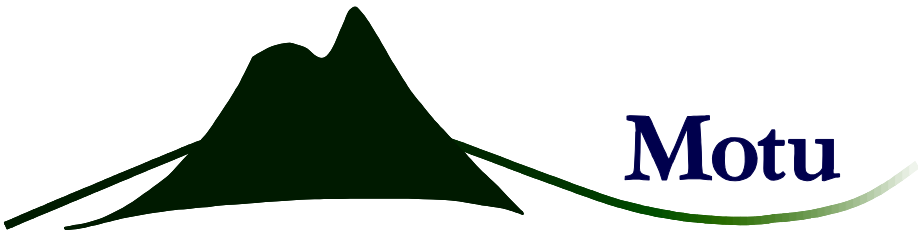

Book Translations as Idea Flows: The Effects of the Collapse of Communism on the Diffusion of Knowledge

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Abstract
We use book translations as a new measure of international idea flows and study the effects of Communism's collapse in Eastern Europe on these flows. Using novel data on 800,000 translations and difference-in-differences approaches, we show that while translations between Communist languages decreased by two thirds with the collapse, Western-to-Communist translations increased by a factor of five and quickly converged to Western levels. Convergence was more complete in more economically-useful fields such as the sciences, and was more complete in Satellite than in Soviet countries. These findings help us understand how institutions shape the international diffusion of knowledge.

JEL codes
N0, N70, N74, F02, F15, P20, P30, P51, P52

Keywords
idea flows, book translations, institutions, institutional change, Communism's collapse

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1. Introduction

Economists and economic historians have long recognized the importance of knowledge and ideas for growth and development, and the importance of institutions in shaping the international flow of ideas.[1] Nevertheless, there is little empirical work on idea flows, primarily because ideas are challenging to measure. In particular, it is challenging to capture the two main properties of ideas, namely non-rivalry (the use of an idea by one party in no way affects its simultaneous use by another) and disembodiment (in contrast to embodiment in purchased goods or equipment). We address this challenge by suggesting a new measure of the international flow of ideas and a setting in which to study the role of institutions in shaping the diffusion of ideas between countries.

Specifically, we use book translations as a measure of the international flow of ideas. Translations are an attractive measure of the diffusion of ideas because they are both non-rival and disembodied, and their key purpose is to transmit written ideas, information or knowledge between speakers of different languages. In the absence of translation, many ideas stored in words might never leave the language or country in which they were conceived. Of course, book translations are not the only way societies gain new knowledge, but they are one channel for the flow of pure ideas between linguistically distinct groups, and are both quantifiable and classifiable by field and specific content.[2] Moreover, the types of ideas captured by translations are broad, ranging from technical ideas (such as in physics or engineering books), to ideas that are essentially social or cultural (such as in books on religion, philosophy, or literature). Finally, empirical analysis of translations is possible because systematic data on translations can be generated from national bibliographies.

We propose a natural setting to identify the effect of institutions on idea flows, namely the collapse of Communism in Eastern Europe. The collapse of Communism was a large shock that swiftly moved countries from nearly complete isolation from Western ideas to full openness. This paper sheds light on the type of ideas most likely to be affected by policy changes that reduce information restrictions. In particular, we can examine whether the collapse of

[1] See, for example, Kuznets (1966), Mokyr (2003, 2009, 2010), Romer (1993, 2010), Klenow (2005), and Jones and Romer (2010).

[2] An alternative measure of disembodied, non-rival idea flows is patent citations, which track the diffusion of particular technological knowledge across disciplines and geographical space (see, for example, Jaffe, Trajtenberg, and Henderson 1993, Jaffe and Trajtenberg 1999). Book translations are a complementary measure that is driven by a quite different process and captures a different range of types of ideas.

Communism had a stronger effect on more "useful knowledge" (as coined by Mokyr, 2003) for economic development than on "less-useful" knowledge with more cultural content. This setting also allows us to examine whether and how quickly an international convergence in the flow of ideas can be achieved following an institutional change. In particular, we examine how quickly the flow of ideas in Communist countries converged to its level in the West, and the extent to which there was persistence in the type of ideas flowing into former Communist countries.

We use newly-collected data on 789,315 book translations for the period 1980 to 2000. The data were extracted from Unesco's Index Translationum (IT), an international bibliography of the translations published annually in a wide range of countries. We note that we test the effect of Communism's collapse on *translations* of titles rather than on trade in physical books. Translations are a measure of disembodied idea flows, and are thus non-rival, whereas books themselves are embodiments of ideas and are therefore rival, as well as being largely driven by the same factors as trade in other goods with cultural content.

We compare translation patterns in former Communist countries before and after the collapse using simple OLS regressions. To account for possible general changes in translations over the 1980s and 1990s, we also compare translation patterns in Communist countries with those in Western European countries using a difference-in-differences framework.

We start by showing that when Communism collapsed the overall flow of Western-to-Communist translations increased by a factor of five, which was offset by a two-third decrease in Communist-to-Communist translations. We further document a large increase in Eastern European access to *important* Western ideas measured by translations of the most influential Western titles of the twentieth century. In contrast, Communism's collapse did not increase Western demand for Eastern European ideas, which stayed very low after the collapse. These findings are shown to not be driven by changes in the publishing industry that allowed a larger total number of books to be published. We further show that the effect of the collapse of Communism was largest for translations of titles in fields that were perceived as especially threatening (e.g. religion) and for translations by authors who were perceived as especially threatening. In contrast, translations of titles in exact science, which was strongly supported by Communist governments, increased relatively little from the West when Communism collapsed.

We find that within just a few years total Western-to-Communist translations fully converged to Western levels. This convergence, however, was not uniform. Translations of

Western titles in the fields of applied science and social science fully converged to their levels in the West. In contrast, translations of Western titles in the arts did not converge to their levels in the West. This pattern suggests that fields that contain more "useful knowledge" and lend themselves more directly to economic development converged more than fields that contain more cultural information, which illustrate how some cultural differences persisted even after Communism collapsed.[3] Moreover, whereas the Satellite countries converged to Western countries in their level of translations of Western titles, Soviet countries did not. This is consistent with a higher pent-up demand for Western ideas in the more Western-oriented Satellite countries. The Satellite countries not only started to catch up on translation of older titles, but they also converged to Western levels of translations of current titles.

This paper proceeds as follows. In Section 2 we present the data on book translations and explain the construction of our measures of idea flows. Section 3 briefly outlines the historical context of publishing in Communist Europe and of the collapse of Communism. Section 4 describes our empirical strategy for examining the effect of the collapse of Communism on book translations. Section 5 presents results on the effect of the collapse of Communism on the total flow of translations. Section 6 presents results breaking translations down by book field. Section 7 discusses further the advantages and limitations of translations as a measure of the diffusion of ideas and concludes.

2. Data

The translation data are extracted from Unesco's Index Translationum (IT), an international bibliography of the translations published in a wide range of countries. 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 (0.1% of translations in the period 1980-2000); Philosophy (including Psychology, 5.3%); Religion and Theology (5.7%); Law, Social Sciences,

[3] This illustration is consistent with the literature showing how history can shape culture (e.g. Greif 1994, Nunn 2011, Nunn and Wantchekon 2009, and Fletcher and Iyigun 2010).

Education (8.5%); Natural and Exact Sciences (4.2%); Applied Sciences (11.4%); Arts, Games, Sports (5.2%); Literature (including books for children, 52.3%)[4]; History, Geography, Biography (including memoirs and autobiographies, 6.6%).[5]

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 field (UDC class) of the title, the number of pages or volumes of the title, the author, and the original and translated titles of the book.

We use data on the translations in Communist countries (our group of interest) and Western European countries (our comparison group) over the period 1980 to 2000, which comprise approximately 800,000 translations. We limit our Communist countries to European countries that were part of the Eastern Bloc and that were Warsaw Pact members in the 1980s, meaning they were under heavy Soviet control pre-collapse because Soviet troops were permitted to be stationed within their borders. Our Communist countries are thus seven former Soviet countries (Russia, Belarus, Estonia, Latvia, Lithuania, Moldova, and the Ukraine), Bulgaria, the Czech Republic, Hungary, Poland, Romania, and Slovakia.[6] The Western European countries in our sample are: Austria, Belgium, Switzerland, Denmark, Spain, Finland, France, Iceland, Italy, the Netherlands, Norway, Portugal, and Sweden. Results are unchanged if we include the USA in the group of Western countries. We include each country only in the years it reported consistently, resulting in an unbalanced panel. Note that Germany is excluded from the analysis because our data do not allow us to distinguish whether a translation after unification was in East or West Germany, and in any case the country post collapse was a single market with a common language. The UK is also excluded because it stopped reporting its translations to Unesco in 1990. However, we do use translations from all Western and Communist languages flowing to these countries, including translations from English.

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,

[4] Literature also includes the very small category Philology and Linguistics.
[5] For a detailed description of the subfields that make up each UDC field, see https://www.unido.org/library/help/udc.html.
[6] We omit Yugoslavia because it escaped the Soviet sphere in the Tito-Stalin split of 1948, and Albania because it withdrew from the Warsaw pact in 1968; thus in our period of interest they were no longer politically aligned with the Soviet Union.

Czechoslovakia as a whole reported its translations. Our data provide a rare opportunity to nevertheless allocate the idea flows to the constituent countries. Specifically, we allocate the translations reported by the USSR and Czechoslovakia to one of their constituent countries based on the city in which each translation was published.

We note that the translations reported are only 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, but is unlikely to affect our analysis. The number of *samizdat* translations produced under Communism is not available, but they were likely only a small fraction of total translations. These illegal publications were largely political magazines and bulletins defending human rights and criticizing repression. Although some were poems and books, both locally written by dissidents and translated from foreign publications, the large personal risk involved in owning such books meant their circulation was limited, and the ideas contained therein were not available to the general populace.

3. Historical context

3.1. A brief timeline of the collapse of Communism in Eastern Europe

In the early 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. Eastern Europe 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 Communism 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 heterogeneity between them in the strength of their Western orientation. The former Soviet countries had a more Russian orientation, the preferences of their consumers favored Western ideas less, and they maintained stronger ties with Russia and demonstrated less effort or desire to integrate with Western Europe. However, the three Baltic states of the Soviet Union, Latvia, Lithuania and Estonia, were more similar to the Satellites than they were to the Soviet nations. Historically, they were relatively recent additions to the USSR (annexed in 1940), and had always maintained their more Western feeling. They were the first among the Soviet nations to declare their independence from the Soviet Union. Furthermore, their 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. For this reason, our main analysis groups the three Baltic states with the Satellites, but we note that the results are similar when excluding them from the analysis or when assigning them to a separate group.

3.2. Restricting information flows: publishing and censorship under Communism

Prior to Gorbachev's reforms, book publishing in the Soviet Union[7] was a state-run industry that produced vast numbers of books with little regard for consumer demand.[8] All publishers were owned and operated by the government, and each had its own subject area or field in which it enjoyed a complete monopoly. Book prices, like other prices and wages in the

[7] We discuss the publishing and censorship system of the Soviet Union, which is the one best understood by Western scholars and observers during the Communist period. The publishing industries of the other Communist countries varied in their exact details, but were similar in their principles.
[8] Skelly and Stabnikov (1993).

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.[9]

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, though periodically concern surfaced in Soviet publishing circles about the shortages of books in specific fields. The process determining the exact titles printed in any year was complex and centrally planned to a high degree.[10]

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 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.

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

[9] Walker (1978).

[10] 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 (Walker, 1978). 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 (Bernstein et al., 1971).

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."

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.[11]

4. Empirical strategy: OLS and difference-in-differences estimates

Communism may have affected idea flows through its effects on the supply of ideas and on the demand for ideas. On the supply side, the political agenda and censorship depressed certain ideas and promoted others. Most notably, the Communist regime depressed ideas centered around the capitalist ideology and promoted pro-communist ideas. On the demand side, Communism may have shaped preferences for ideas (e.g. for Communist ideas) and such preferences may or may not have changed with the collapse of Communism (Alesina and Fuchs-Schündeln, 2007).

