Book translations as information flows: How detrimental was Communism to the flow of ideas?*

[Preliminary and incomplete]

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Abstract

Using book translations as a measure of the flow of ideas across countries, we test the effect of the collapse of Communism in Eastern Europe on the international transmission of ideas. We find that translations of Western European titles into former Communist countries increased by a factor of five with the fall of Communism, while translations between Communist countries decreased by a factor of three. The increased inflow of translations from Western European languages was especially pronounced in the more Western oriented non-Soviet countries of the Eastern Bloc, where translations reached levels comparable to those in Western European countries. In contrast, Western European patterns of translation over this period exhibit little change. The fall of Communism encouraged the translation of titles in more subjective fields such as religion and philosophy, but had limited effect on the translation of scientific titles. Our findings are consistent with the hypothesis that Communism discouraged the flow of ideas, especially those that were perceived to be more threatening or less useful for the regime. The patterns we find are also consistent with cultural convergence of Eastern and Western Europe. We also discuss the advantages and disadvantages of translations as a measure of idea flow, and present the effect of Communism on alternative measures of ideas.

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1. Introduction

A wave of revolutions in 1989 and the disintegration of the Soviet Union in 1991 ended Communism in Central and Eastern Europe, bringing to a close the Cold War that had divided Europe into East and West. How did the fall of Communism affect the flow of ideas between capitalist and Communist countries? How did it affect the flow of ideas among Communist countries? What types of ideas were affected the most by the fall of Communism?

By common wisdom, these Communist regimes of the Eastern Bloc restricted information flows from the West and the circulation of knowledge and ideas within the Communist countries. While the economics literature has recognized the importance of knowledge and ideas in general (e.g. Romer 1990, 1993, Mokyr 2003) and under Communism in particular (e.g. Harrison 2005), it is challenging to address these questions empirically because the transmission of information and ideas is by nature difficult to measure.

This paper addresses this challenge by suggesting a new quantitative measure of the flow of ideas across countries, namely translations of books (See also Sin 2008). In the absence of translation, many ideas would not leave the language, culture, or society in which they were conceived. We thus view book translations as a measure of the flow of ideas between societies, and, while translations are only one way new ideas are made available to a society, they are an important and easily quantifiable measure of the flow of knowledge, ideas and culture between linguistically distinct societies. An attractive feature of translations as a measure of ideas is that they capture both "technical" ideas (such as titles in exact and applied sciences), and ideas that are more "social" and "cultural" (such as titles in religion, philosophy, literature and the social sciences).

To test the effect of the fall of Communism on the flow of ideas, we use data on book translations for the period 1980 to 2000 extracted from Unesco's Index Translationum (IT), an international bibliography of the translations published annually in a wide range of countries. We use graphs and difference-in-differences regression analysis to show that when Communism collapsed translation flows from Western Europe into the former Communist countries increased dramatically, mostly driven by increases into the Soviet satellites. At the same time, translations between Communist countries decreased significantly. The change in GDP per capita required to generate the same change in translations from the West as the fall of Communism is a 789 percent increase; the GDP per capita change that would generate the same change in translations

between Communist countries is a 83 percent decrease. In contrast, translation flows into Western European countries changed little over this period. These patterns suggest that translations from the West into the Eastern Bloc were suppressed under Communism, and translations between Communist countries were, on average, inflated. Since the fall of Communism, the Soviet satellites have caught up with Western Europe in their translations of Western European titles, given their levels of GDP and population.

The effects of Communism's fall differed significantly by subject area. For instance, translations in the subject of religion, which was considered an enemy of the Communist regime and was firmly suppressed under it, rebounded the most when Communism fell. Translations of natural science, the study of which was strongly supported by Communist governments, and which was important for the USSR's standing on the world stage, increased relatively little from the West, and decreased the most of any subject between Communist countries.

These translation patterns are consistent with the hypothesis that Communism discouraged the flow of ideas, especially those that were perceived to be more threatening and less useful for the regime.

Naturally, there are other potential ways to measure the flow of ideas between countries. For instance, ideas embedded in people are transmitted by tourism and migration, ideas embedded in firms are transmitted via foreign direct investment, and ideas embedded in goods are transmitted by international trade. In Section 4.3, we show that the fall of Communism also increased the flow of ideas as measured by these alternative measures. However, for each of these activities, the transmission of ideas is a byproduct rather than the driving force. In the case of book translations, on the other hand, the flow occurs expressly for the purpose of transmitting the ideas between linguistically distinct societies. In Section 5, we discuss the advantages and limitations of using book translations as a measure of the flow of ideas.

In addition to providing a new measure of the flow of ideas, this paper sheds light on the consequences of the transition away from Communism in Eastern Europe. Specifically, there is a literature that documents and explains the transition of Eastern European countries from Communism into market economies (e.g. Blanchard 1994, 1996, 1998, Aghion and Blanchard 1994, Frye 2003). There is also a literature exploring the "natural experiment" created by the fall of Communism in Eastern Europe and elsewhere to learn about individuals' preferences and behavior (e.g. Munich et al 2002, Alesina and Fuchs-Schuendeln 2007, Fuchs-Schuendeln 2008,

Abramitzky 2008, Abramitzky and Lavy 2008). However, this paper is the first to test the effect of the fall of Communism on the flow of information and ideas.

This paper proceeds as follows. In Section 2 we present the data on book translations and explain the construction of our measure of idea flows. Section 3 outlines our empirical strategy in historical context. It begins by describing our "treatment" (former Communist) and "control" (Western European) countries in the context of the collapse of Communism in Europe. It then describes the institutional background of publishing in Communist Europe, illustrating how Communist governments centrally planned the book publishing industry and restricted the publication and translation of books through censorship. The section concludes with a description of our difference-in-differences empirical strategy for examining how the fall of Communism affected the flow of ideas from capitalist countries into Communist countries, and between Communist countries. Section 4 presents the results. First we show that the fall of Communism increased book translations from Western European countries and decreased translations among Communist countries. Second, we show that this effect differed by the subject of the books – it was higher for book titles that were viewed as more threatening to the regime, such as religion, philosophy and social sciences. Finally, it explores the effect of the fall of Communism on several other measures of idea flow, namely the flow of people (tourists and foreign students), the flow of firms (FDI), and the flow of goods (imports). Section 5 discusses some advantages and limitations of books translations as a measure of the flow of ideas between societies. Section 6 draws conclusions and proposes some mechanisms through which the effect of Communism on translations might operate.

2. Data: the flow of book translations across countries

The translations data are extracted from Unesco's Index Translationum (IT), an international bibliography of the translations published in a wide range of countries over the periods 1932 to 1940 and 1948 to the present. These data originate at the national level through the law of legal deposit, which specifies that every book published that is intended for circulation must be submitted to the national depository. The national depository then compiles a list of the publications that are translations, and submits this list to Unesco, which standardizes the entries across countries to form the IT.

Titles in the IT are categorized according to the nine main categories of the Universal Decimal Classification (UDC) system: General; Philosophy (including Psychology); Religion and Theology; Law, Social Sciences, Education; Natural and Exact Sciences; Applied Sciences; Arts, Games, Sports; Literature (including books for children)[1]; History, Geography, Biography (including memoirs and autobiographies).

The bibliographic entry for each translation includes information on the country, city, and year in the which the translation was published, the language of the original title and the target language into which it was translated, the subject area (UDC class) of the title, the number of pages or volumes of the title, the author, and the title of the translation. It may include additional information such as the publisher of the translation, the price of the translation, information on any intermediate language through which the title was translated, and further details on the original title.[2]

We use data on the translations in Communist countries (our treatment group) and Western European countries (our control group) over the period 1980 to 2000. The Communist countries we include are: seven former Soviet countries (Russia, Belarus, Estonia, Latvia, Lithuania, Moldova, the Ukraine), Bulgaria, the Czech Republic, Hungary, Poland, Romania, and Slovakia. The other European countries are: Austria, Belgium, Switzerland, Denmark, Spain, Finland, France, Iceland, Italy, the Netherlands, Norway, Portugal, and Sweden. Not all of these countries reported their translations to Unesco every year, so we include each country only in the years it reported a not-insignificant number of translations.[3] We note that Germany is excluded from the analysis because our data do not allow us to know whether a translation after unification was in East or West Germany. The UK is also excluded because it stopped reporting its translations to Unesco in 1990.

Creation of translation series over time for some of these countries is complicated by the fact they only became separate countries upon the upheaval of interest in the middle of our period of study. Prior to 1992, the USSR as a whole reported its translations; prior to 1993, Czechoslovakia as a whole reported its translations. We allocate the translations reported by the

[1] Literature also includes the very small category Philology and Linguistics.
[2] Unfortunately, the country in which the original title was published is not among the included information.
[3] Translations for a country in the years it did not report tend to be very few as opposed to zero because not all translations are reported the year they were published, thus a country's report to Unesco for, say, 1989, is likely to include a few translations published in 1988 or even earlier.

USSR and Czechoslovakia to one of their constituent countries based on the city in which each translation was published.

From the individual records of translations, we construct our main variable of interest, inward translations of a country. The construction of this variable is complicated by the lack of a one-to-one mapping between countries and languages. We deal with this by choosing a "main" language for each country, defined as the most widely spoken language in the country.[4] In our main specification, we count as inward translations only those translations reported by a country for which the target language is the country's main language.[5] We further consider two subsets of inward translations, namely those that originate in a Communist language, and those that originate in a Western European language.[6]

Another variable of potential interest is outward translations from a country, though constructing this variable presents several additional challenges.[7] Similarly to inward translations, we also consider outward translations that are published in Communist countries, and those that are published in Western European countries separately.[8]

Although Index Translationum data are the most comprehensive available on translations in multiple countries, they do suffer from several imperfections. Like most data gathered from multiple countries, consistency of definitions across countries is problematic. This manifests itself in the definition of a "book" that therefore warrants inclusion, and in the categorization of

[4] "Most widely spoken" is defined in terms of native speakers where these data are available, otherwise in terms of the language spoken at home or spoken on a day-to-day basis.

[5] As a robustness check, we plan to also include translations into other languages that are widespread in the country.

[6] Similarly to Germany, the German language is neither classified as an Eastern Bloc language nor a Western European language. The Eastern Bloc languages are: Armenian, Azerbaijani, Belarusian, Bulgarian, Czech, Estonian, Georgian, Hungarian, Kazakh, Kirghiz, Latvian, Lithuanian, Moldovan, Polish, Romanian, Russian, Slovakian, Tajik, Turkmen, Ukrainian, and Uzbek. The Western European languages are: Danish, Dutch, English, Finnish, French, Modern Greek, Icelandic, Irish, Italian, Maltese, Norwegian, Portuguese, Spanish, and Swedish.

[7] First, because the IT does not contain translations published in every country in the world, we are unable to construct a comprehensive measure of translations out of each language. We instead make the more modest attempt to measure outward translations that are published in the other countries included in our sample. Second, because we lack information on the country in which each original title was published, we cannot allocate outward translations to countries in the ideal way in cases where more than one country publishes books in the same language. Instead, we allocate a proportion of the annual translations out of a language to each country where that language is the most widely spoken. The proportion used for each country is that country's share of the world production of titles in the given language in 1979 (Sin 2008). Third, for outward translation data to be comparable across the years, the set of translating countries over which translations from the language are summed must be the same each year, yet even our included countries lack data for some years in the sample. Thus, for the purposes of creating measures of outward translation only, we impute translations published in each of our countries in years for which these data are missing by using the number of translations published the previous year where available, and otherwise the following year. We count as outward translations only those translations published in our sample countries that are translated into the main language of the country publishing them.

[8] Note Germany is again excluded.

titles by subject. In addition, the only translations reported are those that were submitted to the central depository of the country. In particular, this excludes *samizdat*, the illegal books published under the Communist regime. The exclusion of these titles is unfortunate. However, the large personal risk involved in owning such books suggests their circulation was limited, and the ideas contained therein were not available to the general populace.

3. Historical context and empirical strategy

3.1. "Treatment" and "control" groups: A brief timeline of the fall of Communism in the Eastern Bloc

Coming into the 1980s, the Soviet Union and its satellites were all Communist countries with centrally planned economies, in which the ruling (and only) party, the Communist Party under some name or other, interfered in virtually all aspects of its citizens' lives. The Eastern Bloc was isolated from Western Europe by the Iron Curtain, which hindered the movement of both people and information.

The changes that would result in the fall of the Eastern Bloc began in the late 1980s when Gorbachev came to power in the USSR. Among the reforms he instituted, perhaps the most important two were *perestroika*, restructuring of the economy and political system, and *glasnost*, openness in the media and culture. Through these sets of gradual reforms, the Soviet Union began to move in the direction of a market economy, with a decrease in centralization and the emergence of private firms, and the increase in the freedom of people to express their views on a range of topics without fear of retribution.

