# Book translations as idea flows: The effects of the collapse of Communism on the diffusion of knowledge*

**Ran Abramitzky**
Stanford University

**Isabelle Sin**
Stanford University

**February 2011**

**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, we show that while translations between Communist languages decreased by two thirds with the collapse, Western-to-Communist translations increased by a factor of seven and reached Western levels. Convergence was full in economically-beneficial fields such as sciences and only partial in culturally-beneficial fields such as history. The effects were larger for more Western-oriented countries. These findings help us understand how institutions shape the international diffusion of knowledge.

JEL Classification: F02, F15, N0, N70, N74, O33, P20, P30, P51, P52

Keywords: international flows of ideas, international transfer of knowledge, globalization, book translations, Communism, transition economies

* We are grateful to Nathan Nunn, Manuel Amador, Kamran Bilir, Nick Bloom, Aaron Bodoh-Creed, Albie Bollard, Tim Bresnahan, Elan Dagenais, Doireann Fitzgerald, Paul Gregory, Avner Greif, Caroline Hoxby, Nir Jaimovich, Seema Jayachandran, Pete Klenow, Naomi Lamoreaux, Ed Leamer, Aprajit Mahajan, Roy Mill, Neale Mahoney, John Pencavel, Luigi Pistaferri, Gary Richardson, Robert Staiger, Alessandra Voena, Romain Wacziarg, Gui Woolston, Gavin Wright, and participants of numerous seminars and conferences for most useful suggestions. We owe special thanks to the Index Translationum team, especially Alain Brion, Mauro Rosi, and Marius Tukaj for providing us with the translation data. Isabelle Sin gratefully acknowledges financial support from the Ric Weiland fellowship.

## 1. Introduction

Economists and economic historians have long recognized the importance of knowledge and ideas for growth and development.[1] Indeed, much of the "new" growth theory highlights idea accumulation as key to explaining accelerating growth.[2] Moreover, the international sharing of ideas plays a huge role: according to one estimate[3], world GDP would be just 6% of its current level if countries did not share ideas.

Nevertheless, there is little empirical work on the international flows of ideas[4] for two main reasons. First, ideas are challenging to measure. Second, it is challenging to capture the two main properties of ideas, namely non-rivalry and disembodiment.[5] Vitally, ideas are non-rival, meaning the use of an idea by one party in no way affects its simultaneous use by another; this non-rivalry drives technological spillovers.[6] Ideas are also disembodied; an idea that is embodied in a purchased piece of equipment may not generate a technological spillover.[7]

We address these challenges by suggesting a new measure of the international flow of ideas and a setting in which to study how policies and institutions shape the international diffusion of ideas. Given the importance of ideas for growth, it is imperative to understand how their spread can be affected by policy and institutional changes.

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, as opposed to the physical books that contain them, 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[8], but they are an important channel for the flow of ideas between linguistically

[1] See, for example, Kuznets (1966), Mokyr (2003, 2009, 2010), Romer (1990, 1993), Grossman and Helpman (1991), Jones (2005), Klenow (2005), and Jones and Romer (2010).
[2] See, for example, Romer (1986, 1990), Helpman (2004), and Jones (2001, 2005).
[3] Klenow and Rodriguez-Clare (2005).
[4] Paul Romer makes this point forcefully in his 2010 paper.
[5] Note that measures such as trade, migration, and foreign direct investment are informative in many ways, but they measure embodied flows of ideas, which are not as such non-rival.
[6] See, for example, Romer (1986, 1990, 2010), Helpman (2004), and Jones and Romer (2010).
[7] See, for example, Jaffe and Trajtenberg (1999).
[8] An alternative measure 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, 2002, and Jaffe, Trajtenberg and Fogarty 2000). Foreign research and development (R&D) was also suggested

distinct groups, and are both quantifiable and classifiable by field and specific content. 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.