Our most basic identification strategy examines the effect of the collapse as a whole, acting through either supply or demand channels. Specifically, we compare translation flows in Communist countries before and after the collapse, where the effect of the collapse depends on both the supply and demand sides. We then consider a number of "counterfactuals" that shed light on the specific roles played by supply and demand factors. First, we compare translation patterns in Soviet relative to Satellite countries. While censorship suppressed Western ideas in both, Satellite countries have always been more Western in their orientation and might have had

[11] Skelly and Stabnikov (1993).

greater pent-up demand for translations. Differences in the effect of the collapse between these two regions would depend on differences in their preferences for Western and Eastern European ideas. Second, we compare translation patterns in Eastern relative to Western Europe. The premise here is that there was no censorship post collapse, so that any lack of convergence between East and West post collapse reflected remaining East/West differences in the demand for ideas. Finally, we repeat the comparisons above by type of ideas, such as translations of various book fields with more or less direct economic benefit, and translations of titles that posed more or less threat to the Communist regime.

Because Communist countries may have suppressed information flows from the West and artificially translated more from each other, we distinguish in all our regressions between translations from Western languages and those from Communist languages.[12]

All of our regressions examine the change in translation patterns in former Communist countries post collapse, and take a variation of the following form:

$$\left\{\begin{array}{l} Y_{ijt} = \beta_{1a} Post_t \times WesternLang_j + \beta_{1b} Post_t \times CommunistLang_j \\ \qquad + \beta_{2a} WesternLang_j + \beta_{2b} CommunistLang_j + \beta_3 X_{ijt} + \varepsilon_{ijt} \end{array}\right\} \tag{1}$$

where Y_{ijt} is the (log) number of book translations in country i, in year t, from original language type j (Western or Communist), $WesternLang_j$ is a dummy for the translations being from a Western European language; $CommunistLang_j$ is a dummy for the translations being from a Communist language, and $Post_t$ is a dummy variable for the years 1991 and onwards.[13] This equation thus allows a basic pre/post collapse comparison for translations from Western and Communist languages. The coefficients on the interactions with $Post_t$ measure the changes in translations from the two language sources post collapse. X_{ijt} is a set of additional controls that

[12] The Communist 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. Note the German language is neither classified as a Communist language nor a Western European language.

[13] We choose post-1991 because it is midway between the end of Communism in the Satellites (late in 1989) and the collapse of the Soviet Union (late in 1991). Using alternative *Post* variables, namely post-1989, post-1990, and post-1992, does not substantially alter the results (not presented).

includes the logs of population and GDP per capita,[14] and may also include country fixed effects interacted with original language to account for differences across countries that are constant over time.

We also estimate difference-in-differences models that include Western European countries as a comparison group, which accounts for other common factors that may have affected translation patterns over the sample period 1980-2000, and also allows us to directly test persistence in East/West differences. Specifically, we compare the pre- and post-collapse translation flows into Communist countries with flows into Western European countries. The basic difference-in-differences specification is:

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

where $Communist_i$ is a dummy variable for whether the translating country was a former Communist country, and the other variables are as in equation (1). The first coefficient of interest, β_{1a}, measures the effect of the collapse of Communism on Western-to-Communist translations (relative to Western-to-Western translations), and the second, β_{1b}, measures the effect of the collapse of Communism on Communist-to-Communist translations (relative to Communist-to-Western translations). In addition to specifications that control for log population and GDP per capita and include country fixed effects interacted with original language, we also run specifications with year fixed effects interacted with original language to absorb changes over time that are common to all regions.

In both the basic regression and difference-in-differences model, the construction of the dependent variable is complicated by the lack of a one-to-one mapping between countries and languages. We deal with this by only counting translations into the "main" language for each country, defined as the most widely spoken language in the country.[15] In Section 5.5 we show

[14] Population and GDP data are from Maddison (2003).

[15] "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.

the main results are robust to using the number of pages translated as an alternative dependent variable, and discuss how the results are affected by including translations into secondary languages.

5. The effect of the collapse of Communism on total translations

5.1. Western-to-Communist translations jumped and converged to Western levels, Communist-to-Communist translations declined

Figure 1 shows translations per million inhabitants in the Soviet countries, the Satellites, and the Western European countries. For each set of countries, we show translations from Communist languages and Western European languages.[16]

This figure shows that before the collapse of Communism, Western European countries had much higher per capita translation rates into their main language than Communist countries, and these translations were almost entirely from Western European languages. The 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 Satellites' translations of Western European titles shot up to approach the level of translations of Western European countries, and their translations of Communist titles fell away.

By the year 2000, the Satellites' translation patterns had converged to those of Western European countries to a remarkable degree, though they still showed 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 small and short-lived. These translation patterns stand in contrast to translations from Western European languages in Western European countries, which increased only gradually and by much less over this period. Similarly, translations from Communist languages in Western Europe, which were few, showed little change over the period.

We next subject these patterns to regression analysis as described in Section 4, which allows us to control better for the relationship between a country's translations, population and GDP.

[16] Translations from English show very similar changes over time to translations from all Western European languages.

Columns 1 and 2 of Table 1 present the OLS estimation results of regression equation (1).[17] The results suggest that translations by Communist countries from Western languages increased dramatically, by 480% ($e^{1.761} - 1$) in the preferred specification, which includes country fixed effects interacted with original language. In contrast, translations from fellow Communist countries fell sharply, by 69%. Columns 5-7 present the equivalent difference-in-differences results (equation (2)). Because translations tended to increase in Western Europe during the 1990s, the difference-in-difference estimates are generally smaller than the OLS estimates, but they are still economically large and statistically significant. Specifically, in the specification with country fixed effects interacted with original language (column 6), Communist translations from Western European languages rose by 290% relative to Western translations, whereas translations between Communist countries fell by 67%. Column 7 shows these results are robust to including year fixed effects interacted with original language.[18] These large magnitudes demonstrate just how dramatically the types of translated titles available in Eastern Europe shifted when Communism collapsed.

In contrast, column 6 of Table 1 also shows that Western countries did not translate more Communist titles post collapse; the coefficient on the interaction of $Post_t$ with $CommunistLang_j$ is small and statistically insignificant.

We next examine how the difference in Western orientation between Soviet and Satellite countries reveals itself in their translation patterns.[19] Specifically, to our previous OLS specification we add interactions between all variables and a dummy for the translating country being a Satellite, and in our difference-in-differences specification we allow all *Communist* effects and interactions to differ for Satellite relative to other Communist (Soviet) countries.

[17] We do not have comparable population or GDP data for Iceland, thus this country is excluded from these regressions.

[18] We also ran specifications where we allowed separate linear time trends for each original language in each country (results not presented). The main results hold up, though significance is reduced. Note however that this specification may in fact underestimate the effect of the collapse of Communism on translations because some of the changes that constituted the collapse of Communism are likely falsely attributed to the time trends.

[19] As an alternative measure for Western orientation among Communist countries, we use physical distance from Western Europe. Results (not presented) tell a similar story: Western-to-Communist translations increased post collapse more in former Communist countries located closer to Western Europe. As a second alternative, we divide the Communist countries by whether they are Slavic or non-Slavic, and by whether they are primarily Catholic or Orthodox. Translations in the Slavic countries show similar patterns to those in the Soviet nations, and translations in the non-Slavic countries are similar to in the Soviet satellites. However, the Slavic/non-Slavic difference is less pronounced than the Soviet/Satellite difference. Similarly, the Orthodox countries behave more like the Soviet nations and the Catholic countries more like the Satellites, though the distinction here is smaller again. The Slavic countries are Russia, the Ukraine, Belarus, the Czech Republic, Slovakia, Poland, and Bulgaria. The Catholic countries are Lithuania, Poland, the Czech Republic, Slovakia, and Hungary.

Columns 3 and 4 of Table 1 present the results from the OLS specification, and columns 8-10 present results from the difference-in-differences specification with various additional controls. In every specification, the increase in translations from Western European languages was larger for the Satellites, and the decrease in translations from Communist languages was insignificantly larger for the Soviet countries. Satellite translations of Western titles increased by 390% in the difference-in-differences specification with population and GDP controls and country fixed effects interacted with original language (620% in the OLS specification), compared with 51% for Soviet translations (120% in the OLS specification). In contrast, translations of Communist titles decreased by 68% (70%, i.e. decreased by two thirds) for Satellites and 74% (76%) for Soviet countries.

Because the collapse of Communism was a huge event associated with many different changes to aspects of society and the economy, adjustment (in the translation industry and elsewhere) may have taken some time. We thus now examine the time path of changes in translations that followed the collapse of Communism. We run a version of column 8 of Table 1 that replaces *Post* and its interactions with year dummies (for each year 1989 and onwards) and their equivalent interactions. This analysis also allows us to examine more precisely how similar Eastern and Western Europe become. Figure 2 plots the coefficients of interest. Strikingly, it shows that most of the effects of the collapse occurred within a few years, after which point translations largely stabilized at their new levels. Panel A shows that the positive effect of the collapse of Communism on translations from Western Europe increases until about 1992, and then stabilizes, especially for the Satellite countries. Panel B shows that the negative effect of the collapse on translations between Communist countries increases until 1991, at which time it largely stabilizes.[20] [21]

As suggested by Figure 1,[22] these regression results show that, within a few years of the collapse, translations of Western titles in Satellite countries converged to and even surpassed such translations in Western countries, but in Soviet countries did not. Likewise, Panel B of

[20] Appendix Figure A shows the equivalent graph where we also include country fixed effects interacted with original language in the regression equation (equivalent to column 9 of Table 1). The effects are similar and generally more precisely estimated, but there it is not possible to compare Communist translations with the Western level of translations.

[21] We present this figure for the difference-in-differences specification, but the equivalent graph for the OLS specification looks nearly identical.

[22] Note Figure 1 understates the convergence of Communist translations of Western titles to Western translation levels because it doesn't control for incomes, which were lower on average in the Communist countries.

Figure 2 shows that translations of Communist titles fell over several years in both Soviet and Satellite countries, but remained higher than their level in the West.

5.2. Convergence in translation flows or catching up on stocks?

The convergence of Communist to Western countries that we observe could reflect a convergence in the rate of translation of new titles (flows), which might suggest a genuine convergence in access to new Western ideas. Alternatively, it could reflect a catching up on older titles missed out on during the Communist era (stocks), which might suggest the apparent convergence is only a temporary phenomenon and does not imply similar access to new Western ideas in Communist and Western Europe. We now examine this issue.

Table 2 shows our difference-in-differences regressions separately for translations from Western languages for flows, which we define as titles translated within 15 years of their publication, and stocks, or older titles.[23] [24] Both translations of stocks and flows of Western titles show large increases and convergence to Western levels in Communist Europe upon the collapse of Communism. This suggests both a convergence in access to new Western ideas, and a catching up on older ideas.

5.3. The collapse of Communism increased Communist access to important Western titles

The ideas in some books are more important than the ideas in others. We now investigate how the collapse of Communism affected Communist translations of Western titles that are considered particularly influential. To do this, we compile a list of titles that are considered particularly important in Western Europe and the US, as described in Appendix I. Similarly, we compile lists of influential authors and the titles most translated in Western Europe. A glance at the countries that translated the influential titles reveals that the majority of these titles that were so influential to Western European thought were not published in translation anywhere in Communist Europe before the collapse of Communism. Specifically, only 19% of the titles were

[23] Our main data set does not contain the years in which the original titles were published. However, for a sample of over 1,400 translations from Western languages, we identified the original dates of publication from online sources, and used these to calculate the percentage of titles translated in Western and Communist countries pre and post that were stocks or flows. Across fields, the median percentage of translations that were flows in Communist Europe was 58% in the pre period and 71% post; in Western Europe it was 78% in the pre period and 82% post. The results presented here use the total number of translations, adjusted within each field using the appropriate flow percentages.

[24] Our findings are robust to using other cutoffs such as 10, 20, or 30 years (results not presented).

translated in the period 1980-88 anywhere in Communist countries, compared with 61% in the period 1989-2000. In contrast, Western Europe had already translated 72% of the titles in the pre period.

To control for other factors that affected translation of these titles over time, we run difference-in-difference regressions at the title level, predicting the number of Communist or Western countries that translated the title pre or post collapse (details in Appendix I).[25] Results are presented in Table 3: columns 1 to 3 present results for the influential titles, columns 4 to 6 for the most translated titles, and columns 7 to 9 for the influential authors. The table shows that the average number of Communist countries translating each influential title increased by about 70 percent post collapse (relative to Western countries), suggesting the collapse indeed increased Communist access to important Western ideas. Furthermore, we show that influential titles written by Nobel laureates, those written by anti-Communist authors, and those first published during the Communist period were both translated less pre collapse in Communist Europe and increased more post collapse. These patterns suggest such titles were more threatening to the Communist regime, and faced higher latent demand.