An important consequence of *glasnost* was that people could now openly air their dissatisfaction with the Communist regime. This freedom spread to the Soviet satellites, and was likely a contributing factor in revolutions that heralded the fall of the Berlin Wall and the collapse of the Communist regimes in the satellite countries in the last few months of 1989.

The Communist USSR held together for nearly a further two years, though the power of the Soviet Communists was waning and nationalism in the Soviet republics was on the rise. Late in 1991, a conservative coup in Russia aimed at preventing the disintegration of the Soviet Union was staged. Its unintended effect was just the opposite; the USSR was officially dissolved.

The Communist countries had many commonalities, but there was also heterogeneity within this group in the degree to which Communism fell. We thus additionally consider the

effect of the fall of Communism on two subsets of Eastern Bloc countries. An obvious division is to Soviet and Soviet satellite countries, with the former developing a more Russian orientation and the latter a more Western orientation. Such Russian orientation might reveal itself through greater remaining governmental controls on translations post collapse, consumer preferences that favor Western ideas less, and a lower effort or desire to integrate with Western Europe.

A closer look at the USSR, however, reveals that the three Baltic states of the Soviet Union, Latvia, Lithuania and Estonia, are more similar to the Soviet satellites than they are to Soviet nations. They were more recent additions to the USSR (annexed in 1940), and always maintained their more Western feeling. The Baltic states' independent streak was highlighted when, upon the collapse of the Soviet Union, they were the only three Soviet states not to join the Commonwealth of Independent States (CIS), the loose alliance of independent countries that succeeded the USSR. Since the disintegration of the USSR, the former Communist countries have coalesced into two trading blocs: the Russia-focused CIS countries in one, and the Western-centered non-CIS countries, including the Baltic states, in the other. Because of these differences between the Baltic states and other Soviet states, we assign the three Baltic states to the Soviet satellites. We note that results are similar when excluding the Baltic states from the analysis or when assigning them to a separate group.

In summary, we use two sets of treatment groups in our empirical analysis. The first is a single treatment group, namely Communist countries that belonged to the Eastern Bloc and were Warsaw Pact members in the 1980s;[9] the second consists of two treatment groups, namely the Russia-focused Soviet countries, and the Western-centered Soviet satellites. Our control group in both cases is Western European countries that were not Communist during this period. Figure 1 is a map of our treatment and control groups.

3.2. Blocking information flows: publishing and censorship under Communism

Prior to Gorbachev's reforms, book publishing in the Soviet Union was a state-run industry that produced vast numbers of books with little regard for consumer demand.[10] All publishers were owned and operated by the government, and each had its own subject area or

[9] We omit Albania and Yugoslavia although their data are available because they withdrew from the Warsaw pact in 1968 and 1948 respectively, thus in our period of interest they were no longer politically aligned with the Soviet Union.
[10] Skelly and Stabnikov (1993).

field in which it enjoyed a complete monopoly. Book prices, like other prices and wages in the publishing industry, were strictly controlled; each subject had a designated price range, chosen to ensure the subjects the government intended to be widely read were available at low cost. Selection of the titles published was centrally coordinated and crafted according to the government's grand plan.[11] Central to the organization of the Soviet publishing system was the conception of publishing as an ideological activity. Reading was viewed as a way in which the social consciousness of individuals was shaped, thus full state control over the material published and its availability to citizens was vital. Profits and publishing in order to meet demand were considered less important, through periodically concern surfaced in Soviet publishing circles about the shortages of books in specific fields. Furthermore, in the mid to late 1970s, increasing attention started being paid to studying and forecasting reader demand.[12]

The process determining the exact titles printed in any year was complex and centrally planned to a high degree. USSR-level and republic-level authorities decided on the proportion of total books published in the coming year that would be in each subject area, and assigned printing capacity, paper, and binding materials to individual publishers. Working within these bounds and other specifications given to them, publishers compiled their own lists of planned printings, each item on which then received an approval, rejection, or other recommendation from a "coordinating" central authority. Considerations for the coordinating authority were maintaining the subject monopolies of the printing houses, avoiding duplication of subject matter, and economy in the use of paper, which was often in short supply. Additional centralized planning occurred that was related to the publication of translations.[13]

Foreign titles were selected for translation by utilizing experts employed for the purpose at home, representatives located in numerous countries abroad, and foreign visiting experts such as scientists. The representatives located abroad reviewed tens of thousands of new books annually. They then bought copies of the most important titles from local bookshops, and mailed them back to their publishers in the USSR.[14]

Censorship of books intended for sale in the USSR was the domain of Glavlit (occasionally referred to by its full name, the "Chief Administration for the Protection of State

[11] Walker (1978).
[12] Walker (1978).
[13] Walker (1978).
[14] Bernstein et al. (1971).

Secrets in the Press attached to the Council of Ministers of the USSR"). Editors of publishing houses were expected to use their good sense in selecting titles for publication, but the corrected galley-proofs (*granki*) then had to be perused by Glavlit "…both for the mention of prohibited topics and for the observance of political lines and nuances…" (Walker, 1978, page 66) before publication could occur.[15]

Censorship of translations followed a somewhat different, but undoubtedly no less rigorous, process, explained by Walker (1978):

> The importance of careful and vigilant selection by Soviet publishers in choosing works for translation from foreign languages has been frequently stressed by Party and government, and is visible in a number of special regulations applying to the publication of translations. A publishing-house considering translation of a foreign work must, unless there is a special need for speedy publication, obtain at least two recommendations for the translation from scholarly institutions or specialists, and secure the agreement of the appropriate chief editorial office in the State Committee for Publishing before submitting details of the work for 'coordination' to the State Committee or (in the case of scientific and technical works) to the State Scientific and Technical Library."[16]

Between 1986 and 1991, control over the publishing industry moved out of state hands. State-owned publishing houses were joined by a multitude of other ownership structures, competition entered the industry, and the focus shifted away from producer-led publishing to consumer-led publishing. The monopoly system of publishers was scrapped; price controls and many state subsidies were terminated. Through the reforms, firms, organizations, and institutions gained the right to publish, and Russian authors and publishers gained the right to freely buy or sell rights, including in transactions with international parties.[17]

3.3. How did the fall of Communism affect the flow of ideas between capitalist and Communist countries? How did it affect the flow of ideas among Communist countries?

Our empirical strategy is a simple difference-in-differences specification predicting the number of translations in a country that uses the collapse of Communism in Eastern Europe as

[15] Walker (1978).
[16] Page 119.
[17] Skelly and Stabnikov (1993).

the source of variation. Our treatment group is former Communist countries; our control group is Western European countries that were not communist during this period. We include all countries for which we have sufficient data both before and after the collapse of Communism. We are missing the smaller former Soviet countries further east, namely Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan.

Specifically, we test whether, upon the collapse of Communism, book translations in former Communist countries (treatment group) increased relative to translations in non-Communist Western European countries (control group). Our empirical strategy also allows us to examine the extent to which translations in Communist countries converged to the level of translations in Western European countries after the fall of Communism. Specifically, we run various versions of the following OLS regression:

$$Y_{it} = \beta_0 + \beta_1 Communist_i \times Post_t + \beta_2 Communist_i + \beta_3 Post_t + \varepsilon_{it} \quad (1)$$

where Y is the (log) number of inward book translations in country i in year t. $Post_t$ is a dummy variable for the years 1991 and onwards,[18] $Communist_i$ is a dummy variable for whether the country was a former Communist country, and $Communist_i \times Post_t$ is the interaction between these two variables. The coefficient on the latter variable measures the effect of the fall of Communism on translations into Communist countries.

However, we expect translations from Western languages to be differently affected by the fall of Communism to translations from Communist languages. Specifically, if Communism indeed suppressed information flows from the West, we expect translations from Western languages to increase after the fall of Communism. Moreover, to the extent Communist countries artificially translated more from each other during Communism, we expect translations from Communist languages to decrease with the fall of Communism.

For this reason, we allow the effect of the fall of Communism to differ between translations from Western languages and those from Communist languages. Specifically, we include a dummy variable for whether the translation is from a Western European language

[18] We experiment with alternative *Post* variables, namely post-1989, post-1990, and post-1992 and the results (not presented) are essentially the same. We choose post-1991 because it is midway between the end of Communism in the Soviet satellites (late in 1989) and the collapse of the Soviet Union (late in 1991). We also plan to allow the date of post to differ for the Soviet Union and its satellites.

($WesternLang_j$), and its converse, a dummy for the translation being from a Communist language ($CommunistLang_j$).[19] We interact these dummies with the main effects and interaction of interest to give

$$\left\{\begin{array}{l} Y_{ijt} = \beta_{1a} Communist_i \times Post_t \times WesternLang_j + \beta_{1b} Communist_i \times Post_t \times CommunistLang_j \\ \quad + \beta_{2a} Post_t \times WesternLang_j + \beta_{2b} Post_t \times CommunistLang_j \\ \quad + \beta_{3a} Communist_i \times WesternLang_j + \beta_{3b} Communist_i \times CommunistLang_j \\ \quad + \beta_{4a} WesternLang_j + \beta_{4b} CommunistLang_j + \beta_5 X_{it} + \varepsilon_{ijt} \end{array}\right\} \quad (2)$$

where Y_{ijt} is the (log) number of book translations from either a Communist language or a Western European language, and *j* denotes Communist or Western language. The variables of interest in these specifications are the interactions $Communist_i \times Post_t \times WesternLang_j$ and $Communist_i \times Post_t \times CommunistLang_j$, whose coefficients measure the effect of the fall of Communism on translations from Western or Communist languages into Communist countries (relative to Western European countries). Our control variables X_{it} include population, and GDP per capita; we also include specifications that interact the dummy for whether a language is Communist (as opposed to Western European), $CommunistLang_j$, with country fixed effects and with country-specific linear time trends. Under our hypothesis that Communism suppressed information flows from the West into the Eastern Bloc, we expect β_{1a} to be positive. The expected sign of β_{1b} is less clear, but is expected to be negative if Communist countries substituted Communist translations for Western ones.

We next present results with two treatment groups, namely the former Soviet countries, which have a Russian orientation, and the Soviet satellites, which have a more Western European focus. To allow for a different effect in the Soviet satellites, we partially interact a dummy variable for Soviet satellites (*Satellite*), with a dummy for Communist countries (*Communist*) to yield regressions of the form:

[19] Note *CommunistLang* + *WesternLang* = 1, so our specification is fully interacted with respect to the language of the translation.

$$\left\{\begin{array}{l} Y_{ijt} = \beta_{1a1} Communist_i \times Post_t \times WesternLang_j + \beta_{1a2} Communist_i \times Satellite_i \times Post_t \times WesternLang_j \\ \quad + \beta_{1b1} Communist_i \times Post_t \times CommunistLang_j + \beta_{1b2} Communist_i \times Satellite_i \times Post_t \times CommunistLang_j \\ \quad + \beta_{2a} Post_t \times WesternLang_j + \beta_{2b} Post_t \times CommunistLang_j \\ \quad + \beta_{3a1} Communist_i \times WesternLang_j + \beta_{3a2} Communist_i \times Satellite_i \times WesternLang_j \\ \quad + \beta_{3b1} Communist_i \times CommunistLang_j + \beta_{3b2} Communist_i \times Satellite_i \times CommunistLang_j \\ \quad + \beta_{4a} WesternLang_j + \beta_{4b} CommunistLang_j + \beta_5 X_{it} + \varepsilon_{ijt} \end{array}\right\} \quad (3)$$

The main coefficients of interest are β_{1a2} and β_{1b2}, which capture whether inward translations from Western European and Communist languages respectively increased more in the Soviet satellites than in Soviet countries when Communism fell.

In addition to our analysis of inward translations, we run similar specifications with Y_{ijt} as outward translations. In these specifications, the dummy variables *WesternLang* and *CommunistLang* are replaced by dummy variables for the target language being a Communist language or a Western European language. In Section 4.2, we run the inward translation regressions separately for books in each subject area to examine whether Communism affected certain types of translations more than others.

4. Results

4.1. How did Communism affect translation flows from Western European countries into Communist countries, and flows between Communist countries?

This section begins with a graphical analysis of the effect of the fall of Communism on inward translations, after which we subject the patterns to regression analysis. Figure 2 shows average inward translations normalized by population in the Soviet satellites, the Soviet countries, and the Western European countries. For each set of countries, translations are split by whether they are translated from a Communist language or a Western European language. Translations from languages that fall into neither of these categories are excluded.