The setting we propose is the collapse of Communism in Eastern Europe, which is a natural place to identify the effect of policy on idea flows. The collapse of Communism was a large shock that swiftly moved countries from nearly complete isolation from Western ideas to full openness. Because our measure of idea flows captures a broad range of ideas, 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 Communism had a stronger effect on ideas that contain more "useful knowledge" (as coined by Mokyr, 2003) for economic development than on "less-useful" knowledge with more cultural content.

More broadly, we examine 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). The 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.

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 assess how Communism affected idea flows.[9] Second, while it is known that Communist Europe had low inflows of Western knowledge and ideas (e.g. Garton Ash, 1995, Harrison, 2003, 2005), the role of differences in preferences for ideas between East and West has never been clear. Instead, the emphasis is typically on the stronger censorship of Western ideas in Eastern Europe. Our

---

as a measure of knowledge spillovers (Coe and Helpman 1995, Keller 2002), as well as international trade and foreign direct investment (Keller 2004, 2009). Book translations are a complementary measure.

[9] 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 2003). There is also a literature exploring the "natural experiment" created by the collapse of Communism in Eastern Europe and elsewhere to learn about individuals' preferences and behavior (e.g. Munich et al 2002, Fuchs-Schündeln and Schündeln 2005, Alesina and Fuchs-Schuendeln 2007, Fuchs-Schuendeln 2008, Abramitzky 2008). However, this paper is the first to test the effect of the collapse of Communism on the flow of information and ideas.

empirical strategy sheds light on the role of preferences. To the extent we see convergence in translation rates to Western levels post collapse, we can conclude that Eastern preferences were either similar to Western ones or became like them quickly following the collapse. If there was no convergence despite the end of censorship, then we can conclude that Eastern European preferences for ideas differ from Western preferences.

We begin by comparing translation patterns in former Communist countries before and after the collapse. 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. To shed further light on the role of preferences in the flow of ideas, we first compare translation patterns in the Soviet countries with patterns in the more western-oriented Satellite countries. Second, we test the degree of convergence in translation flows between Eastern and Western Europe post collapse. We then test the effect of the collapse and the degree of convergence to the West of book translations in different fields, to better understand what type of ideas are more likely to increase once information restrictions are lifted.

We use newly-collected data on almost 800,000 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 present four main sets of results. First, we use graphs and regression analysis and show that when Communism collapsed the overall flow of translations from Western Europe into the Soviet satellites increased by a factor of seven. At the same time, we document an offsetting two-third decrease in Communist-to-Satellite translations. These large magnitudes emphasize just how much the flow of ideas was affected by the collapse of Communism. In contrast, translations of Western titles into the former Soviet countries, which had less Western orientation than the Satellites, barely increased. We further show that these findings are not driven by changes in the publishing industry that allowed a larger total number of books to be published. In fact, the total number of books published in Communist countries didn't increase with the collapse of Communism, and may have actually declined. Another striking pattern that emerges is that Western European countries translated very little from Communist languages, both before and after the collapse of the Eastern Bloc. Second, we show that whereas the Satellite countries converged to Western countries in their level of translations of Western titles, Soviet countries did not. This suggests that non-Soviet Eastern Europe has similar preferences for ideas to the

West but the former Soviet Union does not. The Satellite countries not only started to catch up on translation of older titles (stocks), but they also increased their rate of translation of current titles (flows) and converged to Western levels of these translations. This suggests both a convergence in the flow of new ideas, and a catching up on the stock of ideas. Interestingly, even in the Satellite countries, translations of Communist titles remained higher that in the West.

Third, we show that the effect of Communism's collapse was larger for the more "ideological" book fields. Translations of titles in fields such as religion, philosophy, and the social sciences, were highly suppressed under Communism because they were perceived as especially threatening to the Communist regime. For instance, religion was considered an enemy of the Communist regime and was firmly suppressed under it. Once Communism collapsed, translations of titles in religion increased dramatically, especially Christian titles. Similarly, translations in philosophy and the social sciences (especially economics) jumped post collapse. In contrast, the study of exact sciences was strongly supported by Communist governments, and was important for the USSR's international standing. Such translations, especially in mathematics, geology and physics, increased relatively little from the West when Communism collapsed, and decreased the most of any field between Communist countries.