5.4. The collapse of Communism did not affect original publications of books

One possibility is that the increases in Western translations post collapse were driven by changes in the publishing industry that allowed a larger total number of books to be published. If this were the case, then the increase in translations could be mechanical rather than indicating an increased openness to Western ideas.

Table 4 presents OLS before/after and difference-in-differences specifications with the total number of original books published as the dependent variable.[26] The table shows that the total number of original books published in Communist countries did not increase with the collapse of Communism, and may have actually declined. Specifically, the coefficient of interest,

[25] Specifically, we regress the log of 1 plus the number of Communist or Western countries translating the title on a dummy for Communist countries and its interaction with post-1989, and title fixed effects interacted with post.

[26] Book publication data are from the Unesco Statistical Yearbooks for the years 1985-99 and from Unesco's online data on book production available at http://stats.uis.unesco.org/unesco/. They are available pre and post collapse for only a subset of our countries, namely the Communist countries Belarus, Bulgaria, Estonia, Hungary, Latvia, Poland, Romania and the Ukraine, and the Western European countries Belgium, Denmark, Finland, France, Iceland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, and Switzerland. Note, however, that these data are only available at an aggregate level and a large number of years are missing, which precludes using them to conduct more complex analysis.

which is the coefficient on *Post* in the OLS specifications and on *Post*Communism* in the difference-in-differences specifications, is negative and small in most specifications.

5.5. Further robustness checks and alternative specifications

Accounting for translations into countries' secondary languages

The vast majority of the population in many countries speaks natively and uses for everyday interactions the same single language. However, some countries have several widely spoken languages, and native languages may differ from the language of education or commerce. As a robustness check, here we also include translations into secondary languages.[27] We include as secondary languages all additional languages that are (de facto) official in part or all of the country, or that are natively spoken by at least 5% of the population. Note specifically that this includes Russian in many of the Communist countries. Appendix Table A presents the results from these regressions. The main difference between these results and the results from our central specification is that here the difference in the extent to which the Satellite and Soviet countries increase their Western translations decreases in magnitude and loses significance. However, the result that Satellite translations of Western titles are significantly greater than Soviet translations of Western titles post collapse remains ($p<0.01$).

Number of pages translated as an alternative dependent variable

For robustness, we use the number of pages translated as an alternative dependent variable that captures the possibility that longer books contain more ideas. Because we are concerned that some of the short publications might not in fact be books, we limit translations to titles of 49 pages or longer (the minimum length for a "book" as defined by Unesco). Appendix Table B shows that the results are similar when using this alternative dependent variable.

The Bertrand et al. critique of difference-in-differences estimators

Bertrand, Duflo and Mullainathan (2004) show that difference-in-differences techniques applied to data with more than two periods generate inconsistent standard errors because they do

[27] We prefer not to include translations into secondary languages in our central specification because any cutoff for which secondary languages should be counted for a particular country is necessarily arbitrary, and by including multiple target languages in a country we double- (or triple-) count titles that are translated into more than one of these languages.

not account for serial correlation of the outcomes. To address this critique, we follow their recommended procedure and collapse our data down to one pre-collapse and one post-collapse observation. The pre-collapse values of the variables are the averages for the years 1980 to 1989, and the post-collapse values are the averages for 1992 to 2000. We discard data from 1990 and 1991, considering this the transition period. Appendix Table C shows the equivalent difference-in-differences regressions to Table 1, but run with only these two observations for each country/original language pair. Our main results remain large and statistically significant. Specifically, the increase in Satellite translations from Western European languages is significant at the 1% or 5% level in every specification, and the decrease in translations between Communist countries is significant at the 10% level or better in every specification but one.

Comparing Communist countries that transitioned to different degrees

We showed that the collapse of Communism was stronger in the Western-oriented Satellites, whose translations of Western titles converged to Western levels. More generally, we expect the countries that transitioned more into democratic market economies to have experienced greater convergence to the West, namely to have experienced larger increases in translations from the West, and greater declines in translations from the East. We show in Appendix Table D that Communist countries that transitioned more away from Communism increased more their translations of Western European titles into their main language (the data and empirical strategy used in this analysis are described in Appendix II). However, this finding doesn't hold when including translations into secondary languages. We note that a main disadvantage of using variation in the degree of transition is that unlike the single exogenous event of Communism collapsing, these reforms were outcomes likely deriving from many of the same factors as translations.

Accounting for Russian-speaking populations in other Communist countries

Our main analysis shows Soviet countries lag behind both Satellite and Western countries in their translations of Western titles post collapse. To create a lower bound on these differences, we include translations into Russian in each of the Soviet countries in addition to translations into the country's main language. The results (not presented) are very similar to the

specifications that include translations into secondary languages, discussed above and shown in Appendix Table A.[28]

Accounting for the possibility of Russia translating for other Communist countries

A potential concern is that many translations into Communist languages might actually be published in Russia, the largest of the Communist countries and the political center of Communist Europe, rather than in the home country, in which case we would under-report the ideas flowing into the other Communist countries. That is, the concern is that translations from, for instance, English into Czech are published in Russia. To account for this possibility, we ran specifications including Russia's translations into other Communist languages as translations in the appropriate Communist countries. In fact, the number of such translations was very low and the results (not presented) are effectively unchanged.

6. The effect of the collapse by book field

We next investigate how the effect of the collapse of Communism on book translations varied by the type of ideas contained in the books. We examine whether the collapse of Communism had a stronger effect on knowledge that is more directly economically useful. We also examine whether the effect was bigger for titles in more ideological fields, which were likely to be more threatening, and smaller for titles in more objective fields.

We investigate the effects of the collapse on each of the eight book fields Exact Science, Applied Science, Social Science, Arts, Literature, Philosophy, Religion, and History using difference-in-difference regressions. Further, we use keywords in the book titles to disaggregate each of the eight fields into subfields such as mathematics, physics and chemistry, and test the effect of the collapse of Communism on each subfield. Appendix Figure B shows how translations in each aggregate field changed over time.

Figure 3 presents graphically the results from difference-in-differences regressions predicting log translations plus 1, which we run separately by field.[29] [30] The figure shows

[28] We note that the Satellite countries translate very few titles into Russian; including translations into Russian as well as into the main language for all the Communist countries instead of just the Soviet countries makes no difference (results not presented).

[29] The independent variables are as in equation (2), plus the logs of population and GDP per capita.

[30] For each field we also run two separate regressions, a probit regression predicting whether the number of translations is positive (extensive margin), and an OLS regression that estimates the log number of translations given

considerable heterogeneity in the effect of the collapse across fields.[31] Communist translations of Applied Science and Social Science, two fields likely to be particularly economically useful and important for economic growth, converged especially strongly to Western translations. In contrast, translations of Western titles in the more culture-specific fields of History and especially Arts showed less convergence to Western levels, which likely reflect consumer preferences that differ considerably between the two halves of Europe.[32]

We further disaggregate the fields by using keywords in the titles to categorize them into subfields such as mathematics, physics and chemistry.[33] The details of the procedure are given in Appendix III.[34] Within each broad field we run a difference-in-differences regression that compares the effects across constituent subfields.[35] The coefficients of interest are the interactions of the subfield fixed effects with the *Post*Communist* variable. The coefficients of interest and their confidence intervals are shown in Figure 4 which suggests that within the field of Exact Science the more objective fields (e.g. mathematics) seem to jump less than the less objective fields (e.g. biology); in Social Science economics jumped the most, in Applied Science, medical titles, and in Religion, Christian titles.

We note that the broad fields that were affected most and least by the collapse, Religion and Natural Science, are both interesting cases. Religious titles were translated relatively little in Communist Europe pre collapse and saw large increases in translation post collapse, consistent with religion being severely restricted in most Communist countries.[36] At the other end of the spectrum, the more objective field of Exact Science was relatively heavily translated in Communist Europe pre collapse, and was thus less affected by the collapse. This is consistent

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the number of translations is non-zero (intensive margin). Appendix Table E presents the coefficients on the interactions of interest in both regressions. The results tell a similar story.

[31] When we look separately by field at Soviet and Satellite countries, we see similar differences between fields, though the overall levels of translations differ as shown in our main analysis.

[32] However, translations in Literature did show strong convergence. Literature differs from the other fields in that the average age of titles translated is considerably older. There is also a relatively thick tail of very old literature titles translated, suggesting that classics of literature remain relevant, whereas classics in other fields are more likely to become outdated. The convergence of literature may thus be driven largely by catching up on decades of missed classics.

[33] We break down into subfields titles in Exact Science, Social Science, Applied Science and Religion only; titles in the other fields are not named informatively enough to allow categorization by keywords in their titles.

[34] In order to consistently categorize books by keywords in their titles, we focus on titles translated from English.

[35] Specifically, we regress the log of translations + 1 on the full interactions between a set of sub-field dummies and a basic difference-in-differences specification, and control for log population, log GDP per capita, and a set of country fixed effects.

[36] Riasanovsky and Steinberg (2005).

with research in Exact Science being encouraged by the Communist regime, probably because it was unthreatening to Communism and was vital for Soviet power on the world stage.

7. Conclusions and discussion

Idea flows have received limited empirical attention because they are inherently difficult to measure. We tackle this empirical challenge by introducing book translations as a measure of non-rival, disembodied international idea flows. We use this measure to study how the flow of ideas transmitted by translations was affected by the collapse of Communism in Eastern Europe, which is an attractive setting to study how policy and institutional changes affect idea flows.

We find a strong substitution of Satellite countries away from Communist ideas and towards Western ideas: the collapse of Communism resulted in a fivefold increase in translations of Western European titles in the Satellite countries, suggesting a huge increase in the inflow of Western ideas, and a two third decrease in translations of Communist titles, suggesting a decline in the flow of ideas between Communist countries.

Furthermore, we find evidence of rapid and strong idea convergence of Satellite countries to Western Europe. Our findings are consistent with both catching up on the stock of ideas that were missed out on under Communism and a convergence between Satellite countries and Western Europe in access to new Western ideas. In contrast, Western-to-Soviet translations did not converge to Western levels, suggesting the diffusion of Western ideas into these countries was limited.

The degree of convergence to Western levels of translations varied substantially across types of Western ideas. Whereas Satellites' translations of Western titles in the more scientific fields, which likely contain knowledge that is more useful for economic development, reached their levels in Western Europe post collapse, translations in Arts, a more cultural field, did not converge.

This study of the Communist regime and its collapse in Eastern Europe is not only a natural context for the study of international idea flows, but it also contributes to our understanding of this highly important episode in history. First, this is the first study to empirically assess how Communism affected idea flows.[37] Second, while it is known that

[37] There is a literature that documents and explains the transition of Eastern European countries from Communism into market economies (e.g. Blanchard 1994, 1996, 1997, Aghion and Blanchard 1994, Frye and Mansfield 2003),

Communist Europe had low inflows of Western knowledge and ideas (e.g. Garton Ash, 1995, Harrison, 2003, 2005), the emphasis is typically on the stronger censorship of Western ideas in Eastern Europe. Our empirical strategy sheds light on the role of differences in preferences for ideas between Eastern and Western Europe. We conclude from the convergence in translation rates to Western levels in Satellite countries post collapse that Eastern preferences were similar to Western ones pre collapse or became like them quickly following the collapse. The lack of convergence in Soviet countries despite the end of censorship suggests that Soviet preferences for ideas remain different from Western preferences.

More broadly, our paper sheds light how economic incentives shape the international diffusion of knowledge, which economic historians view as one of the most crucial economic phenomena of all (see various work by Joel Mokyr). One wider lesson from our paper is that when these incentives are seriously impaired by institutions, this can have severe effects that are only remedied as institutional change occurs.

Naturally, book translations have a number of limitations as a measure of the flow of ideas. They only allow us to measure idea flows across language barriers, which precludes measuring idea flows between countries that share a language, or between linguistically similar groups within a country. Furthermore, because of the length of time it takes to write a book, they tend not to capture very new ideas. In addition, some people are able to read multiple languages, so have access to ideas before they are translated.[38] Finally, ideas in books must by definition be codifiable as opposed to tacit. That is, they must be able to be expressed in words and written down.