This figure shows that before the fall of Communism, Western European countries had much higher translation rates into their main language than Communist countries, and these translations were almost entirely from Western European languages. The Soviet satellites translated more than the Soviet countries, and both sets translated primarily from Communist languages. However, in the few years around 1990, the patterns of translation for Communist countries changed drastically. The Soviet satellites' translations of Western European titles

rocketed up to approach the level of translations of Western European countries, and their translations of Communist titles fell away. By the year 2000, the Soviet satellites had translation patterns remarkably similar to those of Western European countries, though still with a slight bias towards translations from other former Communist countries. The Soviet countries also experienced a fall in translations from Communist languages, but their increase in translations from Western European languages was short-lived. These translation patterns stand in contrast to inward translations of Western European countries, which show no distinct change over this period.

We next subject these patterns to regression analysis, while controlling for other factors that might affect translations. For instance, income differences might explain why the Soviet countries enjoyed a much smaller inflow of ideas from Western Europe upon the collapse of Communism than did the Soviet satellites; the Soviet countries have had more difficulty overcoming their post-collapse recessions than the Soviet satellite countries. The regressions show, however, that differences in GDP cannot fully explain the difference between the Soviet and Soviet satellite countries.

Table 1 presents our main difference-in-differences regression results. The dependent variable in each column is the log of inward translations from either a Communist language or a Western European language. The first column is a basic difference-in-differences specification with no additional controls. We see that, as suggested by the graphs, Communist translations from Western European languages rose when Communism collapsed, whereas translations between Communist countries fell. The magnitudes of these effects are large.

The second column shows that these effects are robust to controlling for log population and log GDP per capita.[20] The third column adds country fixed effects interacted with Communist original language; the main results hold and remain significant. The fourth column is the most demanding specification. It allows translations from Communist languages and from Western European languages to be on different linear time trends in each country, and identifies the effect of the fall of Communism off changes in translations over and above these time trends. The main results hold up, though the decrease in translations from Communist languages decreases in significance. Note, however, that this specification may in fact underestimate the

[20] We currently do not have comparable population or GDP data for Iceland, thus this country is excluded in the specifications where these controls are included.

effect of the fall of Communism on translations because the changes that constituted the fall of Communism were many and occurred over several years around the date we attribute to the fall, so some of these changes are likely falsely attributed to the time trends in this specification.[21]

Columns 5 to 8 use the same controls as columns 1 to 4, but allow the treatment effect to differ for Soviet satellites relative to Soviet countries. We see the increase in translations from Western European languages was larger for the Soviet satellites, and the decrease in translations from Communist languages was larger for Soviet countries (though the latter difference is not statistically significant). A comparison of column 5 with column 6 reveals that differences in income can account for some but not all of the difference between the post-Communism translation experiences of the Soviet countries and those of the Soviet satellites.

Columns 2-4 and 6-8 include controls for log population and log GDP per capita. In columns 2 and 6, where country fixed effects are not included, the coefficients on these variables are identified primarily off cross-country differences. Both have the expected positive sign and are significant, indicating richer and more populous countries translate more. However, when country fixed effects are included, the coefficient on population becomes large and negative. In these specifications the coefficients on population and GDP per capita are identified off the differences in growth rates between countries. Thus the negative coefficient on population indicates countries with faster growing populations, which tend to be the poorer countries, have translation rates that grow more slowly.

One way to put the magnitude of the effect of Communism's fall on translations into perspective is to ask what change in GDP per capita would be required to cause the same change in translations. Using the third specification in our main regression table, we see a 789% increase in GDP per capita would cause the same increase in translations from Western European languages, and an 83% decrease in GDP per capita would cause the same effect on translations from Communist languages.

Appendix Table A presents the same regressions but replacing *Post* and its interactions with a year dummy for each year 1990 and onwards and their equivalent interactions. This allows the changes that occurred in response to the collapse of Communism to show an evolving shape over time. Figures 3A and 3B plot the effect of the fall of Communism on translations and

[21] We also ran the same regressions with the dependent variable defined as the log of translations per capita; the results were very similar, if a little stronger.

how it changes over time as estimated in column 7 of Table A. Figure 3A shows that the positive effect of the fall of Communism on translations from Western Europe increases until 1993, and then stabilizes for the Soviet satellites. Figure 3B shows that the negative effect on translations between Communist countries increases until 1993, when it stabilizes for the Soviet satellite countries.

Figure 4 shows the average of outward translations to Communist or Western European languages for the three sets of countries: Soviet, Soviet satellite, and Western European. Outward translations are essentially the mirror image of inward translations. The main point to notice is that Western European countries did not suddenly become more interested in ideas from the Communist countries when Communism collapsed. However, again we see that when the Eastern Bloc fell, Communist countries translated fewer titles from Communist languages, suggesting that Communist ideas became less appealing to the former Eastern Bloc countries, or that these countries started writing fewer books.

Table 2 repeats the regressions in Table 1, but with the log of outward translations as the dependent variable. These regressions confirm what the graphs suggested, that the outward translations from Communist countries fell with the fall of the Eastern Bloc. This effect is driven by the decrease in translations into Communist languages, which is large and robust to the various alternative specifications. The magnitude of the effect is similar for Soviet and Soviet satellite countries.

4.2. What types of ideas were affected the most by the fall of Communism?

In this section we investigate how the effect of Communism on book translations varied by subject area. First we show the change in translations per capita over time graphically for two subjects that, *ex ante*, we expect to have been affected very differently by the Communist regime: religion, and natural science. We then run difference-in-difference regression specifications for each of the eight subject areas separately.

Figure 5 shows inward translations in the category of Religion and Theology. Religion was considered an enemy of Communism, and religious freedom was severely restricted in most Communist countries.[22] Consequently, we expect religion translations to have been few under Communism. The figure reveals this was indeed the case. When Communism collapsed, Soviet

[22] Riasanovsky and Steinberg (2005).

satellites' translations of religion books increased dramatically from Western European languages, and somewhat from other Communist sources. The rapidity of the increase suggests demand for these translations existed under the Communist regime, but was unable to be satisfied. Soviet countries' translations of religious books from Western European languages, however, increased only a little.

Figure 6 shows inward translations of Natural and Exact Science. Research in exact science received a lot of government support under the Communist regime because it tended to be unthreatening to Communism, and was vital for Soviet power on the world stage. Thus we expect a high level of translations in the Eastern Bloc even under Communism, and a relatively small increase if any when Communism fell. Indeed, we see that the pre-1991 levels of exact science translations in both Soviet countries and Soviet satellites were comparable to those in Western European countries, though the original languages of the titles were largely Eastern as opposed to Western European. When Communism collapsed, exact science translations between Communist countries fell away, but were gradually replaced by translations from Western European languages.

We next estimate our second specification from Table 1 separately for translations in each of the eight subject areas.[23] The difficulty that arises in this case is that, because of the smaller numbers of translations, many of the observations are zero. This is problematic because we are using a log specification. To deal with this, we run two separate regressions for each subject area. The first is a probit that predicts whether the number of translations is positive; the second is an OLS regression that estimates the log number of translations, and includes only observations for which the number of translations is non-zero. Panel A of Table 3 presents the coefficients on the interactions of interest in the probit for each subject; Panel B presents the OLS results.

The coefficients on *Translations in Communist countries from Communist languages* and *Translations in Communist countries from Western languages* shed light on the level of translations of various subject areas in Communist countries before the collapse of the Eastern Bloc. Given positive translations, Communist countries pre collapse translated fewer titles from Western European languages than did Western European countries in every book category. Conversely, Communist countries translated more Communist titles in every subject than did

[23] We omit analysis of the "General" category because of its small size and the difficulty of its interpretation.

Western European countries, though the difference is not significant for translations of *Religion and Theology*. This latter effect is largest for the categories *Law*, *Social Sciences and Education*, *Natural and Exact Sciences*, *Applied Sciences*, and *Literature*.

However, it is difficult to meaningfully compare the effect of the fall of Communism between different subjects because for each subject we must compare both the coefficient in the probit (the extensive margin) and that in the OLS regression (the intensive margin), and one may be larger for one subject and the other smaller. Thus, for ease of comparison between subjects, we also run (for each subject) an OLS regression similar to equation (2) but predicting the log of translations plus one. Figure 7 plots the coefficients on the two interactions of interest against each other. The axes in the figure are the coefficients of interest multiplied by 100, which can approximately be thought of as percentage changes in translation when Communism fell.[24]

The figure shows that the change in translations from Western European languages and the change from Communist languages are positively correlated across subjects. This suggests the types of ideas that were considered helpful or harmful to the Communist regime tended to be the same whether the original language was Communist or Western European.

The axes, which show the extent to which inward translations "rebounded" when Communism collapsed, can be approximately thought of as the extent to which the translation of such ideas was suppressed under communism. Religion translations, in the top right hand corner of the graph, were most highly suppressed under Communism. Natural Science translations, in the lower left hand corner, were the most encouraged under Communism from both types of language. Another subject of particular interest is Social Science, which was relatively suppressed from Western European sources under Communism, but was among the most encouraged from Communist languages. This seems to suggest that Communist countries had their own version of Social Science, but they substituted away from it and towards the Western version when Communism collapsed.

4.3. Other measures of ideas: how did the fall of communism affect the flow of people, firms and goods?

[24] When we allow the effect of the fall of Communism to differ for Soviet countries relative to Soviet satellites, the relative positions of the subjects are similar for the two types of Communist countries, though the points for the Soviet countries are all shifted to the left.

Naturally, there are other ways to potentially measure the flow of ideas between countries. For instance, ideas embedded in people are transmitted by tourism and migration, ideas embedded in firms are transmitted via foreign direct investment (FDI), and ideas embedded in goods are transmitted by international trade. We next briefly examine how the fall of Communism affected the flow of students, tourists and migrants from former Communist countries to the US; FDI in Communist countries; and imports into Communist countries.

4.3.1. The effect of the fall of Communism on visas granted by the United States to residents of Communist countries.

When the Iron Curtain fell and leaving Eastern Europe became a real possibility for many citizens, the former Communist countries suddenly became vulnerable to large-scale emigration and all its consequences. Emigration can affect a country's access to ideas in a range of ways. If emigrants are positively selected in their abilities, the country suffers a loss of their human capital. However, if they acquire new ideas outside the country and transmit these back to acquaintances who did not emigrate, the country may gain ideas. Additionally, people who leave temporarily to study or work abroad may bring new ideas with them when they return.

Figure 8 shows visas granted by the United States to residents of Communist and Western European countries. Despite the complication of the regulations through which the United States limits entry to foreigners, the figure shows clear increases in both temporary visitors to the USA from the Eastern Bloc and in permanent migrants after the collapse of Communism. Visas granted to Soviet and Soviet satellite citizens both increase, though this increase is more pronounced for the Soviet satellite countries.

4.3.2. The effect of the fall of Communism on Foreign Direct Investment (FDI).

Prior to the late 1980s, the economic and legal environments of most Communist countries were discouraging to FDI. However, with the collapse of Communism many of these countries began to transition to market economies, and introduced laws aimed specifically at attracting foreign investment and an inflow of the knowledge embedded in foreign firms. We next examine the flow of FDI in Communist compared with Western European countries after the collapse of Communism.

Figure 9 shows the inflow of FDI as a percentage of GDP for the Soviet countries, Soviet satellites, and Western European countries. Data for the former Communist countries prior to 1993 are incomplete; the data for this period that do exist suggest a much lower inflow of FDI in earlier years. However, even post 1993 we see a general upward trend in FDI in the former Communist countries, especially in the Soviet satellites, which reached levels of FDI comparable to those in Western Europe in the few years before the explosion of FDI in Western Europe in 1998.

4.3.3. The effect of the fall of Communism on imports.

Under the interpretation that translation is a form of trade in ideas, a natural comparison for translation is the trade of goods. Trade in the Communist era in Eastern European countries was overseen by Comecon, and largely consisted of bilateral clearing arrangements between Communist countries. With the collapse of the Eastern Bloc, the former Communist countries of Central and Eastern Europe, particularly the Soviet satellites, set about dismantling their barriers to trade and greatly increased their openness to the West. Here we compare the effect of the fall of Communism on inward translations from Western European languages with its effect on imports from Western European countries. The former Communist countries we investigate are Bulgaria, Hungary, Poland and Romania, which are the Communist countries for which comparable import and translation data are available over our period of interest.

Figure 10 compares the changes over time in imports from Western European countries as a percentage of GDP into these four Communist countries with such imports into Western European countries. Imports of the former Communist countries show a small positive jump in 1991 and an upward trend from this date, whereas Western European imports show no distinct change upon the fall of Communism.

Figure 11 shows imports against translations from Western European countries for these Soviet satellites. Unlike imports, translations jumped substantially in 1991 after Communism collapsed. This suggests that the flow of ideas is faster to adjust than the flow of goods, perhaps because greater investments in international relationships and infrastructure are required for trade.