At the same time, given censorship was lifted with the collapse of Communism, remaining differences between Eastern and Western Europe post collapse are likely to reflect differences in tastes between East and West. We find that 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 fields of history and arts did not converge to their levels in the West. That is, fields that contain more "useful knowledge" and lend themselves more directly to economic development converged more than fields that contain more cultural information and are relatively culture-specific, which suggests economically-beneficial foreign ideas are the most likely to be adopted.

Finally, we conduct title- and author-level analyses to test how the collapse of Communism affected translations of especially important titles, namely titles that were considered highly influential in the West, and a sample of Western Europe's most translated titles. For this purpose, we augment our translation data on these titles with more detailed information on the book and its author. We find that most of these titles were not published in translation anywhere in Communist Europe prior to the collapse of Communism, but after the

collapse Eastern Europe translated them at rates more comparable to Western Europe. Furthermore, we examine the translation of titles whose authors voiced anti-Communist opinions, titles published in the Communist era, and those written by Nobel laureates, all of which were more likely to pose threats to the Communist regime than other important titles. Such titles were translated at lower rates in Eastern Europe pre collapse, and experienced larger increases in translation post collapse than did other influential titles.

Our findings are consistent with a dramatic increase in the flow of Western ideas into former Communist countries when Communism collapsed, and with a decline in the flow of ideas between Communist countries. The effect of the collapse of Communism on the flow of ideas reflected both high suppression of idea flows during the Cold War and East/West differences in preferences for ideas. For example, the higher effect of the collapse on translations in philosophy and economics relative to exact sciences illustrates the role of severe suppression. The convergence in Western ideas between the more Western-oriented Satellite countries and Western Europe, and the lack of convergence between the more Russian-oriented Soviet countries and Western Europe illustrates differences in tastes for Western ideas. Similarly, the remaining differences in translations between East and West in some fields, and between Soviet and the West in all fields, illustrate how cultural differences persisted even after Communism collapsed.[10]

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 presents our analysis of the effect of the collapse on influential titles. Section 8 discusses further translations as a measure of the diffusion of ideas and concludes.

[10] This illustration is consistent with the literature showing how history can shape culture (e.g. Greif 1994, Guiso, Sapienza, and Zingales 2008, Nunn and Wantchekon 2009, and Fletcher and Iyigun 2010; see also the surveys by Tabellini 2007 and Nunn 2009 on the historical origins of culture).

## 2. Data

### 2.1. The flow of book translations across countries

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, 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%)[11]; History, Geography, Biography (including memoirs and autobiographies, 6.6%).[12]

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.[13] The Western European countries in our sample are: Austria, Belgium, Switzerland, Denmark, Spain, Finland,

[11] Literature also includes the very small category Philology and Linguistics.
[12] For a detailed description of the subfields that make up each UDC field, see https://www.unido.org/library/help/udc.html.
[13] 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.

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, 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.

### 2.2. Translation of influential titles

To test the effect of the collapse of Communism on the most influential titles, we extract from the Index Translationum data the translation patterns of titles considered important and influential in the West. The titles selected, listed in the Influential Titles Online Appendix[14], are those given in any one of three lists. The first is the Central and East European Publishing

[14] The online appendix can be found on the authors' websites.

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.[15] The third is National Review's best 100 non-fiction books of the 20th century.[16] 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.