Despite these limitations, translations are an attractive measure of the international flow of ideas because they capture flows of non-rival, disembodied ideas, and their key purpose is to transmit written ideas, information and/or knowledge between languages. Moreover, they are both quantifiable and classifiable by field and specific content, and thus lend themselves naturally to empirical work.

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and the transition away from socialism of Israeli kibbutzim (e.g. Abramitzky 2008, 2011). Alesina and Fuchs-Schuendeln (2007) studies the effect of the collapse of Communism on preferences). However, this paper is the first to test the effect of the collapse of Communism on the flow of information and ideas.

[38] However, it is reasonable to assume that such a person finds it less costly to read in his own language, thus an increase in translations into his native language implies a reduced cost of access to information.

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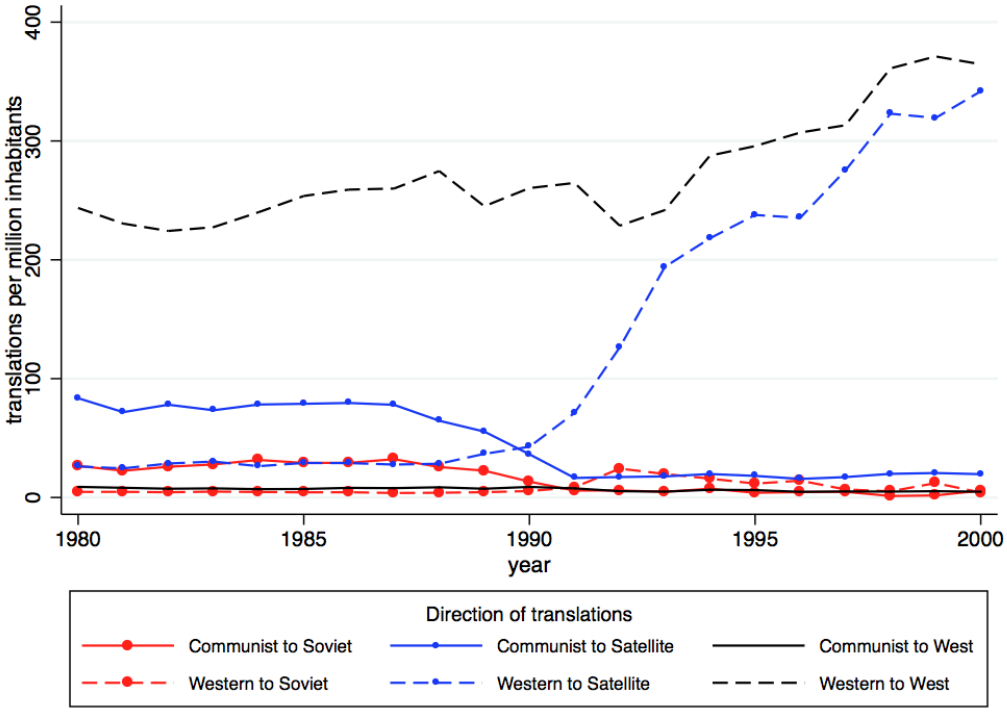
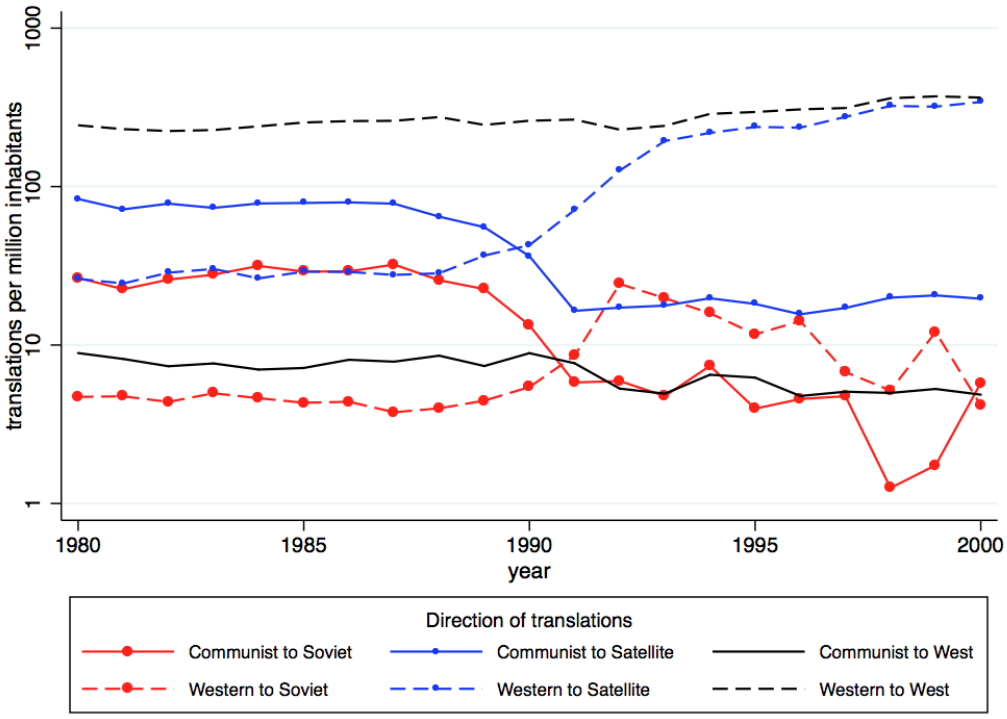
Figure 1: Translations in Communist and Western Europe
Panel A: Linear scale

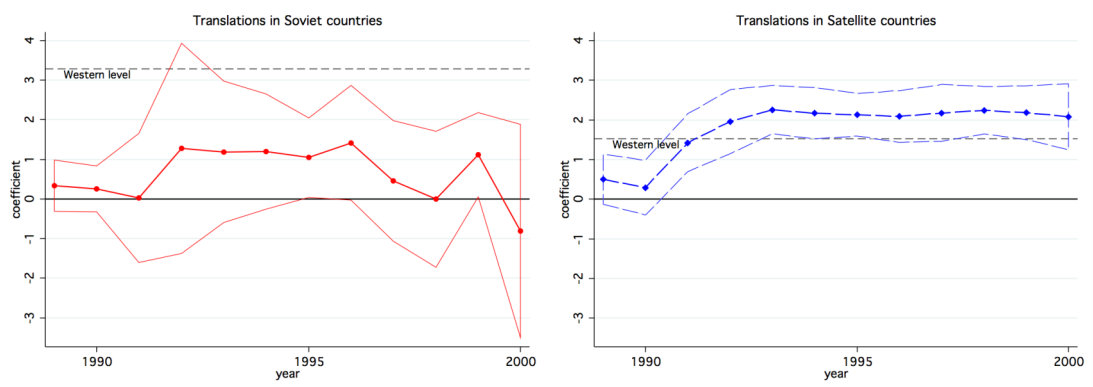


Panel B: Log scale

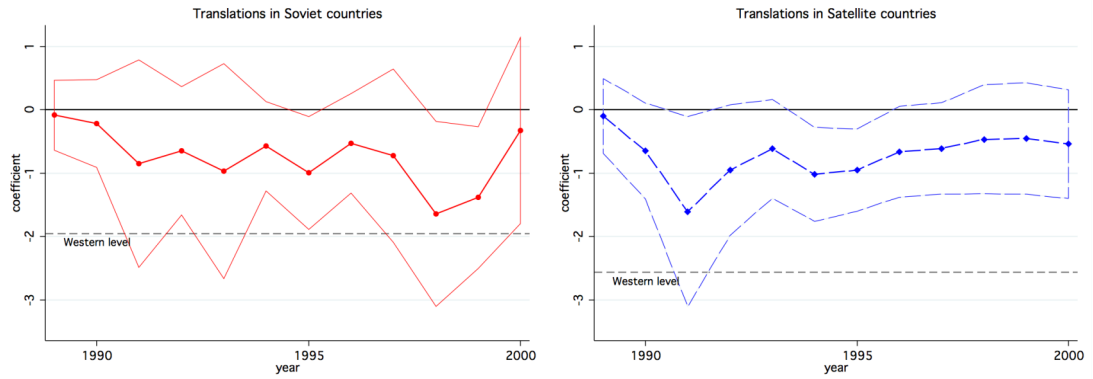


This figure shows translations from Western European and Communist languages in the former Soviet countries, the Satellite countries, and Western European countries. The values are averages over the countries in the regions.

Figure 2: The effects over time of the collapse of Communism on translations
Panel A: Translations from Western European languages

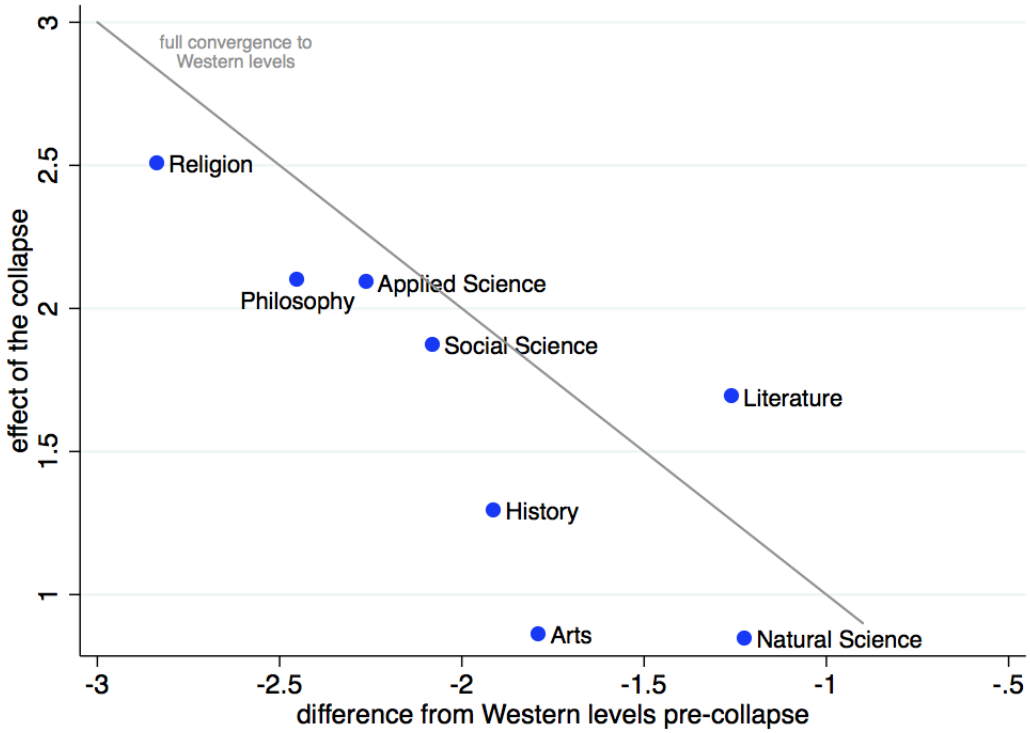


Panel B: Translations from Communist languages

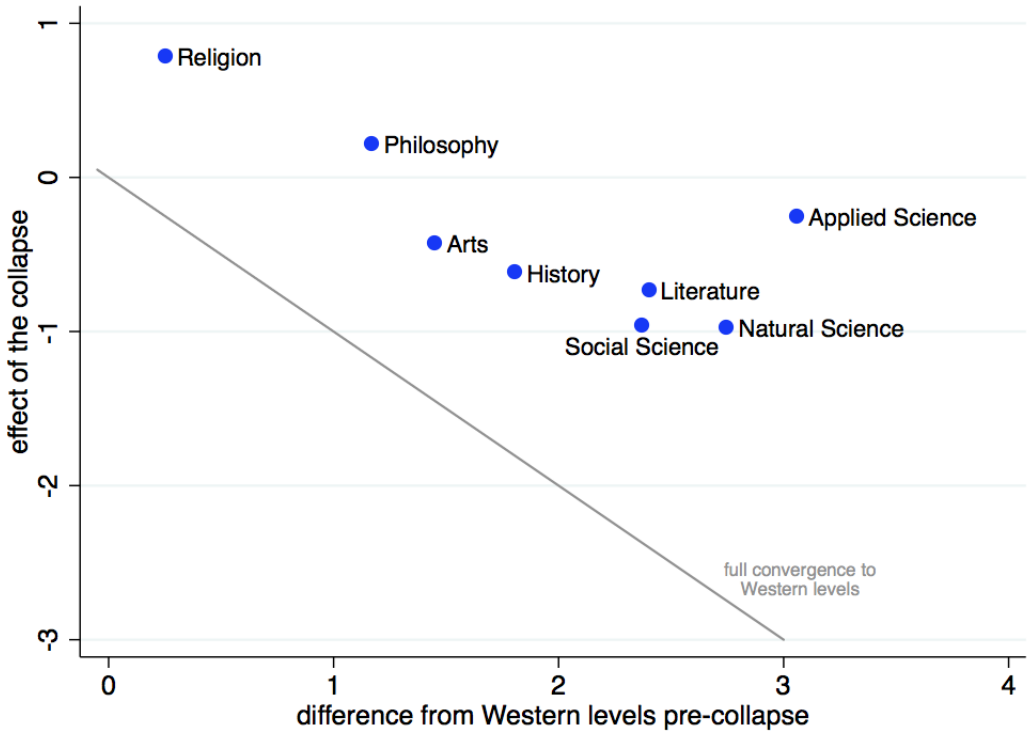


The coefficients plotted are from the estimation of a version of equation (2) where effects in Communist countries are allowed to differ for Soviet and Satellite countries. The post dummy and its interactions have been replaced by year dummies (for 1989-2000) and their equivalent interactions. Controls for population and GDP per capita are also included. The figure shows coefficients and 95% confidence intervals on interactions of the year dummies with Western (Panel A) or Communist (Panel B) translations in Soviet countries (left panel) and in Satellite countries (right panel). The Western level line is the negative of the coefficient on Soviet (left panel) or Satellite (right panel) interacted with Western (Panel A) or Communist (Panel B) original language.