Table 4 shows parallel regressions predicting translations and imports from Western European and Communist countries. The first two columns are basic difference-in-differences

specifications controlling for the logs of GDP per capita and population. Relative to Western European countries, imports and inward translations before the collapse of Communism were both suppressed in the Communist countries. They were similarly suppressed in the Soviet nations and in the Soviet satellites. However, translations increased relatively more than imports when the Eastern Bloc fell; the coefficient on the interaction of Soviet satellites with the post period is 1.65 in the translation regression and 1.20 in the imports regression. Both are significant at the 1 percent level. These regressions show that the Soviet satellites have caught up to and even surpassed Western European levels of translations and imports (controlling for their populations and incomes).

Columns 3 and 4 are difference-in-difference specifications that allow a linear time trend that differs for Communist relative to Western European countries, and that changes differently for the treatment and control groups upon the collapse of Communism. These regressions confirm what the figures suggested, that the collapse of Communism corresponded to a large sudden increase in translations, and to a small increase plus a steepening of the time trend in imports for the former Soviet satellites.

5. Translations as a measure of the flow of ideas: advantages and limitations

As a measure of the flow of ideas, book translations have both advantages and disadvantages. One useful aspect is that they are classifiable by type. That is, we know the subject category of the book being translated, and so we can categorize the type of idea it contains. Another advantage is that translation flows are driven by the desire to transmit the ideas the books contain. Furthermore, systematic collection of translation data began in the 1930s in a number of countries, and the geographic range has expanded over the years, allowing both a long time series and wide coverage for more recent years. Another useful attribute of book translations that is particularly important for our study is that they can be attributed to sub-national regions of a country. Specifically, we are able to attribute translations in the USSR and Czechoslovakia prior to their dissolutions to the appropriate constituent nation. In contrast, for many other measures of idea flows, data for this period are only available at the USSR or Czechoslovakia level, which does not allow the utilization of within-country heterogeneity, and makes more difficult comparisons of before the dissolution of these countries with after. Finally, book translations avoid the need to compare dollar values across countries, as is generally

required when using trade or FDI data. Such comparisons are particularly problematic in the non-market Communist economies, which are central to our study.

However, book translations have a number of limitations as a measure of the flow of ideas. They only allow us to measure idea flow across language barriers, which precludes measuring idea flows between countries that share a language, or between linguistically similar groups within a country. In addition, counting the number of translated titles does not allow us to capture the importance of each translated title or the breadth of its circulation. Finally, translations capture some types of ideas better than others. Because of the delay in writing, translating, and publishing books, they tend not to capture the very new ideas that appear in patents. By definition, ideas in books must be codifiable as opposed to tacit. That is, they must be able to be put into words and written down. Within the range of codifiable ideas, however, translations capture a wide range of types of knowledge. They capture specific technological and scientific knowledge, but also what we might call more "social" ideas, such as conceptions of justice, the relationship between an individual and his government, and so on.

Another alternative measure to book translations that is commonly used in the economics literature is patent citations, which track the diffusion of particular technological knowledge across disciplines and geographical space. However, as a measure of the flow of ideas, book translations differ from patent citations in a few important ways. For instance, the types of ideas captured by book translations are broader than those captured in patents and thus patent citations. Additionally, the link between knowledge creation and patents has a strategic element that is missing from book translations. An inventor who has created a patentable invention is faced with a strategic decision whether or not to patent it, and the optimal action will depend on the type of invention and institutional factors such as the strength of intellectual property protection in the country. Hence not all patentable discoveries are patented, and the likelihood of patenting varies across space, time, and type of discovery. The translation of books is not plagued by this complication. Finally, patenting does not occur in countries with weak or nonexistent intellectual property laws, particularly developing countries. Thus for these countries data on book translations may exist in meaningful form, whereas data on patent citations may not.

6. Conclusions

We introduce book translations as a measure of idea flows between countries, and use this measure to test the effect of the fall of Communism in Eastern and Central Europe on the international transmission of ideas. We plan to extend the analysis and test for the effect on the flow of ideas as reflected in book translations of other key historical events, such as the Great Depression, Nazism, the Second World War, and the Hungarian revolution.

We find that the fall of Communism resulted in a fivefold increase in translations of Western European titles in former Communist countries, and a threefold decrease in translation flows between Communist countries. Since the end of Communism in Eastern Europe, the more Western-looking former Communist countries have increased their translations of Western European titles to levels comparable of those in Western European countries, which is suggestive of cultural convergence. Furthermore, we find that the degree to which Communism discouraged translations varied with the cultural content of the books; the translation of religious and philosophy titles was heavily suppressed under Communism, but the translation of scientific titles was affected to a much smaller degree. We contrast these translation patterns with those in Western Europe, where translations changed little over this period. These translation patterns are consistent with the hypothesis that Communism discouraged the flow of ideas, especially those that were perceived to be more threatening and less useful for the regime.

The effect of Communism on translations could act through a range of different mechanisms. Specifically, in deciding what titles to publish or translate, the central planning system balanced several factors: the necessity of preventing the circulation of ideas that could be damaging to the government or regime, the promotion of ideas that reinforced the regime, and the provision of books to meet demand (to the extent that demand was known). These artificial constraints undoubtedly created a gap between the titles translated and those demanded under Communism. However, demand itself may also have been directly affected by the Communist regime. First, it may be that people's intrinsic preferences for types of ideas differ if they are accustomed to living under a communist regime. Second, the exposure to the West that came with the fall of Communism may have created demand for Western ideas. Finally, it could be that the value of some types of ideas changed with the fall of Communism. Separating out the various mechanisms through which Communism affected the flow of ideas is left for future research.

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Table 1: The effect of the collapse of Communism on book translations in Communist vs. Western European countries

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Translations from Western European languages in:								
Communist countries * post	1.268***	1.896***	1.361***	0.799**	-0.050	0.687	0.409	0.192
	(0.283)	(0.269)	(0.233)	(0.344)	(0.296)	(0.511)	(0.361)	(0.607)
Soviet Satellite countries * post					1.741***	1.337***	1.183***	0.864
					(0.323)	(0.410)	(0.325)	(0.530)
Communist countries	-2.608***	-1.739***			-3.371***	-3.249***		
	(0.484)	(0.498)			(1.056)	(0.905)		
Soviet Satellite countries					1.102	1.777**		
					(1.076)	(0.678)		
Post	0.321**	0.043	0.380**	0.138	0.321**	0.110	0.379**	0.135
	(0.125)	(0.135)	(0.153)	(0.129)	(0.125)	(0.151)	(0.154)	(0.129)
Translations from Communist languages in:								
Communist countries * post	-1.253***	-0.582***	-1.095***	-1.349***	-1.659***	-0.880*	-1.354**	-1.159
	(0.235)	(0.206)	(0.267)	(0.469)	(0.431)	(0.482)	(0.492)	(0.784)
Soviet Satellite countries * post					0.559	0.157	0.221	-0.276
					(0.435)	(0.354)	(0.469)	(0.720)
Communist countries	1.775***	2.583***			1.846***	1.907***		
	(0.331)	(0.424)			(0.436)	(0.471)		
Soviet Satellite countries					-0.102	0.573		
					(0.395)	(0.502)		
Post	-0.117	-0.437**	-0.084	0.124	-0.117	-0.369**	-0.086	0.121
	(0.157)	(0.160)	(0.174)	(0.191)	(0.157)	(0.172)	(0.172)	(0.191)
Other controls:								
Population (ln)		0.545***	-4.541**	-8.075**		0.649***	-2.774*	-7.799**
		(0.097)	(1.804)	(2.979)		(0.131)	(1.589)	(2.853)
Real GDP per capita (ln)		1.205***	0.623**	-0.185		0.814*	0.261	-0.217
		(0.329)	(0.292)	(0.518)		(0.438)	(0.300)	(0.549)
Communist original language dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country * Communist original language fixed effects	No	No	Yes	Yes	No	No	Yes	Yes
Country-specific linear time trends * Communist original language	No	No	No	Yes	No	No	No	Yes
R-Squared	0.579	0.673	0.921	0.942	0.641	0.764	0.925	0.943
Observations	1,000	964	964	964	1,000	964	964	964

Notes: All columns are OLS regressions. Dependent varable is log inward translations from a Communist or Western European language. "Post" is a dummy for 1991 onwards. The Communist countries used in the analysis are Russia, Belarus, Estonia, Latvia, Lithuania, Moldova, the Ukraine, Bulgaria, the Czech Republic, Hungary, Poland, Romania, and Slovakia. The Western European countries used are Austria, Belgium, Switzerland, Denmark, Spain, Finland, France, Iceland, Italy, the Netherlands, Norway, Portugal, and Sweden. Their corresponding Communist and Western European languages are described in footnote 5 in the text. We include the three Baltic countries in the Soviet Satellite countries (see explanation in text). No more than two observations in each regression are dropped for being zero. Standard errors are clustered at the country level. * p<0.10, ** p<0.05, *** p<0.01.

Table 2: The effect of the collapse of Communism on book translations out of Communist vs. Western European countries

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Translations into Communist languages from:								
Communist countries * post	-2.122***	-0.899***	-1.856***	-1.165***	-2.362***	-1.002*	-2.276***	-1.310***
	(0.264)	(0.298)	(0.245)	(0.182)	(0.535)	(0.560)	(0.353)	(0.174)
Soviet Satellite countries * post					0.345	0.097	0.499	0.200
					(0.566)	(0.488)	(0.356)	(0.203)
Communist countries	0.971*	3.034***			1.202	2.599***		
	(0.484)	(0.394)			(0.920)	(0.343)		
Soviet Satellite countries					-0.334	0.697**		
					(0.882)	(0.275)		
Post	0.788***	0.188	0.613***	0.435***	0.788***	0.171	0.615***	0.434***
	(0.132)	(0.191)	(0.143)	(0.125)	(0.132)	(0.192)	(0.137)	(0.125)
Translations into Western European languages from:								
Communist countries * post	-0.060	1.354***	0.315*	0.481***	-0.262	1.880***	0.026	0.435
	(0.197)	(0.263)	(0.156)	(0.165)	(0.316)	(0.416)	(0.164)	(0.349)
Soviet Satellite countries * post					0.280	-0.644	0.296*	0.049
					(0.305)	(0.449)	(0.152)	(0.340)
Communist countries	-2.534***	-0.617			-1.843	-1.745*		
	(0.652)	(0.474)			(1.763)	(0.984)		
Soviet Satellite countries					-0.850	1.430		
					(1.774)	(0.955)		
Post	0.192	-0.518***	-0.027	0.037	0.192	-0.535***	-0.025	0.036
	(0.139)	(0.137)	(0.089)	(0.049)	(0.139)	(0.134)	(0.087)	(0.049)
Other controls:								
Population (ln)		1.027***	1.963	2.730		1.135***	2.823**	2.811
		(0.091)	(1.190)	(2.025)		(0.102)	(1.205)	(2.054)
Real GDP per capita (ln)		2.858***	0.693***	0.583*		2.903***	0.502*	0.564*
		(0.408)	(0.192)	(0.315)		(0.357)	(0.250)	(0.324)
Translations into Communist languages	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country * translations into Communist language fixed effects	No	No	Yes	Yes	No	No	Yes	Yes
Country-specific linear time trends * translations into Communist languages	No	No	No	Yes	No	No	No	Yes
R-Squared	0.309	0.730	0.956	0.973	0.316	0.751	0.957	0.973
Observations	945	910	910	910	945	910	910	910

Notes: All columns are OLS regressions. Dependent varable is log number of translations out of the country's main language to a Communist or Western European language. "Post" is a dummy for 1991 onwards. See Table 1 for the Communist and Western European countries used in the analysis. Their corresponding Communist and Western European languages are described in footnote 5 in the text. We include the three Baltic countries in the Soviet Satellite countries (see explanation in text). Zero values are dropped (<6% of observations). Standard errors are clustered at the country level. * p<0.10, ** p<0.05, *** p<0.01.