To illustrate, one of our influential titles is Isaiah Berlin's 1969 book, "Four Essays on Liberty". Berlin was a philosopher and historian of ideas, was one of the leading liberal thinkers of the 20th century, and featured prominently in the intellectual and ideological battle against Communism during the Cold War. His book, originally written in English, was translated before 1989 by Western European countries, but was only translated after the collapse of Communism in former Communist countries. Similarly, F.A. von Hayek's "The Road to Serfdom", an influential exposition of classical liberalism and libertarianism, was translated widely in Western Europe in the early 1980s, but not in Communist Europe until 1989. In contrast, Karl Marx's "Das Kapital" was translated prior to the collapse in both Communist and Western countries. The translation dates in Western and Communist Europe of these three titles are illustrated in Figure 1.

## 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.

[15] The "Board's List", available at www.randomhouse.com/modernlibrary/100bestnonfiction.html.
[16] http://www.nationalreview.com/100best/100_books.html

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 extent to which they had a 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. Figure 2 is a

map showing the Soviet countries, Satellites plus Baltic states, and the Western European countries in our analysis.

### 3.2. Restricting information flows: publishing and censorship under Communism

Prior to Gorbachev's reforms, book publishing in the Soviet Union[17] was a state-run industry that produced vast numbers of books with little regard for consumer demand.[18] 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 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.[19]

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. 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.

[17] 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.
[18] Skelly and Stabnikov (1993).
[19] Walker (1978).

Additional centralized planning occurred that was related to the publication of translations.[20] 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.[21]

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 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

[20] Walker (1978).
[21] Bernstein et al. (1971).

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.[22]

## 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 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 ideas. Second, we compare translation patterns in Eastern relative to Western Europe. The premise here is that there were no censorship post collapse, so that the degree 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 the type of ideas, such as translations of various book fields, and translations of titles that posed more or less threat to the regime.

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

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

[22] Skelly and Stabnikov (1993).

where $Y_{it}$ is the (log) number of book translations in country $i$ in year $t$.[23] $Post_t$ is a dummy variable for the years 1991 and onwards,[24] and its coefficient measures the change in translation patterns post collapse. Our control variables $X_{it}$ include population and real GDP per capita. In some specifications, we include country fixed effects to account for differences across countries that are constant over time.

We also estimate difference-in-differences models that compare the pre- and post-collapse translation flows into Communist countries with flows into Western European countries. The inclusion of Western European countries as a comparison group accounts for other common factors that may have affected translation patterns over the sample period 1980-2000. The basic difference-in-differences specification is:

$$Y_{it} = \beta_0 + \beta_1 Communist_i \times Post_t + \beta_2 Communist_i + \beta_3 Post_t + \beta_4 X_{it} + \varepsilon_{it} \quad (2)$$

where $Y_{it}$ and $Post_t$ are as before, $Communist_i$ is a dummy variable for whether the translating country was a former Communist country, and $Communist_i \times Post_t$ is the interaction between these two variables. The coefficient on the latter variable measures the effect of the collapse of Communism on translations into Communist countries (relative to into Western European countries). In addition to specifications that control for population and GDP and include country fixed effects, we also run specifications with year fixed effects 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.[25] In Section 5.6 we show the main results are robust to also including translations into secondary languages, and to using the number of pages translated as an alternative dependent variable.

[23] The trivially few observations with zero values are dropped.
[24] 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).
[25] "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.

After testing the effect of the collapse of Communism on overall translations in Section 5.1, we investigate heterogeneity in the magnitude of the effect across different types of idea to shed light on what sorts of ideas were more restricted during the Communist era and on what determined the degree of convergence to the West post-collapse. We begin in Section 5.2 by allowing the effect to differ for translations from Western and Communist languages, expecting mainly translations from Western languages, which weren't originally written under a Communist government, to increase after the collapse of Communism.

To shed light on what determined convergence between East and West, in Section 5.3 we test whether the effect of the collapse was bigger for the Satellite countries, which had a more Western orientation, than for the Soviet countries. Then, in Section 5.4, we test whether the convergence we document reflected catching up in translating old titles (stocks) or a convergence to Western levels in translating current titles (flows).