Figure 3: The effect of the collapse of Communism on translations by field
Panel A: Western-to-Communist translations

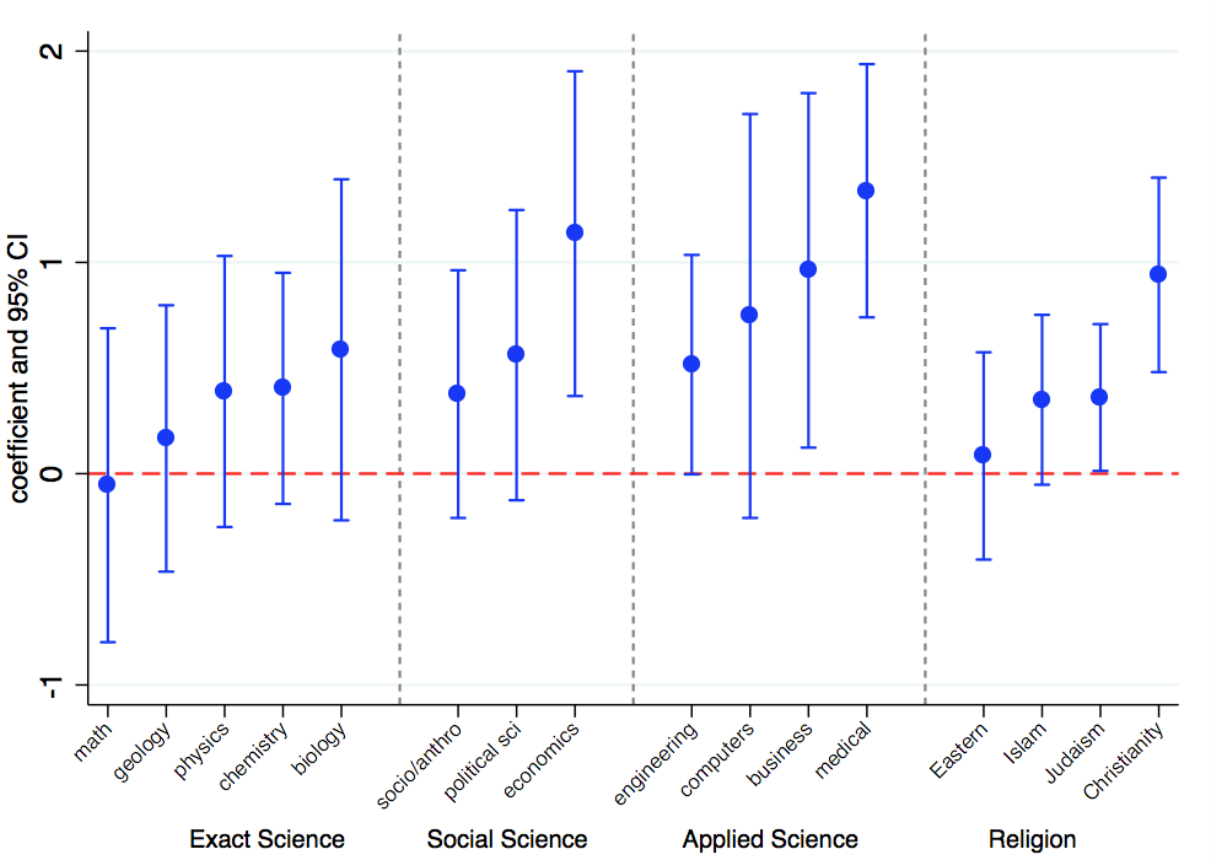


Panel B: Communist-to-Communist translations



This figure plots the coefficients from difference-in-differences regressions predicting log translations plus 1 run separately by subject as described in Section 6. In each panel, the x-axis plots the coefficient on the interaction between Western (Panel A) or Communist (Panel B) original language and Communist translating country. The y-axes plot the coefficients between the interactions between these variables and a post-1991 dummy.

Figure 4: Effect of the collapse of Communism on translations from English by subfield



The regressions that give rise to these coefficients are difference-in-differences regressions comparing Communist with Western Europe, run by field as described in Section 6.

Table 1: Before/after and difference-in-differences analysis: The effect of the collapse of Communism on book translations

Dependent variable: log number of translations

	OLS: pre vs post				Difference-in-differences: Communist vs West					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Translations from Western original languages in:										
Communist country * post	2.014***	1.761***	0.893*	0.806**	1.897***	1.361***	1.428***	0.687	0.409	0.508
	(0.226)	(0.179)	(0.483)	(0.333)	(0.269)	(0.233)	(0.256)	(0.511)	(0.361)	(0.407)
Satellite country * post			1.271**	1.168***				1.337***	1.183***	1.137***
			(0.452)	(0.336)				(0.410)	(0.325)	(0.337)
Communist country					-1.739***			-3.249***		
					(0.498)			(0.905)		
Satellite country			1.838**					1.777**		
			(0.664)					(0.678)		
Post					0.043	0.380**		0.110	0.379**	
					(0.135)	(0.153)		(0.150)	(0.154)	
Translations from Communist original languages in:										
Communist country * post	-0.945***	-1.160***	-1.154**	-1.421***	-0.582***	-1.095***	-1.009***	-0.880*	-1.354**	-1.251**
	(0.113)	(0.186)	(0.445)	(0.453)	(0.206)	(0.267)	(0.292)	(0.482)	(0.492)	(0.507)
Satellite country * post			0.091	0.206				0.158	0.221	0.195
			(0.375)	(0.484)				(0.354)	(0.469)	(0.469)
Communist country					2.583***			1.907***		
					(0.424)			(0.471)		
Satellite country			0.634					0.573		
			(0.594)					(0.502)		
Post					-0.437**	-0.084		-0.369**	-0.086	
					(0.160)	(0.174)		(0.172)	(0.172)	
Other controls:										
Western original language dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Communist original language dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Population and GDP controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects * Western original language		Yes		Yes		Yes	Yes		Yes	Yes
Country fixed effects * Communist original language		Yes		Yes		Yes	Yes		Yes	Yes
Year fixed effects * Western original language							Yes			Yes
Year fixed effects * Communist original language							Yes			Yes
R-Squared	0.422	0.869	0.661	0.880	0.673	0.921	0.928	0.764	0.925	0.932
Observations	511	511	511	511	964	964	964	964	964	964

An observation is a country, year, original language (Western or Communist)

Notes: Each column is a regression predicting the log number of translations published in the country, year, and from the original language (Communist or Western European). Columns 1-4 are OLS regressions using annual data for the period 1980-2000, run for countries in Communist Europe (versions of equation (1) as described in Section 4). Columns 5-10 are difference-in-differences OLS regressions, with Communist Europe as the region of interest and Western Europe as the comparison group (versions of equation (2) as described in Section 4).
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, Italy, the Netherlands, Norway, Portugal, and Sweden. We include the three Baltic countries in the Satellite countries (see explanation in Section 3.1). The Communist and Western original languages are given in footnote 12. *Post* is a dummy for 1991 onwards. *Population and GDP controls* are the logs of population and of real GDP per capita. Standard errors, in parentheses, are clustered at the country level. * p<0.10, ** p<0.05, *** p<0.01.

Table 2: Access to new Western ideas: The effect of the collapse of Communism on translations of recent versus older Western titles

Dependent variable: log number of translations from a Western original language

	Recent titles (15 years old and newer)				Older titles (more than 15 years old)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post * Communist country	1.417***	2.114***	1.485***	1.408***	1.263***	1.960***	1.331***	1.254***
	(0.283)	(0.352)	(0.305)	(0.325)	(0.283)	(0.352)	(0.305)	(0.325)
Communist country	-2.966***	-1.997***			-2.029***	-1.061*		
	(0.484)	(0.597)			(0.484)	(0.597)		
Post	0.428***	0.119	0.530***		-0.027	-0.335*	0.076	
	(0.125)	(0.178)	(0.173)		(0.125)	(0.178)	(0.173)	
Population and GDP controls		Yes	Yes	Yes		Yes	Yes	Yes
Country fixed effects			Yes	Yes			Yes	Yes
Year fixed effects				Yes				Yes
R-Squared	0.478	0.610	0.934	0.943	0.269	0.453	0.908	0.920
Observations	500	482	482	482	500	482	482	482

An observation is a country, year

Notes: Each column is a difference-in-differences regression predicting the log number of translations of recent titles (columns 1-4) or of older titles (columns 5-8) from Western languages published in the country and year. Communist Europe is the region of interest and Western Europe is the comparison group. Data are annual for the period 1980-2000 (see Section 5.2 for data construction). See the notes to Table 1 for the Communist and Western countries used (note Iceland is also included in columns 1 and 5) and the Western original languages. *Post* is a dummy for 1991 onwards. *Population and GDP controls* are the logs of population and of real GDP per capita. Standard errors, in parentheses, are clustered at the country level. * p<0.10, ** p<0.05, *** p<0.01.