Table 3: The effect of the fall of Communism on various subject areas of book translations

Panel A: Probit predicting non-zero inward translations in the subject area

	Natural Sci	Applied Sci	Social Sci	Arts	Literature	Philosophy	Religion	History
Translations in Communist countries from:								
Communist languages * post	-1.256***	0.399	0.221	-0.330	-9.018***	0.241	0.839***	-0.551
	(0.339)	(0.286)	(0.532)	(0.279)	(0.473)	(0.259)	(0.251)	(0.402)
Western languages * post	0.992***	1.139***	1.139***	1.215***	-4.633	1.434***	2.003***	1.133***
	(0.157)	(0.265)	(0.284)	(0.286)	.	(0.269)	(0.372)	(0.342)
Controls as in Panel B	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	966	966	966	966	966	966	966	966

Panel B: OLS predicting log number of inward translations in the subject area, where translations are non-zero

	Natural Sci	Applied Sci	Social Sci	Arts	Literature	Philosophy	Religion	History
Translations in Communist countries from:								
Communist languages * post	-0.767*	-0.362	-1.312***	-0.622**	-0.641**	0.198	0.889***	-0.841***
	(0.375)	(0.251)	(0.272)	(0.226)	(0.246)	(0.300)	(0.171)	(0.242)
Western languages * post	0.684*	2.067***	1.762***	0.764**	1.897***	2.176***	2.074***	1.198***
	(0.396)	(0.338)	(0.372)	(0.284)	(0.256)	(0.280)	(0.435)	(0.318)
Communist languages	2.445***	3.134***	2.380***	1.144**	2.388***	1.154**	0.270	1.739***
	(0.438)	(0.396)	(0.321)	(0.552)	(0.449)	(0.447)	(0.417)	(0.355)
Western languages	-0.955*	-1.907***	-1.758***	-1.679***	-1.329**	-2.291***	-2.164***	-1.551***
	(0.553)	(0.580)	(0.543)	(0.546)	(0.483)	(0.528)	(0.704)	(0.406)
Other controls:								
Translations from Communist languages * post	-0.287*	-0.497***	-0.467***	-0.249*	-0.345*	-0.206	-0.223*	-0.174
	(0.145)	(0.165)	(0.148)	(0.137)	(0.192)	(0.215)	(0.119)	(0.146)
Translations from Western languages * post	0.328*	0.184	0.299**	0.419***	-0.048	0.354***	0.212	0.186
	(0.167)	(0.129)	(0.130)	(0.124)	(0.167)	(0.119)	(0.166)	(0.150)
Population (ln)	0.435***	0.462***	0.370***	0.441***	0.550***	0.363***	0.344***	0.455***
	(0.064)	(0.081)	(0.060)	(0.097)	(0.109)	(0.077)	(0.108)	(0.113)
Real GDP per capita (ln)	0.684	1.072**	0.644*	0.508	1.360***	0.574	0.420	0.841**
	(0.476)	(0.413)	(0.359)	(0.490)	(0.412)	(0.391)	(0.364)	(0.320)
Translations from Communist languages	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-Squared	0.535	0.709	0.606	0.691	0.682	0.718	0.739	0.680
Observations	752	748	824	750	953	717	656	846

Notes: "Post" is a dummy for 1991 onwards. See Table 1 for the Communist and Western European countries used in the analysis. Their corresponding Communist and Western European languages are described in footnote 5 in the text. The OLS regressions in Panel B drop zero values. Standard errors in both panels are clustered at the country level. * p<0.10, ** p<0.05, *** p<0.01.

Table 4: Comparing the effect of the fall of Communism on book translations vs. imports

	(1) translations	(2) imports	(3) translations	(4) imports
Communist countries * post dummy	1.653***	1.203***	1.403***	0.763***
	(0.277)	(0.226)	(0.463)	(0.250)
Communist countries * post trend			-0.059	0.082
			(0.038)	(0.071)
Post dummy	0.150	0.020	0.065	0.064***
	(0.163)	(0.065)	(0.135)	(0.020)
Post trend			0.057*	-0.035***
			(0.029)	(0.008)
Communist countries	-1.072	-1.083***	-0.817	-1.061**
	(0.729)	(0.191)	(0.964)	(0.458)
Communist countries * trend			0.048	0.006
			(0.048)	(0.055)
Trend			-0.015	0.011
			(0.028)	(0.009)
Real GDP per capita (ln)	0.674	1.880***	0.641	1.863***
	(0.635)	(0.177)	(0.708)	(0.189)
Population (ln)	0.481**	0.763***	0.478**	0.762***
	(0.202)	(0.057)	(0.204)	(0.059)
R-Squared	0.458	0.905	0.464	0.909
Observations	309	336	309	336

Notes: All columns are OLS regressions. Dependent variable is log inward translations (columns 1 and 3) or log value of imports (columns 2 and 4) from Western European countries. "Post dummy" is a dummy for the years 1991 and onwards. "Post Trend" is defined as Post dummy times (year minus 1991). The Communist countries ("treatment" group) included are the ones for which comparable import and translations data are available over our period of interest, namely Bulgaria, Hungary, Poland and Romania. Standard errors are clustered at the country level. * p<0.10, ** p<0.05, *** p<0.01.

Figure 1: Treatment and control groups

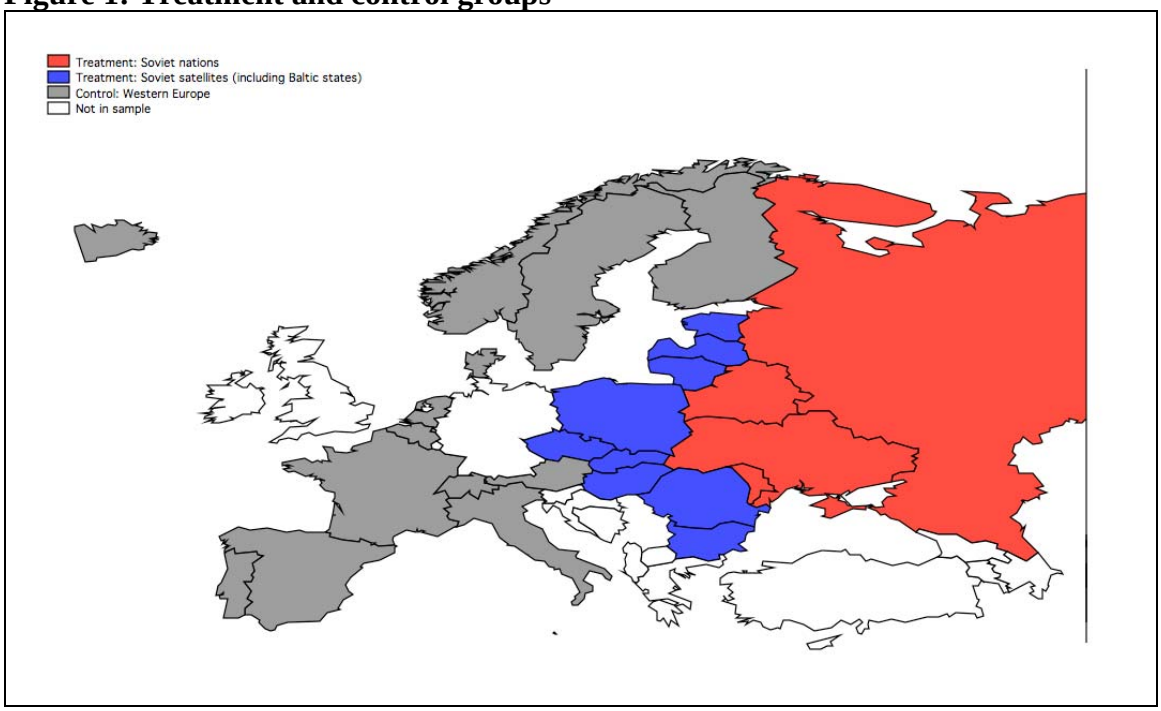
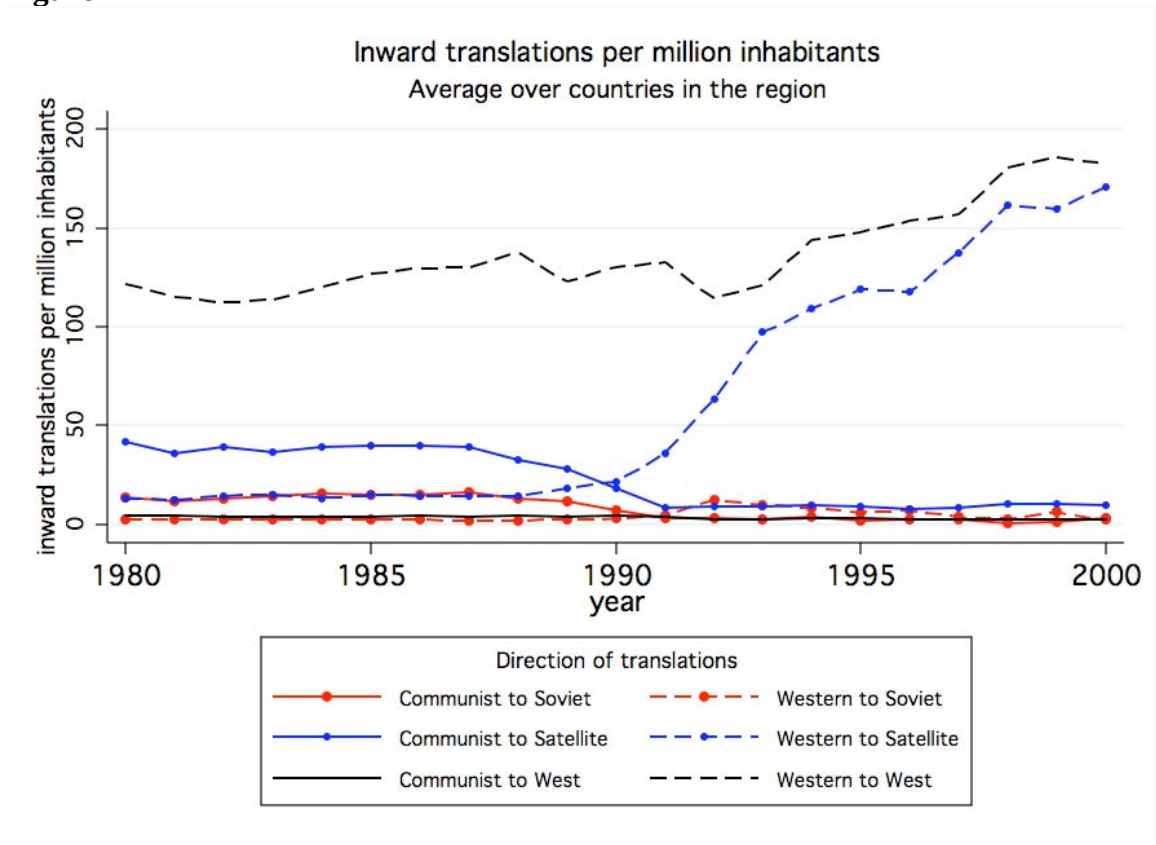
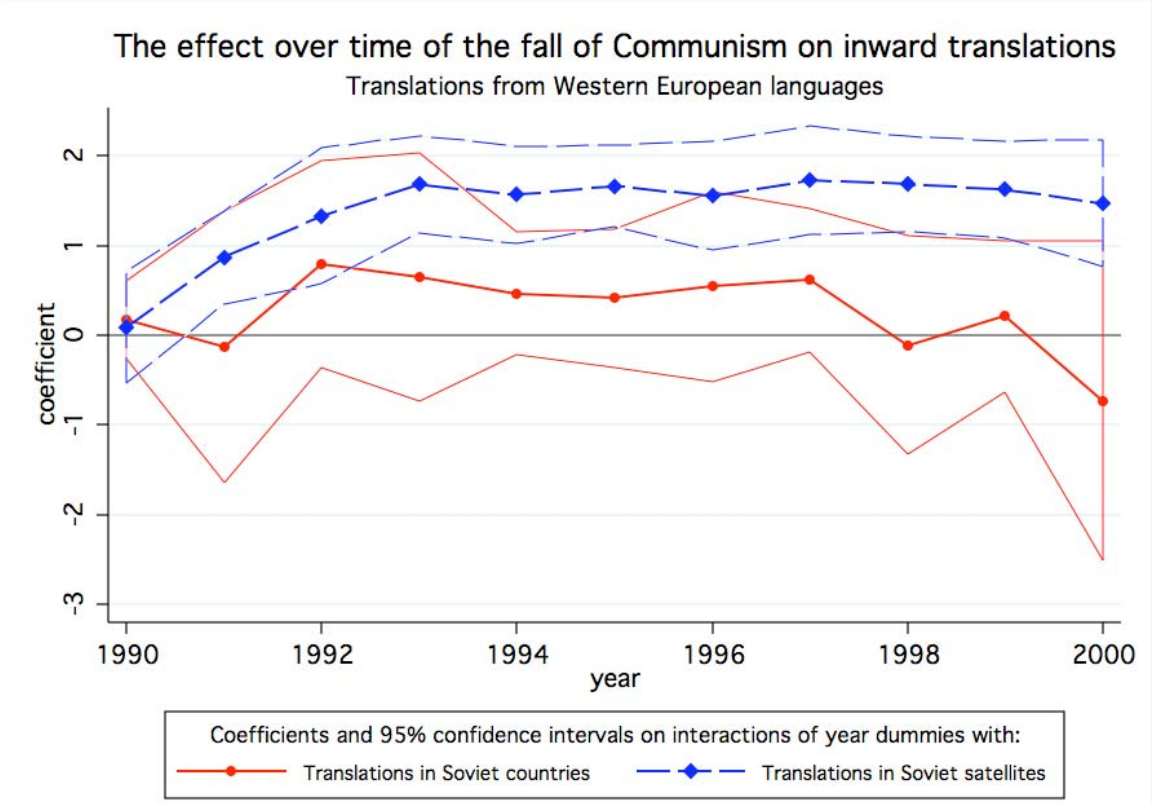