In Section 5.5, we show that the changes in translation patterns that occurred were not simply driven by general changes in the book industry, as total publications of original books in Communist countries did not increase after Communism's collapse.

We test for heterogeneity of the effect across book fields in Section 6. To further shed light on the role of isolation during the Cold War, we test whether the effect of the collapse was bigger for more "ideological" fields, such as philosophy and economics, and whether it was bigger for titles that were perceived to be more threatening to the regime. We note that, given censorship was lifted with the collapse of Communism, remaining differences between Eastern and Western Europe post collapse reflect either pre-existing differences in tastes between East and West, or a lack of convergence in their tastes post collapse. We find that in fields such as history and arts, translations of Western titles did not converge to Western levels, suggesting a lack of Eastern interest in the Western version of these fields, perhaps because they are relatively culture specific.

Section 7 analyzes the most influential Western titles of the 20$^{th}$ century to test the extent to which translations of specific authors and titles considered particularly threatening to Communism increased more than translations of other titles with the collapse of Communism.

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

Figure 3 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.[26] [27]

This figure shows that before the collapse of Communism, Western European countries had much higher translation rates into their main language than Communist countries, and these translations were almost entirely from Western European languages. The 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.

### 5.1. Changes in overall translation patterns

We first estimate a simple OLS regression as in equation (1), predicting the number of book translations in country *i* in year *t*. The first three columns of Table 1 present the regression results. The first column is a basic specification with no additional controls. The second column adds controls for log population and log GDP per capita. The third column adds country fixed

[26] 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.

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

effects. We see that translations in Communist countries rose when Communism collapsed. We note that the main coefficient in the specification without controls is positive but statistically insignificant, but we show next that this simply masks opposite patterns of translations from Western and Communist languages. When controls for population and GDP per capita are added, the coefficient on $Post_t$ is large and significant, even when country fixed effects are included. Translations in Communist countries increased by 120% ($e^{0.799}$-1) after the collapse of Communism (column 3).

In column 2, where country fixed effects are not included, the coefficients on population and GDP per capita have the expected positive sign and are significant, indicating richer and more populous countries translate more. When country fixed effects are included, the coefficient on population becomes large and negative, but this is based on little variation, and is probably driven by the population decreases that occurred in many of the Communist countries post collapse.[28]

### 5.2. Changes in translations from Western and Communist languages

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

For this reason, we allow the effect of the collapse of Communism to differ between translations from Western languages and those from Communist languages.[29] Specifically, we include a dummy variable for whether the translation is from a Western European language ($WesternLang_j$), and its converse, a dummy for the translation being from a Communist language ($CommunistLang_j$):[30]

[28] In the specifications with country fixed effects, the coefficients on population and GDP per capita are identified off within-country correlation between population and translations.

[29] Results are unchanged when we focus on translations from the major languages only, namely from English and Russian.

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

$$\left\{\begin{array}{l} Y_{ijt} = \beta_{1a} Post_t \times WesternLang_j + \beta_{1b} Post_t \times CommunistLang_j \\ \quad + \beta_{2a} WesternLang_j + \beta_{2b} CommunistLang_j + \beta_3 X_{it} + \varepsilon_{ijt} \end{array}\right\} \quad (3)$$

where $Y_{ijt}$ is the (log) number of book translations from either a Communist language or a Western European language, and $j$ denotes Communist or Western original language. The variables of interest in these specifications are the interactions $Post_t \times WesternLang_j$ and $Post_t \times CommunistLang_j$, whose coefficients measure the effect of the collapse of Communism on translations from Western or Communist languages into Communist countries. Our control variables $X_{it}$ include population, and GDP per capita; we also include specifications that fully interact the dummies for whether the original language is Communist or Western European with country fixed effects. Under the hypothesis that Communism suppressed information flows from Western into Communist Europe, we expect $\beta_{1a}$ to be positive. The expected sign of $\beta_{1b}$ is less clear, but is expected to be negative if Communist countries substituted Communist translations for Western ones pre collapse.