Table 3: Important ideas: The effect of the collapse of Communism on the translation of influential titles/authors, and the most translated titles

Dependent variable: log number of countries translating the author/title + 1

Sample:	**Influential titles**			**Most translated titles**			**Influential authors**		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Post * Communist country	0.524***	0.436***	0.463***	0.502***	0.490***	0.262***	0.380***	0.278***	0.352***
	(0.063)	(0.068)	(0.066)	(0.051)	(0.051)	(0.086)	(0.055)	(0.056)	(0.058)
Post * Communist country * Anti-Communist author		0.505***			0.932**			1.001***	
		(0.164)			(0.456)			(0.176)	
Post * Communist country * Nobel laureate			0.579***						0.326*
			(0.202)						(0.195)
Post * Communist country * Published 1917-44						0.568***			
						(0.209)			
Post * Communist country * Published 1945-85						0.332***			
						(0.107)			
Communist country	-0.531***	-0.501***	-0.504***	-0.800***	-0.795***	-0.536***	-0.501***	-0.444***	-0.495***
	(0.044)	(0.048)	(0.047)	(0.036)	(0.036)	(0.061)	(0.039)	(0.040)	(0.041)
Communist country * Anti-Communist author		-0.171			-0.435			-0.562***	
		(0.116)			(0.323)			(0.125)	
Communist country * Nobel laureate			-0.257*						-0.076
			(0.143)						(0.138)
Communist country * Published 1917-44						-0.280*			
						(0.148)			
Communist country * Published 1945-85						-0.406***			
						(0.076)			
Post	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Author fixed effects							Yes	Yes	Yes
Author fixed effects * post							Yes	Yes	Yes
Title fixed effects	Yes	Yes	Yes	Yes	Yes	Yes			
Title fixed effects * post	Yes	Yes	Yes	Yes	Yes	Yes			
R-Squared	0.723	0.732	0.730	0.804	0.806	0.818	0.815	0.829	0.817
Observations	644	644	644	952	952	952	828	828	828
Number of authors							207	207	207
Number of titles	161	161	161	238	238	238			
An observation is a:	title, pre/post, Communist/West						author, pre/post, Communist/West		

Notes: Each coumn is a difference-in-differences regression predicting the log of the number of countries translating the title (columns 1-6) or author (columns 7-9). Data (described in Appendix I) are aggregated to the pre/post collapse and Communist/Western Europe level, with Communist Europe as the region of interest and Western Europe as the comparison group. The "pre" period is 1980-88; the "post" period is 1989-2000. The Communist countries used are Bulgaria, the Czech Republic, Poland, Romania, Slovakia, Belarus, and Estonia. The Western countries used are Spain, France, Denmark, Norway, Austria, and Belgium. We include translations into the main language of the country only, plus into Russian in the Soviet countries. Standard errors are given in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

Table 4: Size of the publishing industry: The effect of the collapse of Communism on total book publications

Dependent variable: log total number of books published

	Pre vs post			Difference-in-differences			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Post * Communist country				-0.378*	-0.052	-0.084	-0.111
				(0.218)	(0.149)	(0.122)	(0.113)
Post	-0.230	0.136	0.123	0.148	0.172*	0.216**	
	(0.163)	(0.092)	(0.110)	(0.152)	(0.097)	(0.082)	
Real GDP per capita (ln)		0.729**	0.463		0.547**	0.472*	0.423*
		(0.287)	(0.267)		(0.230)	(0.234)	(0.207)
Population (ln)		0.555***	-1.955		0.572***	-0.897	-0.675
		(0.121)	(1.521)		(0.080)	(1.232)	(1.267)
Communist country dummy				Yes	Yes		
Country fixed effects			Yes			Yes	Yes
Year fixed effects							Yes
R-Squared	0.037	0.580	0.884	0.234	0.788	0.948	0.958
Observations	131	131	131	339	327	327	327
An observation is a country, year							

Notes: Each column is a regression predicting the log total number of books published in the country and year. All columns use annual data for the period 1980-2000 (where available). Columns 1-3 are before/after OLS regressions using only the Communist countries; columns 4-7 are difference-in-differences OLS regressions where the region of interest is Communist countries and the comparison group is Western Europe. The Communist countries used are Belarus, Bulgaria, Estonia, Hungary, Latvia, Poland, Romania and the Ukraine, and the Western European countries used are Belgium, Denmark, Finland, France, Iceland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, and Switzerland. *Post* is a dummy for 1991 onwards. Standard errors, in parentheses, are clustered at the country level. * p<0.10, ** p<0.05, *** p<0.01.

Appendices

Appendix I: Translations of important Western titles

This appendix presents the details of the data and analysis summarized in Section 5.3., which investigates how the collapse of Communism affected access to important Western titles.

I.1. Data

To test the effect of the collapse of Communism on the most influential titles, we extract from the Index Translationum data on the translation patterns of titles considered important and influential in the West. The titles selected, listed in the Influential Titles Online Appendix[1], are those given in any one of three lists. The first is the Central and East European Publishing Project's (CEEPP) list of the 100 books that have been most influential in the West since 1945. This list was assembled in 1994, and appeared in Garton Ash (1995). The second is the Modern Library's list of the 100 best non-fiction books of the 20th century published in English.[2] The third is National Review's best 100 non-fiction books of the 20th century.[3] A considerable number of titles appear in more than one of these lists. We include only titles that were originally published before 1985 (to allow them enough time to have been translated before the collapse), and we omit all titles that were not translated in any of our sample countries in the period 1980-2000. This leaves us with a total of 161 titles. For each of these titles, we used various online sources to establish the publication date of the original book, determine whether the author expressed explicitly anti-Communist views, and whether he or she was a Nobel laureate.

As an alternative to examining the translation of influential titles, we examine the translation of titles by influential authors. The authors we use are those with a book appearing on one of the three lists of influential titles given above. As a second alternative that captures readership rather than critics' views, we take the titles most frequently translated in Western Europe in the period 1980-2000 (30 from each field). Compared with the influential titles, these titles, listed in the Most Translated Titles

[1] The online appendix can be found on the authors' websites.
[2] The "Board's List", available at www.randomhouse.com/modernlibrary/100bestnonfiction.html.
[3] http://www.nationalreview.com/100best/100_books.html.

Online Appendix, are more likely to be classics or popular works, and less likely to be academic.

I.2. Empirical strategy

Since we have a small number of observations in our analysis of influential titles, we limit ourselves to a simple pre/post, Communist/West comparison. This means we need to use the same set of countries in every year we include in order to draw conclusions about relative changes in Eastern compared with Western Europe. Thus because some countries have missing data for some years, we consider three alternative sub-samples for which we have consistent data. Our preferred sample, using the whole period 1980-2000, consists of translations in the Communist countries Bulgaria, the Czech Republic, Poland, Romania, Slovakia, Estonia, and Belarus, and the Western European countries Spain, France, Denmark, Norway, Austria, and Belgium. The first alternative sample also includes Russia, but only uses the period 1980-1996. The second alternative sample differs from the preferred sample in that it also includes Finland, Lithuania, Latvia, Iceland, and Moldova, but only uses the periods 1980-89 and 1995-2000. We present results for the preferred sample only, but results for the two alternative samples are similar.

To formally test the effect of the collapse on influential titles, we first run the following title- and author-level difference-in-differences specification:

$$Y_{ijt} = \alpha_i + \gamma_i Post_t + \beta_1 Post_t \times Communist_j + \beta_2 Communist_j + \varepsilon_{ijt} \quad \text{(I.1)}$$

where Y_{ijt} is the log of the number of countries translating title (author) i (plus one) in region j and period t. The dependent variable is defined over the two regions Western Europe and Communist Europe, and the two periods pre (1980-1988) and post (1989-2000).[4] $Post_t$ is a dummy for post Communism's collapse. We also include title (author)

[4] Note this cutoff date of 1989 for "post" differs to the 1991 used in the analysis of the total number of translations. The reason we prefer the 1989 cutoff for the analysis of individual titles is that by 1989 Gorbachev's reforms had greatly reduced the Communist regime's restrictions on information flows, so we don't want to attribute a translation published in 1989 to the pre-collapse period. The results are qualitatively similar when using 1991 as the first "post" year, but they are sometimes less significant

fixed effects to test the effect of the collapse within a title (author). We interact these title fixed effects with the post dummy to allow each title to be translated differently post. The coefficient of interest is β_1, which tests the extent to which Communist translations of influential Western titles increased post collapse (relative to Western translations).

We next test whether the translations of anti-Communist authors increased more than the translations of other authors post collapse. We run the regression:

$$\left\{\begin{array}{l} Y_{ijt} = \alpha_i + \gamma_i Post_t + \beta_1 Post_t \times Communist_j \times AntiComm\_Author_i \\ +\beta_2 Post_t \times Communist_j + \beta_3 Communist_j \times AntiComm\_Author_i \\ +\beta_4 Communist_j + \varepsilon_{ijt} \end{array}\right\} \quad \text{(I.2)}$$

where $AntiComm\_Author_i$ is a dummy for whether the author of title *i* voiced explicitly anti-Communist opinions.

We run alternative specifications that replace the anti-Communist author variable with dummies for whether the title was published during the Communist era and whether it was published during the Cold War. The premise is that titles published during the Communist era, especially during the Cold War, would be more threatening to the Communist regime and thus more likely to be translated by Communist countries only post collapse. We also run alternative specifications that test whether authors who won the Nobel prize, and are thus potentially even more influential, were translated more by Communist countries post collapse.

Results from the regressions are presented in Table 3.

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because some anti-Communist authors were translated as early as 1989, e.g. von Hayek's famous "The Road to Serfdom". When dropping the two transition years 1989 and 1990 and using 1991 as the first "post" year, the results are unchanged and highly significant. We also note that the results from the analysis of the total number of translations discussed in equations 1-6 are robust to defining post as 1989 onwards, but there we choose the 1991 cutoff because we test for an average effect and because Communism did not collapse in the Soviets until 1991.

Appendix II: Comparing Communist countries that transitioned to different degrees

This appendix uses several variables on the degree to which the former Communist countries transitioned into democratic market economies to test the prediction that countries that experienced greater such transitions also converged to Western translation patterns to a higher degree.

II.1. Data

We use four variables to measure the degree to which the Communist countries transitioned from communist, centrally-planned economies to democratic market economies, namely *institutionalized democracy*, *political competition*, *price liberalization*, and *trade and foreign exchange system reform*.

The variables *institutionalized democracy* and *political competition* are from the Polity IV data set, described at and available from www.systemicpeace.org/polity/polity4.htm. *Institutionalized democracy* is measured on a scale of 0 to 10, with greater values indicating more democratic political systems. *Political competition* captures the degree of regulation of participation and the competitiveness of participation in the political arena. It is measured on a scale of 1 to 10, where larger values denote more regulation and more competitiveness. These variables are available for all the Communist countries in our sample for each year 1980 to 2000.

The variables *price liberalization* and *trade and foreign exchange system reform* were developed by The European Bank for Reconstruction and Development, and are available at http://www.ebrd.com/pages/research/economics/data/macro.shtml. Each is measured on a scale from 1 to 4.33, where 1 indicates "most prices formally controlled by the government" and "widespread import and/or export controls or very limited legitimate access to foreign exchange" for the two variables respectively, and 4.33 indicates "standards and performance typical of advanced industrial economies: complete price liberalization with no price control outside housing, transport and natural monopolies" and "standards and performance norms of advanced industrial economies:

removal of most tariff barriers; membership in WTO".[5] These two variables are available for all the Communist countries in our sample for each year 1989 to 2000.

II.2. Empirical strategy and results

We run regressions that predict translations from Western European or Communist languages using a "degree of transition" variable fully interacted with Western European original language, plus controls. We include only the former Communist countries in these regressions, and run them for the years 1980-2000 or 1989-2000, depending on the availability of the "degree of transition" variable. For each "degree of transition" variable, described above, a higher value indicates a greater degree of transition. We control for *price liberalization* and *trade and foreign exchange system reform* in a single regression, which allows us to investigate which type of transition was more important for which type of translation.

Appendix Table D presents the results from OLS regressions that show the relationship between several types of reform in Communist countries and translations from Western European and Communist languages. The first of each group of three columns includes the additional controls population and GDP per capita only; here the coefficients of interest, on the reform variable interacted with the two types of original language, are identified both off between-country variation in the degree of transition and off average trends in transition over time. An important concern here is that, because both Western translations and the degree of transition increase over time in most countries, the effects in this specification may be driven by the presence of two unrelated time trends. We thus add year fixed effects interacted with original language in the second column of each group. The concern remains that we are identifying off levels differences between countries, and countries differ across many more dimensions than just their degree of transition away from Communism, so we add country dummies interacted with original language in the third columns. Thus in the final column of each group, the coefficient of interest is identified solely off between-country differences in changes over time.

[5] These descriptions of the values are from http://www.ebrd.com/pages/research/economics/data/macro/ti_methodology.shtml.

The two variables directly related to the political system, *institutionalized democracy* and *political competition*, are both positively and significantly related to translations from Western European languages. These results suggest that Communist countries that transitioned more away from Communism experienced a higher jump in Western European translations. For instance, the regression with country and year fixed effects shows an increase in *institutionalized democracy* score from 7, the 25th percentile in 2000, to 9, the 75th percentile in 2000, corresponds to a 32% increase in translations from the West. The transition away from Communism consisted of various broad-ranging reforms, and in columns 7 to 9 we test the relative importance of two relevant reforms, namely price and trade deregulations. The regressions suggest that while *trade and foreign exchange system reform* was a more important driving force of increasing translations from Western European languages, *price liberalization* was more important in reducing translations from Communist languages. These results suggest that, while trade barriers kept translations from the West artificially low, the Communist price control system kept between-Communist translations artificially high.[6]

[6] We note that the magnitude and significance of the coefficients are not robust to including translations into secondary languages (results not presented).