Figure 2



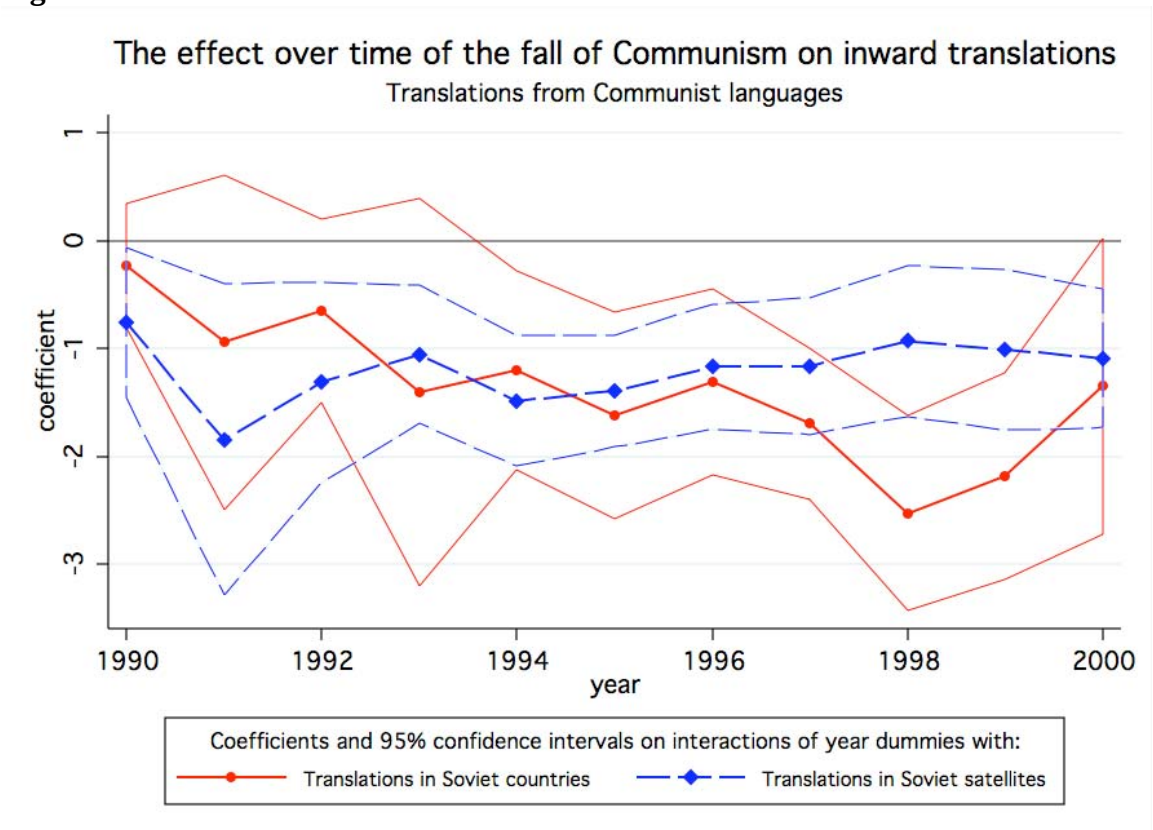
Satellite countries also include the Baltic states, as explained in the text.

Figure 3A



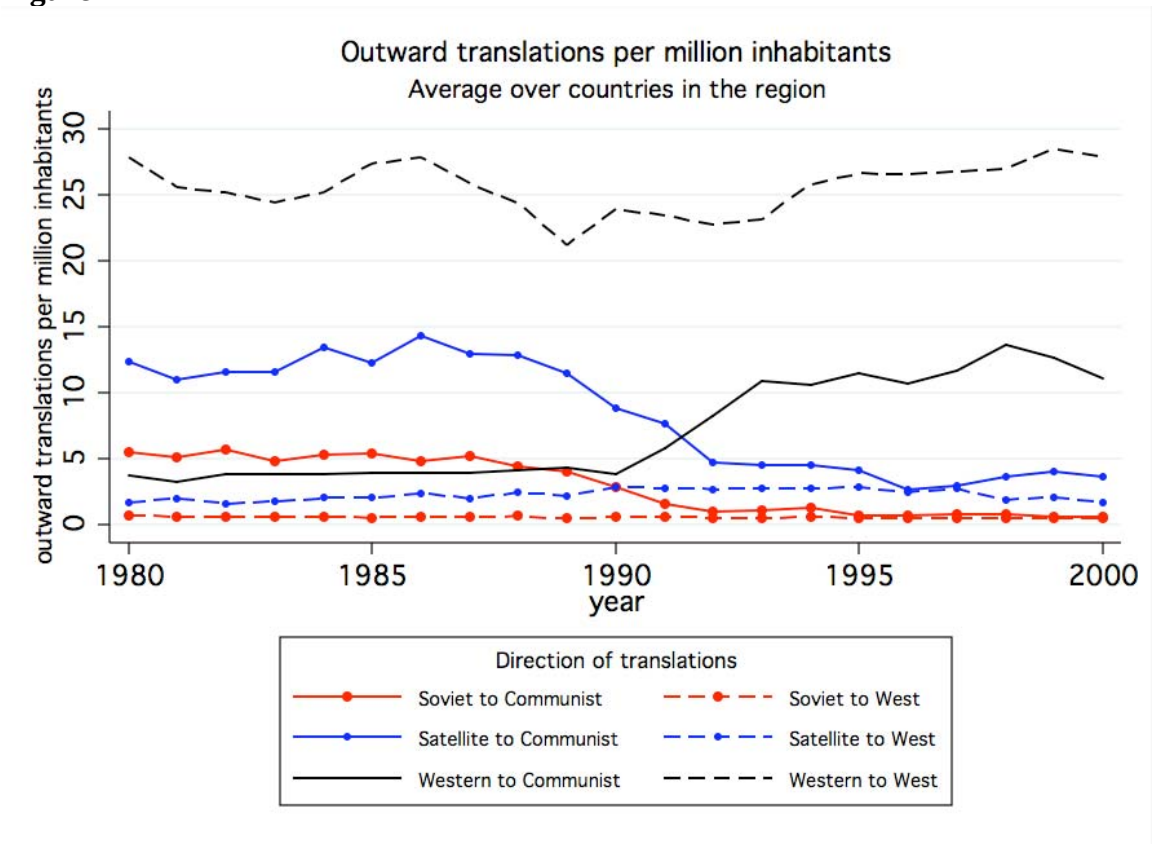
The three Baltic states are classified as Soviet satellites, as explained in the text. The effects plotted are derived from the coefficients in column 7 of Appendix Table A.

Figure 3B



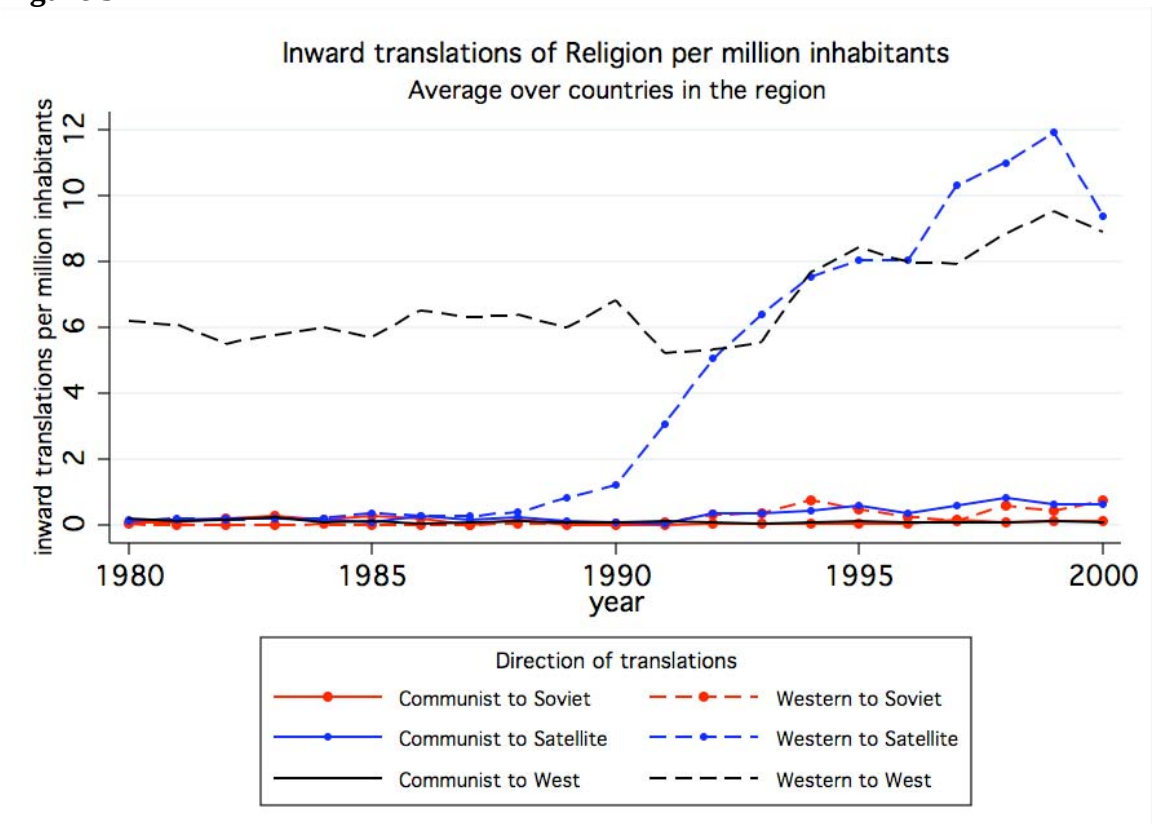
See the notes for Figure 3A.

Figure 4



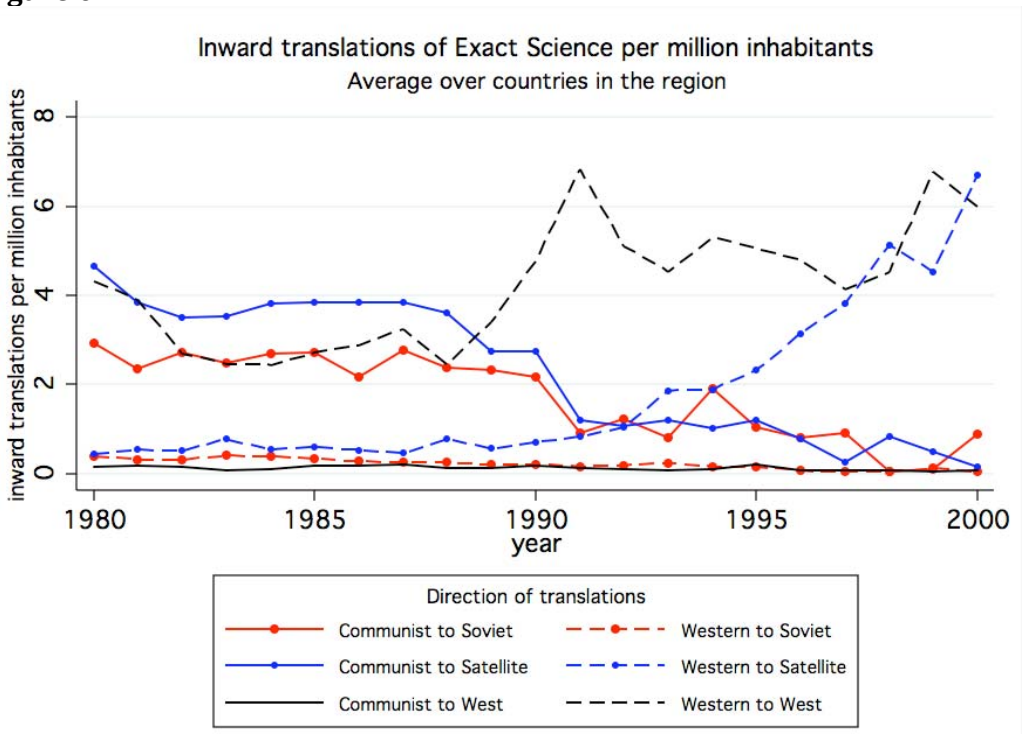
Note the Baltic states are classified as Soviet satellites, as explained in the text.