We next estimate difference-in-differences regressions that use Western Europe as the comparison group. To allow translation patterns to differ between translations from Western languages and those from Communist languages, we in fact estimate the following regression:

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

where the variables of interest in these specifications are the interactions $Communist_i \times Post_t \times WesternLang_j$ and $Communist_i \times Post_t \times CommunistLang_j$, whose coefficients measure the effect of the collapse of Communism on translations from Western or Communist languages into Communist countries (relative to into Western European countries).

Column 4-6 of Table 1 present the OLS estimation results of regression equation (3), and columns 1-5 in Table 2 present the difference-in-differences estimates of equation (4). Table 1 suggests that translations by Communist countries from Western languages increased

dramatically, by 480% ($e^{1.761} - 1$), but translations from fellow Communist countries fell sharply, by 69%.

Because translations tended to increase in Western Europe during the 1990s, the difference-in-difference estimates presented in Table 2 are generally smaller than the OLS estimates, but they are still economically large and statistically significant. Specifically, the first column of Table 2 is a basic difference-in-differences specification with no additional controls. We see that, as suggested by the graphs, Communist translations from Western European languages rose by 260% when Communism collapsed, whereas translations between Communist countries fell by 71%. These large magnitudes demonstrate just how dramatically the types of translated titles available in Eastern Europe shifted when Communism collapsed.

The second column of Table 2 shows that these effects are robust to controlling for log population and log GDP per capita.[31] The third column adds country fixed effects interacted with Communist and Western original languages; the main results hold and remain significant. The fourth column is the most demanding specification. It allows translations from Communist languages and from Western European languages to be on different linear time trends in each country, and identifies the effect of the collapse of Communism off changes in translations over and above these time trends. The main results hold up, though the decrease in translations from Communist languages decreases in significance. Note, however, that this specification may in fact underestimate the effect of the collapse of Communism on translations because the changes that constituted the collapse of Communism were many and occurred over several years around the date we attribute to the collapse, so some of these changes are likely falsely attributed to the time trends in this specification. The fifth column includes both country and year fixed effects; the results are unchanged.

Moreover, column 3 of Table 2 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.

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

### 5.3. Changes in translations in Soviet and Satellite countries

We next examine how the difference in East/West orientation between Soviet and Satellite countries reveals itself in their translation patterns. We note that as an alternative measure for Western-orientation among Communist countries, we use the distance of a country from Western Europe, which proxies for cultural distance from the West. Results (not shown) suggest a similar pattern: Western-to-Communist translations increased post collapse more, and Communist-to-Communist translations declined more, in former Communist countries located closer to Western Europe.[32] Specifically, we estimate the following specification:

$$\left\{\begin{array}{l} Y_{ijt} = \beta_{1a} Satellite_i \times Post_t \times WesternLang_j + \beta_{1b} Satellite_i \times Post_t \times CommunistLang_j \\ \quad + \beta_{2a} Post_t \times WesternLang_j + \beta_{2b} Post_t \times CommunistLang_j \\ \quad \beta_{3a} Satellite_i \times WesternLang_j + \beta_{3b} Satellite_i \times CommunistLang_j \\ \quad + \beta_{4a} WesternLang_j + \beta_{4b} CommunistLang_j + \beta_5 X_{it} + \varepsilon_{ijt} \end{array}\right\} \quad (5)$$

where $Satellite_i$ is a dummy variable for whether the translating country is a Satellite country. The main coefficients of interest are $\beta_{1a}$ and $\beta_{1b}$, which capture whether translations from Western European and Communist languages respectively increased more in the Satellites than in the Soviet countries when Communism collapsed.