Appendix III: Disaggregation of fields into subfields using title keywords

The Index Translationum categorizes translations according to eight aggregate fields. To study translations at a more disaggregated level, we use categorize titles into subfields using keywords from their titles. This appendix describes the methodology we use for this categorization. In order to consistently categorize books by keywords in their titles, we focus on titles translated from English (74% of the titles translated from Western European languages) for which the original title is non-missing (79% of these titles).[7]

Our categorizations were determined as follows:

1. In each field, we identified the words that appear most frequently in titles translated in that field (e.g. physics, chemistry, earth, and universe).
2. We discarded those that select titles that are not primarily on a consistent topic.
3. To the remaining informative common keywords we added related keywords that also returned consistent topics.
4. We aggregated our keyword searches into cohesive subfields.

The aggregated subfields for each field are as follows:

- Religion and Theology: Christian, Judeo-Christian, Judaism, theology, Islam, Eastern religions;
- Education, Social Science and Law: economics, communism, political science, sociology and anthropology, and education;
- Natural and Exact Science: mathematics, physics, chemistry, biology, geology;
- Applied Science: computers, business, medical, engineering, food, gardening.

We do not present results for subfields of Arts, Games and Sports, Literature, History, Geography, and Biography, or Philosophy and Psychology because such books are not amenable to categorization using keywords from their titles. Notice individual

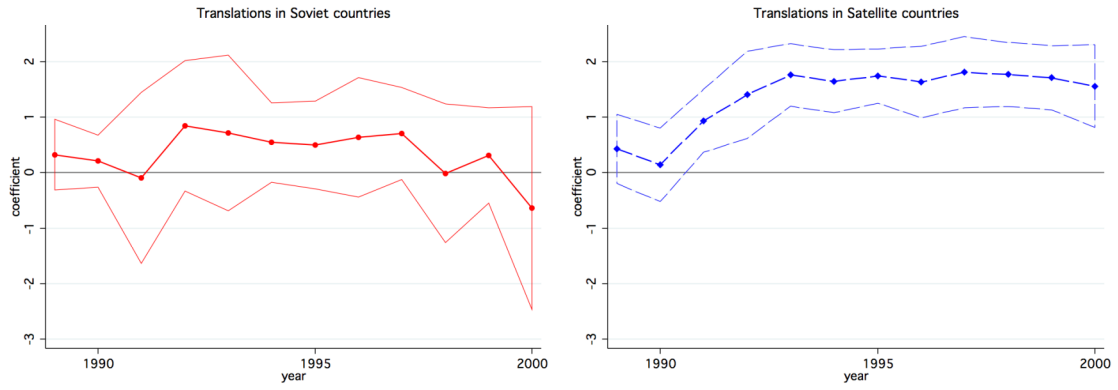
[7] Our results for the subfields identified by keyword searches are unlikely to be driven by the restrictions to titles translated from English or with non-missing original titles. Restricting from titles translated from Western languages to titles translated from English in a difference-in-differences specification pooling all fields increases the coefficient of interest from 1.34 to 1.78; subsequently restricting to translations with non-missing original titles decreases it slightly to 1.62. These changes are small relative to the standard errors on the coefficient estimates.

titles might be captured by more than one search, in which case they are attributed to both. The percentage of titles captured by this process ranges from roughly 20% to 55% in the various fields.[8] The Keyword List Online Appendix lists the keywords contributing to each subfield. The Example Title Online Appendix gives examples of the titles found by each keyword search.

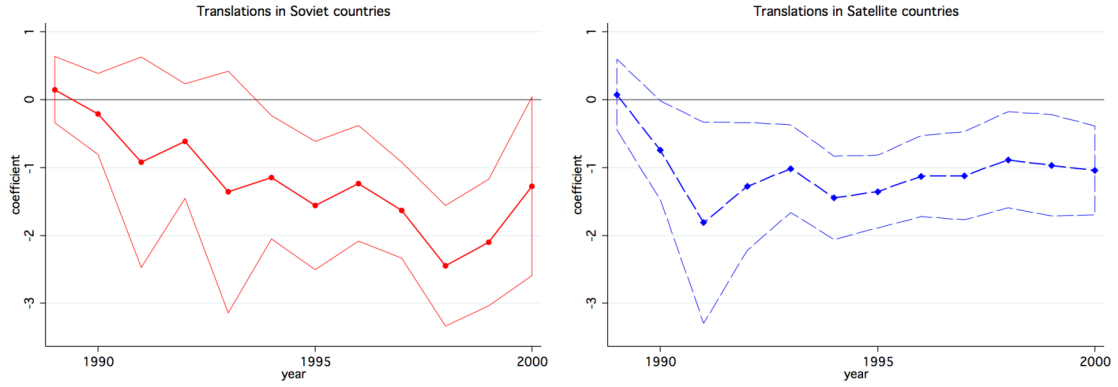
[8] The primary reasons why these percentages were not higher were that many titles are uninformative about the subject of the book (e.g. "Nowhere to Hide" by Susan Francis is an Englishwoman's story of her life in Iraq in the time of Saddam Hussein), and many others contain only keywords that appear in multiple contexts (e.g. the keyword "rights" appears in Thomas Paine's classic on democracy "Rights of Man" and the title "Human Rights Violations In Zaire".)

Appendix Figure A: The effect over time of the fall of Communism on translations, estimation with country fixed effects

Panel A: Translations from Western European languages

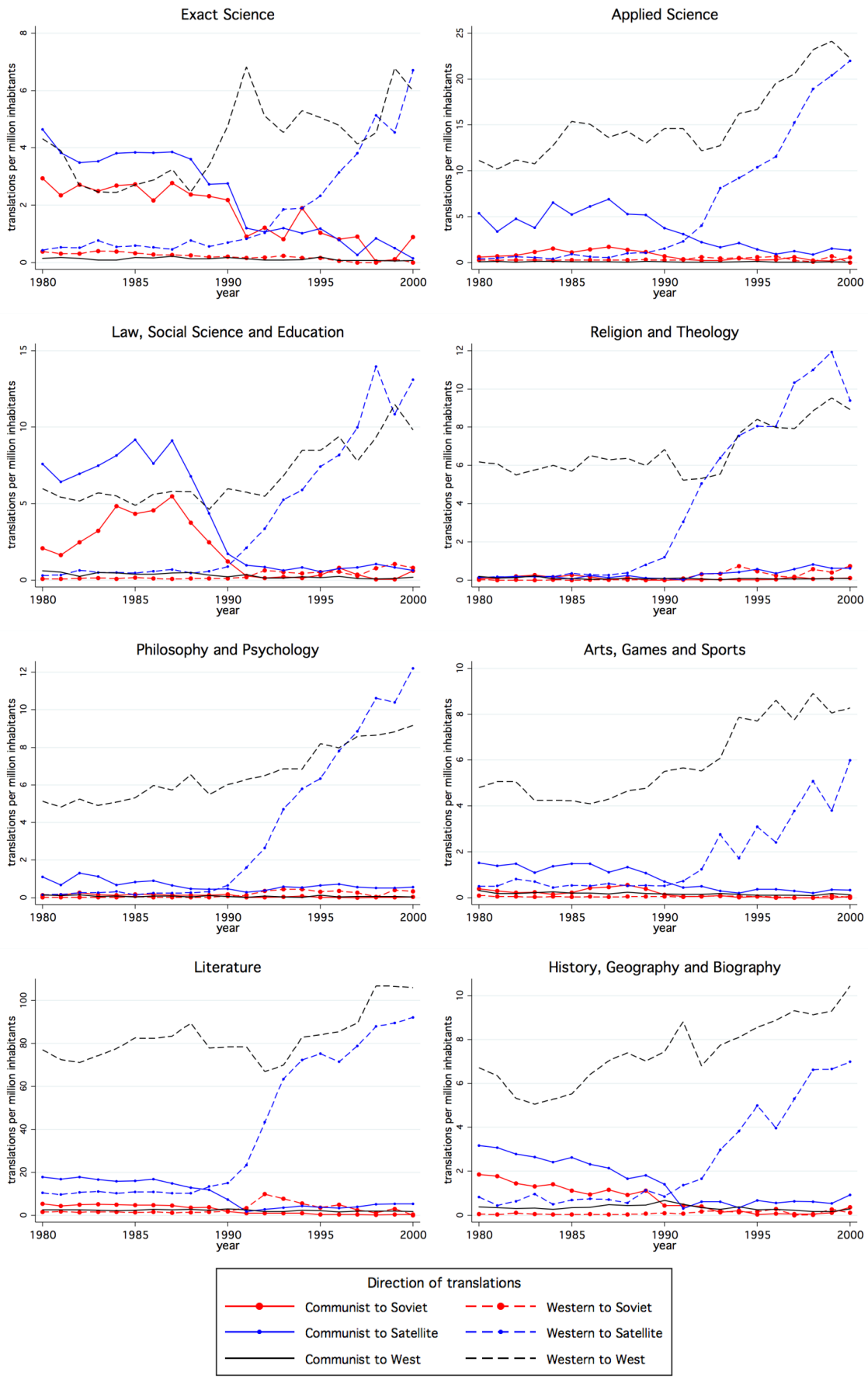


Panel B: Translations from Communist languages

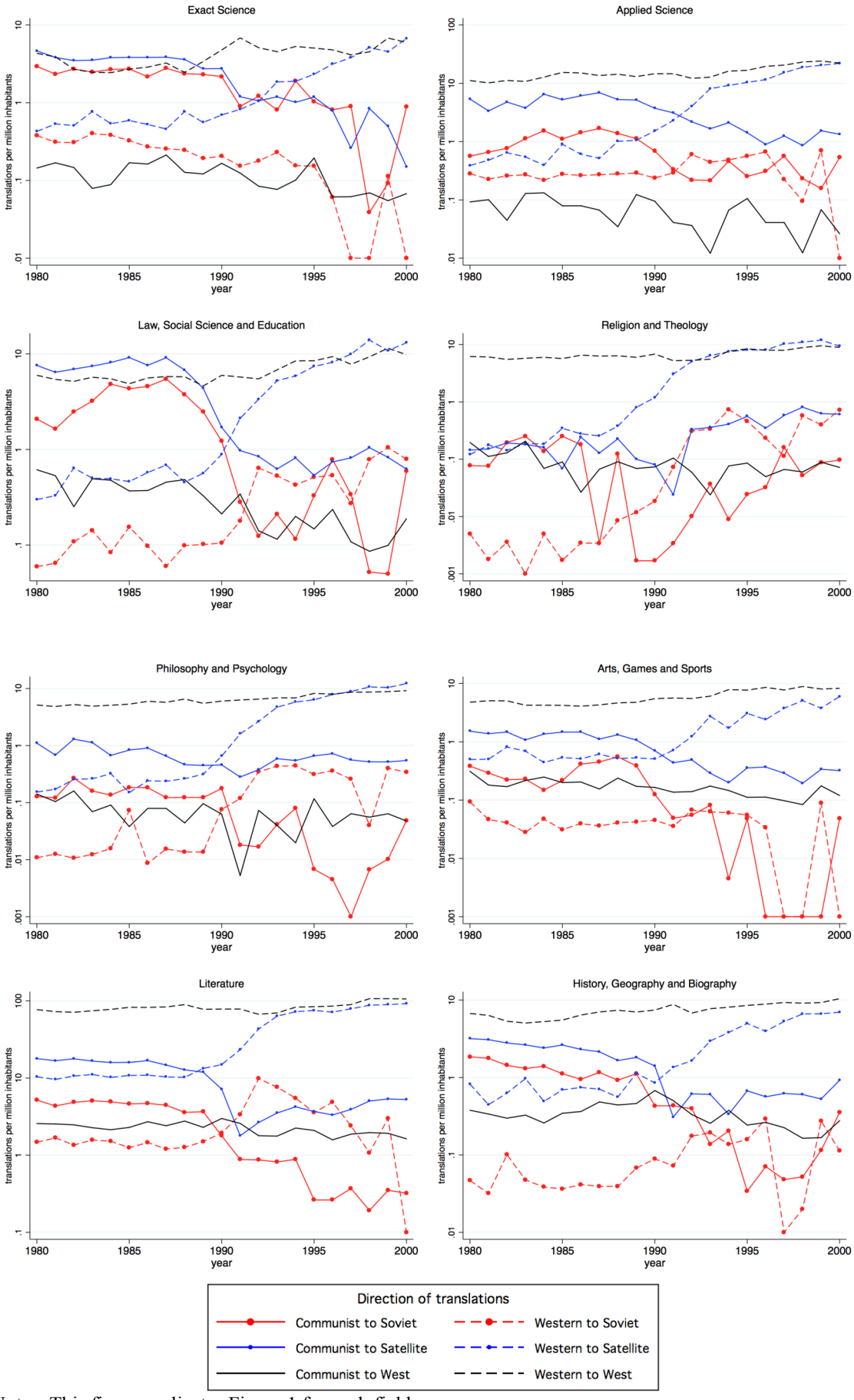


This figure replicates Figure 2, but also includes country fixed effects interacted with original language in the regression. The coefficients plotted are from the estimation of a version of equation (2) where effects in Communist countries are allowed to differ for Soviet and Satellite countries. The post dummy and its interactions have been replaced by year dummies (for 1989-2000) and their equivalent interactions. Controls for population and GDP per capita, and country fixed effects interacted with original language are also included. The figure shows coefficients and 95% confidence intervals on interactions of the year dummies with Western (Panel A) or Communist (Panel B) translations in Soviet countries (left panel) and in Satellite countries (right panel). The Western level line is the negative of the coefficient on Soviet (left panel) or Satellite (right panel) interacted with Western (Panel A) or Communist (Panel B) original language.