Figure 5



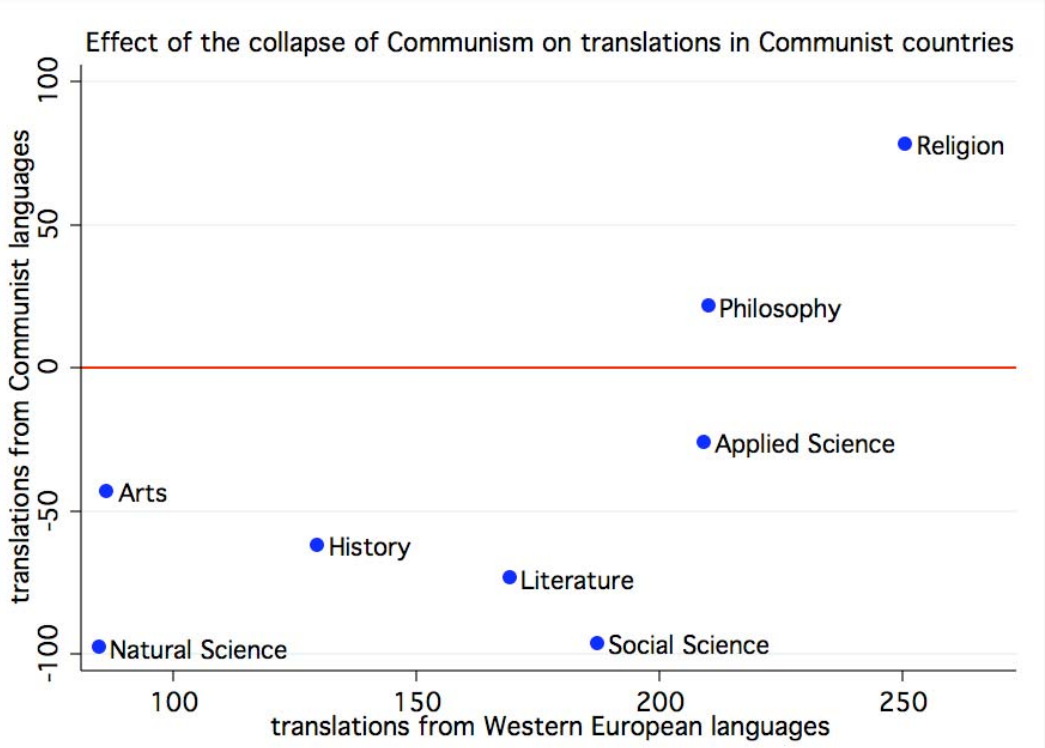
Note the Baltic states are classified as Soviet satellites, as explained in the text.

Figure 6



Note the Baltic states are classified as Soviet satellites, as explained in the text.

Figure 7



Notes: Figure 7 plots the coefficients (multiplied by 100) of the two interaction variables of interest, $Communist_i \times Post_t \times WesternLang_j$ (x axis) and $Communist_i \times Post_t \times CommunistLang_j$ (y axis), from the regression specification in equation 2 (that also includes controls for log population and GDP per capita) run separately for each subject. The dependent variable is the log of translations plus one. These coefficients (approximately) measure the effect (in percentages) of the fall of Communism on translations from Western or Communist languages into Communist countries (relative to Western European countries).

Figure 8: Temporary and permanent visas granted by the United States

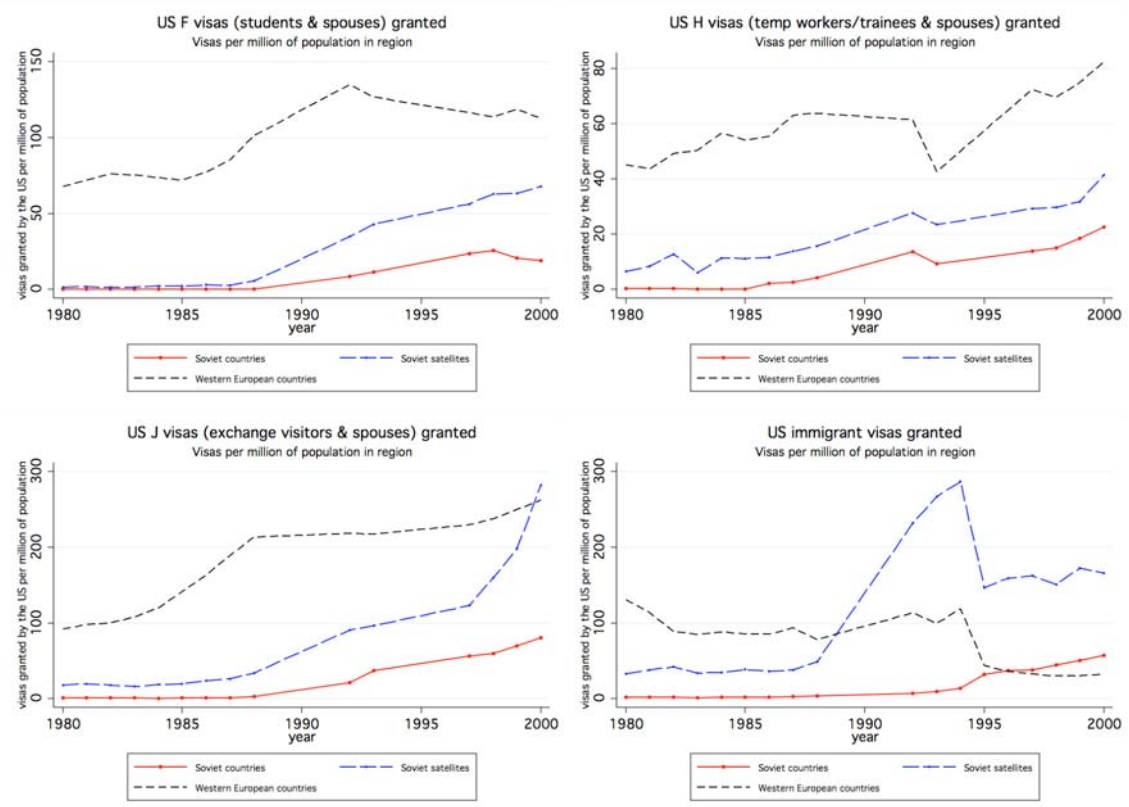


Figure 9

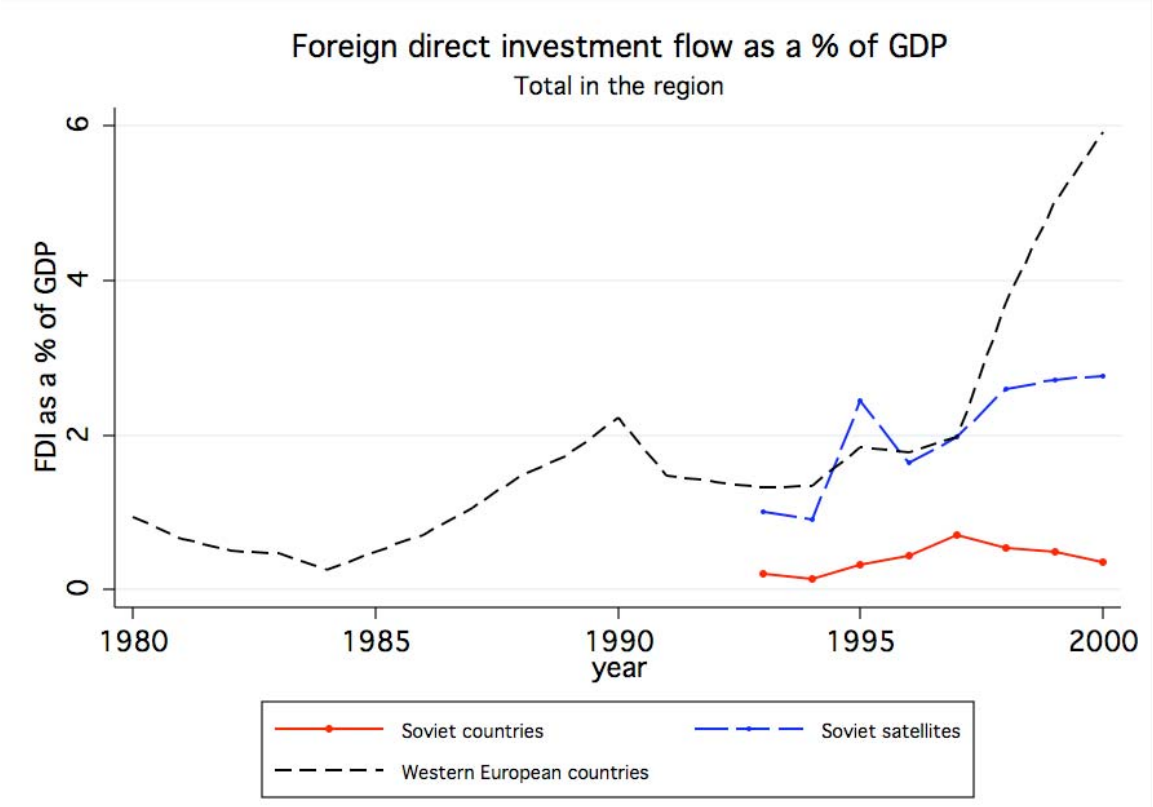


Figure 10

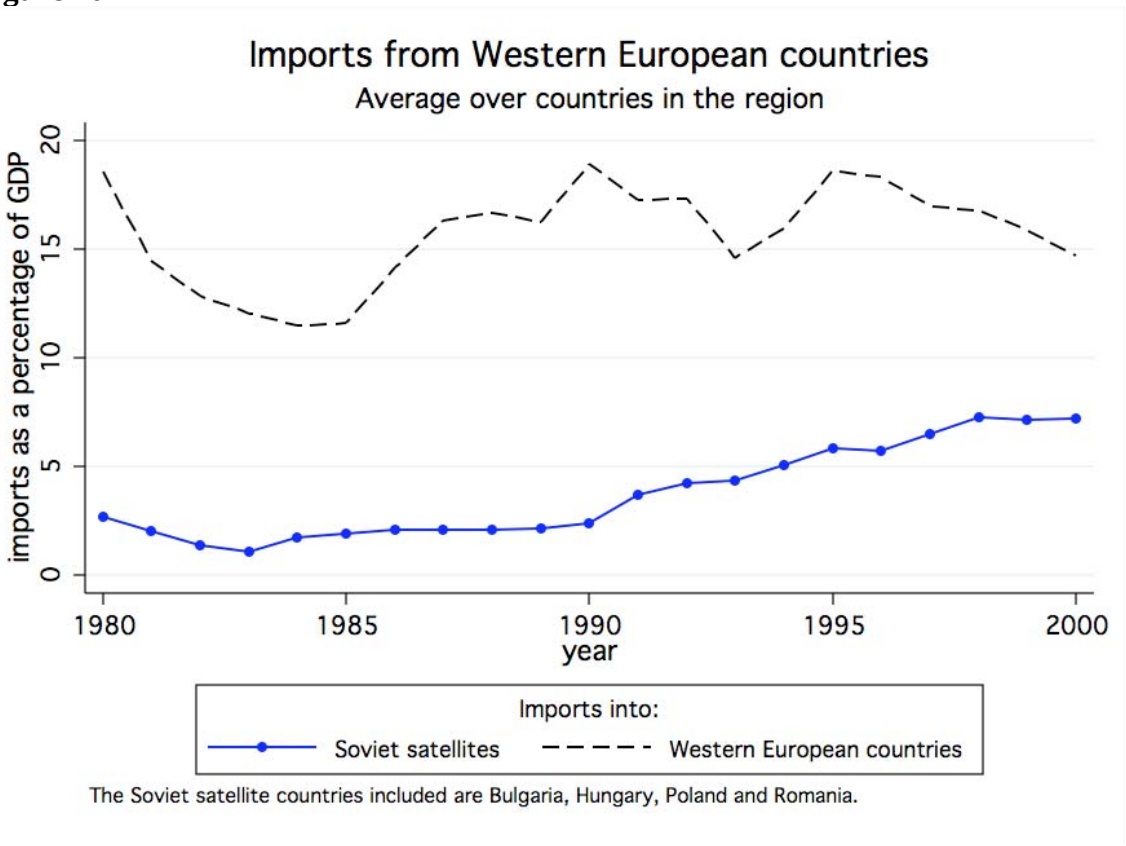
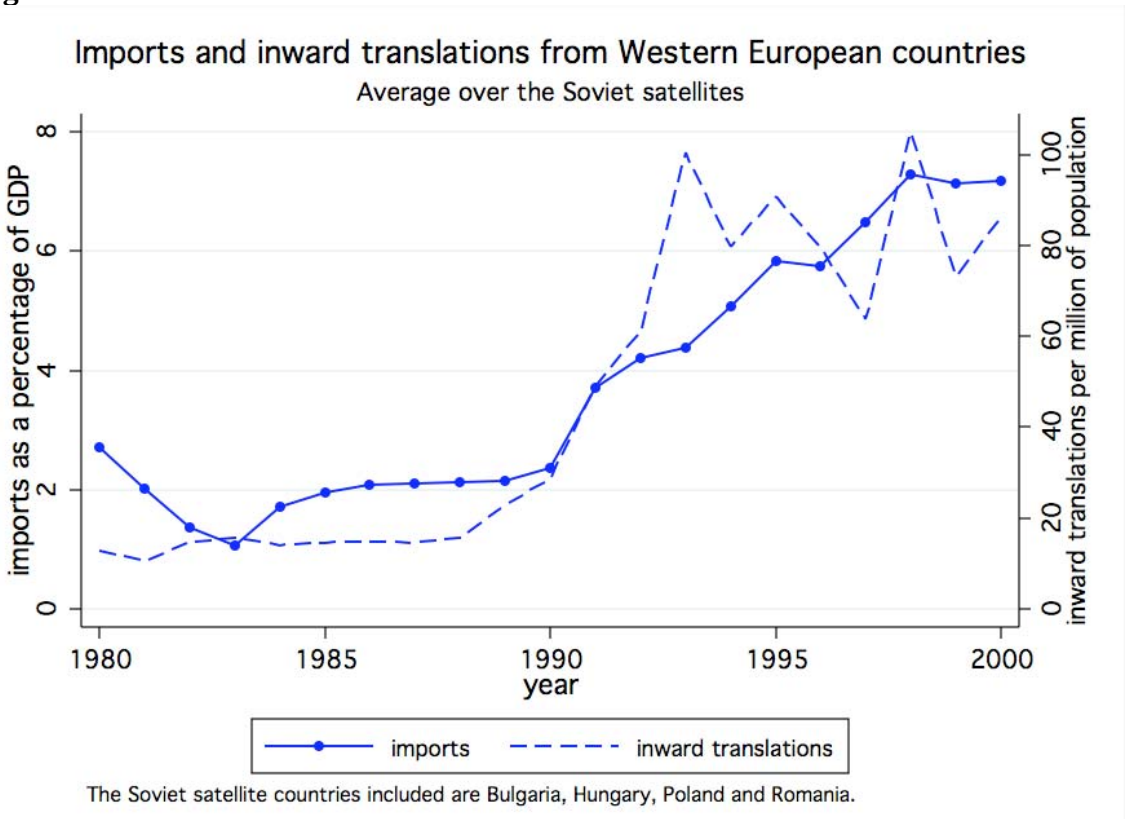


Figure 11



Appendix

Table A: The effect by year of the collapse of Communism on book translations in Communist vs. Western European countries

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Translations in Communist countries from:								
Communist languages * 1990	-0.760**	-0.431	-0.484	-0.668**	-0.414	-0.208	-0.227	-0.388
	(0.324)	(0.330)	(0.311)	(0.301)	(0.321)	(0.336)	(0.278)	(0.314)
Communist languages * 1991	-1.577***	-1.212**	-1.352**	-1.666**	-1.051	-0.844	-0.941	-1.241
	(0.543)	(0.530)	(0.557)	(0.639)	(0.788)	(0.792)	(0.750)	(0.942)
Communist languages * 1992	-1.167***	-0.646*	-0.907**	-1.390**	-0.636*	-0.633	-0.646	-1.320*
	(0.411)	(0.371)	(0.407)	(0.498)	(0.327)	(0.495)	(0.412)	(0.682)
Communist languages * 1993	-1.222***	-0.499*	-0.868***	-1.426**	-1.632*	-0.960	-1.399	-2.122*
	(0.378)	(0.264)	(0.305)	(0.556)	(0.935)	(0.824)	(0.869)	(1.167)
Communist languages * 1994	-1.471***	-0.654**	-1.085***	-1.745***	-1.434***	-0.575	-1.200**	-2.233**
	(0.306)	(0.289)	(0.292)	(0.469)	(0.433)	(0.348)	(0.448)	(0.883)
Communist languages * 1995	-1.362***	-0.716***	-1.129***	-1.825***	-1.587***	-0.997**	-1.618***	-2.768***
	(0.223)	(0.207)	(0.222)	(0.533)	(0.388)	(0.435)	(0.464)	(0.903)
Communist languages * 1996	-1.118***	-0.375	-0.890***	-1.666**	-1.359***	-0.533	-1.302***	-2.625***
	(0.217)	(0.256)	(0.259)	(0.607)	(0.306)	(0.385)	(0.417)	(0.908)
Communist languages * 1997	-1.331***	-0.384	-0.987***	-1.836***	-2.315***	-0.727	-1.694***	-2.966***
	(0.268)	(0.291)	(0.294)	(0.639)	(0.341)	(0.656)	(0.338)	(0.794)
Communist languages * 1998	-1.428***	-0.485	-1.050***	-1.911**	-2.931***	-1.648**	-2.524***	-3.912***
	(0.376)	(0.329)	(0.353)	(0.768)	(0.514)	(0.707)	(0.437)	(1.063)
Communist languages * 1999	-1.327***	-0.503	-1.098***	-2.111**	-2.179***	-1.389**	-2.178***	-3.716***
	(0.359)	(0.363)	(0.338)	(0.793)	(0.379)	(0.547)	(0.465)	(1.058)
Communist languages * 2000	-1.133***	-0.245	-0.905***	-1.995**	-1.928**	-0.336	-1.347*	-2.913**
	(0.332)	(0.346)	(0.295)	(0.824)	(0.711)	(0.711)	(0.662)	(1.229)
Western languages * 1990	0.060	0.310	0.223	-0.031	0.097	0.225	0.172	0.044
	(0.232)	(0.245)	(0.228)	(0.260)	(0.235)	(0.265)	(0.211)	(0.203)
Western languages * 1991	0.604	0.942**	0.718**	0.330	-0.213	-0.006	-0.136	-0.400
	(0.423)	(0.346)	(0.322)	(0.419)	(0.763)	(0.779)	(0.734)	(0.757)
Western languages * 1992	1.631***	2.085***	1.433***	0.867**	1.309	1.245	0.788	0.153
	(0.465)	(0.465)	(0.352)	(0.403)	(1.587)	(1.286)	(0.558)	(0.628)
Western languages * 1993	1.507***	2.162***	1.672***	1.011**	0.546	1.152	0.653	-0.046
	(0.370)	(0.310)	(0.268)	(0.481)	(0.927)	(0.860)	(0.670)	(0.790)
Western languages * 1994	1.380***	2.130***	1.578***	0.804*	0.360	1.153	0.468	-0.541
	(0.341)	(0.331)	(0.263)	(0.444)	(0.638)	(0.701)	(0.334)	(0.637)
Western languages * 1995	1.320***	1.988***	1.610***	0.790	0.389	1.001**	0.415	-0.662
	(0.250)	(0.231)	(0.206)	(0.466)	(0.297)	(0.479)	(0.375)	(0.698)
Western languages * 1996	1.482***	2.182***	1.598***	0.642	0.589	1.373*	0.544	-0.754
	(0.304)	(0.291)	(0.264)	(0.548)	(0.673)	(0.695)	(0.514)	(0.882)
Western languages * 1997	1.300***	2.147***	1.749***	0.704	-1.082	0.407	0.615	-0.470
	(0.420)	(0.409)	(0.303)	(0.550)	(1.064)	(0.741)	(0.388)	(0.742)
Western languages * 1998	1.138**	1.966***	1.489***	0.433	-1.223	-0.054	-0.110	-1.294
	(0.410)	(0.383)	(0.346)	(0.621)	(1.091)	(0.839)	(0.590)	(0.891)
Western languages * 1999	1.260***	1.999***	1.467***	0.287	0.358	1.066**	0.213	-1.234
	(0.346)	(0.348)	(0.254)	(0.639)	(0.268)	(0.510)	(0.409)	(0.809)
Western languages * 2000	1.056*	1.900***	1.258***	-0.036	-2.409*	-0.860	-0.731	-1.992*
	(0.520)	(0.532)	(0.441)	(0.776)	(1.338)	(1.307)	(0.862)	(1.087)

(continued on following page)

Table A (continued from previous page)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Translations in Soviet Satellites countries from:								
Communist languages * 1990					-0.499**	-0.432*	-0.532**	-0.537*
					(0.233)	(0.235)	(0.226)	(0.305)
Communist languages * 1991					-0.791	-0.755	-0.899	-0.980
					(0.968)	(0.958)	(0.985)	(1.111)
Communist languages * 1992					-0.677**	-0.309	-0.665	-0.524
					(0.325)	(0.580)	(0.455)	(0.595)
Communist languages * 1993					0.567	0.350	0.347	0.470
					(0.930)	(0.794)	(0.902)	(1.096)
Communist languages * 1994					-0.049	-0.439	-0.282	0.096
					(0.404)	(0.300)	(0.451)	(0.730)
Communist languages * 1995					0.324	0.053	0.227	0.726
					(0.393)	(0.303)	(0.439)	(0.769)
Communist languages * 1996					0.325	-0.122	0.135	0.794
					(0.322)	(0.225)	(0.414)	(0.796)
Communist languages * 1997					1.238***	0.124	0.533	1.092
					(0.372)	(0.501)	(0.399)	(0.736)
Communist languages * 1998					2.009***	1.187**	1.595***	2.254**
					(0.510)	(0.504)	(0.472)	(0.953)
Communist languages * 1999					1.276***	0.941***	1.168**	1.873*
					(0.317)	(0.265)	(0.427)	(0.922)
Communist languages * 2000					0.981	-0.198	0.260	0.972
					(0.699)	(0.514)	(0.681)	(1.130)
Western languages * 1990					-0.053	0.014	-0.086	-0.240
					(0.298)	(0.300)	(0.297)	(0.275)
Western languages * 1991					1.381	1.376*	1.002	0.721
					(0.822)	(0.766)	(0.787)	(0.765)
Western languages * 1992					0.293	0.661	0.543	0.514
					(1.595)	(1.216)	(0.560)	(0.545)
Western languages * 1993					1.268	1.051	1.031	0.975
					(0.931)	(0.761)	(0.671)	(0.680)
Western languages * 1994					1.349**	0.959	1.098***	1.284**
					(0.654)	(0.597)	(0.326)	(0.498)
Western languages * 1995					1.345***	1.074***	1.248***	1.463**
					(0.299)	(0.351)	(0.334)	(0.544)
Western languages * 1996					1.105	0.658	1.010*	1.396*
					(0.690)	(0.601)	(0.538)	(0.772)
Western languages * 1997					2.829**	1.715**	1.111**	1.205*
					(1.083)	(0.759)	(0.398)	(0.663)
Western languages * 1998					3.063***	2.241**	1.794***	1.952**
					(1.093)	(0.839)	(0.578)	(0.801)
Western languages * 1999					1.394***	1.059***	1.412***	1.718**
					(0.297)	(0.378)	(0.396)	(0.698)
Western languages * 2000					4.065***	2.886**	2.204**	2.332**
					(1.351)	(1.321)	(0.891)	(1.065)
Other controls:								
Translations in Communist countries from Communist languages	Yes	Yes			Yes	Yes		
Translations in Communist countries from Western languages	Yes	Yes			Yes	Yes		
Translations in Soviet Satelllites from Communist languages					Yes	Yes		
Translations in Soviet Satellites from Western languages					Yes	Yes		
Translations from Communist languages * dummies for years 1990-2000	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Translations from Western languages * dummies for years 1990-2000	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Population (ln)		Yes	Yes	Yes		Yes	Yes	Yes
Real GDP per capita (ln)		Yes	Yes	Yes		Yes	Yes	Yes
Translations from Communist languages	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country * translations from Communist language fixed effects			Yes	Yes			Yes	Yes
Country-specific linear time trends * translations from Communist languages				Yes				Yes
R-Squared	0.585	0.683	0.929	0.947	0.658	0.777	0.938	0.952
Observations	1,000	964	964	964	1,000	964	964	964

Notes: All columns are OLS regressions. Dependent varable is log inward translations from a Communist or Western European language. See Table 1 for the Communist and Western European countries used in the analysis. Their corresponding Communist and Western European languages are described in footnote 5 in the text. We include the three Baltic countries in the Soviet Satellite countries (see explanation in text). No more than two observations in each regression are dropped for being zero. Standard errors are clustered at the country level. * p<0.10, ** p<0.05, *** p<0.01.