Appendix Figure B: Translations by field
Panel A: Linear scale



Panel B: Log Scale



Notes: This figure replicates Figure 1 for each field.

Appendix Table A: Secondary languages: The effect of the collapse of Communism on book translations into main and secondary languages

Dependent variable: log number of translations						
	(1)	(2)	(3)	(4)	(5)	(6)
Translations from Western original languages in:						
Communist country * post	1.932***	1.532***	1.578***	1.430***	1.225***	1.304***
	(0.207)	(0.192)	(0.233)	(0.392)	(0.388)	(0.426)
Satellite country * post				0.547	0.419	0.379
				(0.369)	(0.370)	(0.378)
Communist country	-1.665***			-2.425***		
	(0.417)			(0.602)		
Satellite country				0.934**		
				(0.425)		
Post	0.103	0.347**		0.130	0.346**	
	(0.122)	(0.143)		(0.129)	(0.144)	
Translations from Communist original languages in:						
Communist country * post	-0.602***	-0.968***	-0.909***	-0.473**	-0.741**	-0.663**
	(0.196)	(0.217)	(0.243)	(0.222)	(0.277)	(0.287)
Satellite country * post				-0.284**	-0.325	-0.344
				(0.116)	(0.242)	(0.245)
Communist country	2.569***			2.183***		
	(0.373)			(0.450)		
Satellite country				0.394		
				(0.382)		
Post	-0.317**	-0.071		-0.290**	-0.072	
	(0.131)	(0.159)		(0.137)	(0.159)	
Other controls:						
Western original language dummy	Yes	Yes	Yes	Yes	Yes	Yes
Communist original language dummy	Yes	Yes	Yes	Yes	Yes	Yes
Population and GDP controls	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects * Western original language		Yes	Yes		Yes	Yes
Country fixed effects * Communist original language		Yes	Yes		Yes	Yes
Year fixed effects * Western original language			Yes			Yes
Year fixed effects * Communist original language			Yes			Yes
R-Squared	0.759	0.922	0.929	0.785	0.924	0.930
Observations	965	965	965	965	965	965
An observation is a country, year, original language (Western or Communist)						

Notes: This table replicates columns 5-10 of Table 1, but considers translations into both the main and secondary languages of the countries. All columns are difference-in-differences OLS regressions using annual data for the period 1980-2000, with Communist Europe as the region of interest and Western Europe as the comparison group. Standard errors, in parentheses, are clustered at the country level. * p<0.10, ** p<0.05, *** p<0.01.

Appendix Table B: Pages translated: The effect of the collapse of Communism on the number of book pages translated

Dependent variable: log number of pages translated						
	(1)	(2)	(3)	(4)	(5)	(6)
Translations from Western original languages in:						
Communist country * post	1.822***	1.352***	1.396***	0.882*	0.752**	0.833**
	(0.252)	(0.211)	(0.248)	(0.479)	(0.343)	(0.385)
Satellite country * post				0.973**	0.767**	0.719**
				(0.374)	(0.314)	(0.319)
Communist country	-1.648***			-3.285***		
	(0.503)			(0.967)		
Satellite country				1.985**		
				(0.753)		
Post	0.027	0.318*		0.089	0.317*	
	(0.145)	(0.159)		(0.160)	(0.161)	
Translations from Communist original languages in:						
Communist country * post	-0.619***	-1.056***	-0.995***	-0.738	-1.050*	-0.965
	(0.200)	(0.267)	(0.304)	(0.558)	(0.550)	(0.565)
Satellite country * post				-0.082	-0.076	-0.106
				(0.440)	(0.512)	(0.514)
Communist country	2.490***			1.699***		
	(0.431)			(0.489)		
Satellite country				0.763		
				(0.519)		
Post	-0.442***	-0.155		-0.380**	-0.156	
	(0.143)	(0.162)		(0.158)	(0.163)	
Other controls:						
Western original language dummy	Yes	Yes	Yes	Yes	Yes	Yes
Communist original language dummy	Yes	Yes	Yes	Yes	Yes	Yes
Population and GDP controls	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects * Western original language		Yes	Yes		Yes	Yes
Country fixed effects * Communist original language		Yes	Yes		Yes	Yes
Year fixed effects * Western original language			Yes			Yes
Year fixed effects * Communist original language			Yes			Yes
R-Squared	0.664	0.918	0.926	0.757	0.920	0.928
Observations	963	963	963	963	963	963
An observation is a country, year, original language (Western or Communist)						

Notes: This table replicates columns 5-10 of Table 1, but uses the dependent variable log number of pages translated rather than log number of titles translated. All columns are difference-in-differences OLS regressions using annual data for the period 1980-2000, with Communist Europe as the region of interest and Western Europe as the comparison group. Standard errors, in parentheses, are clustered at the country level. * p<0.10, ** p<0.05, *** p<0.01.

Appendix Table C: The Bertrand et al. critique: Two-period difference-in-differences

Dependent varable: log average number of translations						
	(1)	(2)	(3)	(4)	(5)	(6)
Translations from Western original languages in:						
Communist country * post	1.389***	2.193***	2.001***	0.443*	1.224**	1.038*
	(0.247)	(0.239)	(0.384)	(0.258)	(0.484)	(0.516)
Satellite country * post				1.366***	1.008**	1.084**
				(0.294)	(0.390)	(0.514)
Communist country	-2.665***	-1.542***		-3.403***	-3.123***	
	(0.481)	(0.464)		(1.062)	(0.890)	
Satellite country				1.066	1.729**	
				(1.087)	(0.673)	
Post	0.271***	-0.055	0.080	0.271***	0.052	0.113
	(0.092)	(0.106)	(0.204)	(0.094)	(0.121)	(0.201)
Translations from Communist original languages in:						
Communist country * post	-1.213***	-0.370*	-0.562	-1.568***	-0.748*	-0.934*
	(0.212)	(0.194)	(0.356)	(0.410)	(0.429)	(0.537)
Satellite country * post				0.512	0.154	0.230
				(0.432)	(0.305)	(0.553)
Communist country	1.783***	2.857***		1.813***	2.043***	
	(0.330)	(0.413)		(0.448)	(0.490)	
Satellite country				-0.044	0.619	
				(0.409)	(0.549)	
Post	-0.193*	-0.556***	-0.422*	-0.193*	-0.450***	-0.389*
	(0.110)	(0.132)	(0.232)	(0.112)	(0.145)	(0.227)
Other controls:						
Western original language dummy	Yes	Yes	Yes	Yes	Yes	Yes
Communist original language dummy	Yes	Yes	Yes	Yes	Yes	Yes
Population and GDP controls		Yes	Yes		Yes	Yes
Country fixed effects * Western original language			Yes			Yes
Country fixed effects * Communist original language			Yes			Yes
R-Squared	0.641	0.755	0.982	0.698	0.838	0.986
Observations	104	100	100	104	100	100
An observation is a country, pre/post, original language (Western or Communist)						

Notes: All columns are difference-in-differences OLS regressions using using data aggregated to the pre/post collapse level (as described in Section 5.5), with Communist Europe as the region of interest and Western Europe as the comparison group. The regression equations estimated are versions of equation (2). "Pre" values are the average over the years 1980-89; "post" values are the average over the years 1992-2000. See the notes to Table 1 for the Communist and Western countries used (note Iceland is also included in columns 1 and 4) and the Communist and Western original languages. *Population and GDP controls* are the logs of population and of real GDP per capita. Standard errors, in parentheses, are clustered at the country level. * p<0.10, ** p<0.05, *** p<0.01.

Appendix Table D: Degree of reform: The effect of the degree of collapse of Communism on book translations

Dependent variable: log number of translations									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Translations from Western original languages interacted with:									
Institutionalized democracy	0.299***	0.436***	0.139**						
	(0.031)	(0.125)	(0.046)						
Political competition				0.336***	0.451**	0.120*			
				(0.036)	(0.158)	(0.060)			
Price liberalization							0.014	0.313	0.119
							(0.259)	(0.246)	(0.151)
Trade and foreign exchange system reform							1.091**	1.324***	0.375**
							(0.376)	(0.263)	(0.172)
Translations from Communist original languages interacted with:									
Institutionalized democracy	-0.100***	0.085*	-0.003						
	(0.022)	(0.043)	(0.031)						
Political competition				-0.117***	0.031	-0.006			
				(0.023)	(0.060)	(0.031)			
Price liberalization							-0.426***	-0.249*	-0.210
							(0.110)	(0.123)	(0.180)
Trade and foreign exchange system reform							0.396**	0.428**	0.278
							(0.146)	(0.148)	(0.236)
Other controls:									
Western original language dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Communist original language dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Population and GDP controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects * Western original language		Yes	Yes		Yes	Yes		Yes	Yes
Year fixed effects * Communist original language		Yes	Yes		Yes	Yes		Yes	Yes
Country fixed effects * Western original language			Yes			Yes			Yes
Country fixed effects * Communist original language			Yes			Yes			Yes
R-Squared	0.489	0.560	0.897	0.501	0.553	0.894	0.691	0.744	0.903
Observations	507	507	507	507	507	507	277	277	277
An observation is a country, year, original language (Western or Communist)									

Notes: All columns are OLS regressions using annual data, predicting the log number of translations. Columns 1-6 are for the years 1980-2000; columns 7-9 are for 1989-2000. The countries used in the analysis are Russia, Belarus, Estonia, Latvia, Lithuania, Moldova, the Ukraine, Bulgaria, the Czech Republic, Hungary, Poland, Romania, and Slovakia. The Communist and Western original languages are given in footnote 12. The variables *Institutionalized democracy*, *Political competition*, *Price liberalization*, and *Trade and foreign exchange system reform* are measures of aspects of the degree of reform from communist centrally-planned economy to democratic market economy. They are described in detail in Appendix II. *Population and GDP controls* are the logs of population and of real GDP per capita. Standard errors, in parentheses, are clustered at the country level. * p<0.10, ** p<0.05, *** p<0.01.

Appendix Table E: Translations by book field: The effect of the collapse of Communism on various fields of book translations

Panel A: Probit predicting non-zero translations in the field (extensive margin)

	Natural Sci	Applied Sci	Social Sci	Arts	Literature	Philosophy	Religion	History
Translations in Communist countries from:								
Communist original 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 original 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 translations in the field, where translations are non-zero (intensive margin)

	Natural Sci	Applied Sci	Social Sci	Arts	Literature	Philosophy	Religion	History
Translations in Communist countries from:								
Communist original 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 original 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 original 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 original 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:								
Western original 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)
Communist original 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)
Western original languages	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Communist original languages	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Population and GDP controls	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

An observation is a country, year, original language (Western or Communist)

Notes: All columns are difference-in-differences regressions (equation (2)) using annual data for the period 1980-2000, with Communist Europe as the region of interest and Western Europe as the comparison group. See the notes to Table 1 for the Communist and Western countries used and the Communist and Western original languages. Post is a dummy for 1991 onwards. *Population and GDP controls* are the logs of population and of real GDP per capita. Standard errors in both panels, in parentheses, are clustered at the country level. * p<0.10, ** p<0.05, *** p<0.01.

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