To examine these translation patterns relative to translation patterns in Western Europe, we run the difference-in-differences version of this OLS regressions equation:

[32] 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.

$$\left\{\begin{aligned} Y_{ijt} = {} & \beta_{1a1} Communist_i \times Post_t \times WesternLang_j + \beta_{1a2} Communist_i \times Satellite_i \times Post_t \times WesternLang_j \\ & + \beta_{1b1} Communist_i \times Post_t \times CommunistLang_j + \beta_{1b2} Communist_i \times Satellite_i \times Post_t \times CommunistLang_j \\ & + \beta_{2a} Post_t \times WesternLang_j + \beta_{2b} Post_t \times CommunistLang_j \\ & + \beta_{3a1} Communist_i \times WesternLang_j + \beta_{3a2} Communist_i \times Satellite_i \times WesternLang_j \\ & + \beta_{3b1} Communist_i \times CommunistLang_j + \beta_{3b2} Communist_i \times Satellite_i \times CommunistLang_j \\ & + \beta_{4a} WesternLang_j + \beta_{4b} CommunistLang_j + \beta_5 X_{it} + \varepsilon_{ijt} \end{aligned}\right\} \quad (6)$$

The main coefficients of interest are now $\beta_{1a2}$ and $\beta_{1b2}$.

Columns 7-9 of Table 1 present the results from estimating OLS equation (5), and columns 6-10 of Table 2 present results from estimating difference-in-differences equation (6). The OLS and the difference-in-differences estimates show similar results, and again the magnitudes of the changes are generally greater in the OLS. We see 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 (620% in the OLS specification, i.e. increased by a factor of seven), 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. A comparison of column 6 with column 7 reveals that differences in income can account for some but not all of the difference between the post-Communism translation experiences of the Soviet countries and those of the Satellites.

To test how the effect of the collapse of Communism changed over time and how similar Eastern and Western Europe become, we run a version of column 7 of Table 2 that replaces *Post* and its interactions with year dummies (for each year 1989 and onwards) and their equivalent interactions. Figure 4A 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. Figure 4B shows that the negative effect of the collapse on translations between Communist countries increases until 1991, at which time it largely stabilizes.[33] [34]

[33] Appendix Figures 1A and 1B show the equivalent graph where we also include country fixed effects in the regression equation (equivalent to column 3 of Table 2). The effects are similar and more precisely estimated, but there it is not possible to compare Communist translations with the Western level of translations.

### 5.4. Convergence in translation flows or catching up on stocks?

As mentioned earlier, Figure 3 suggests that translations of Western titles in Satellite countries nearly converged to their levels in Western countries. We note that this figure understates convergence because it doesn't control for GDP, which was lower in Communist countries. Indeed, column 7 of Table 2 shows that Satellite translations of Western titles post collapse are actually greater than Western translations of these titles after controlling for population and GDP.[35] Translations of Western titles by Soviet countries, however, increased to just 8% of such translations by Western countries.[36]

Figures 4A and 4B illustrate the dynamics of how the translation of Western titles in Satellite countries converged to and even surpassed Western levels, but in Soviet countries did not. The figures also show that translations of Communist titles fell over several years in both Soviet and Satellite countries but remained higher than their level in the West.

This convergence of Communist to Western countries could reflect a convergence in the rate of translation of new titles (flows), or a catching up on older titles missed out on during the Communist era (stocks). We now examine this issue.

Our data set does not lend itself easily to infer the years in which the original titles were published. However, for the years 1985, 1993 and 1996, we sampled over 1,400 translations from Western languages, identified their original dates of publication from online sources, and used these to estimate the age distribution of translations of Western titles.

We define flows as titles translated within 15 years of their publication, but our findings hold for other cutoffs (10, 20, 30 years). We find that such titles make up the majority of translations in most fields.[37] 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. We adjust the total number of translations using these percentages corresponding to each field, and repeat our main analysis for both flows and stocks.

---

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

[35] $0.687 + 1.337 - 3.249 + 1.777 > 0$

[36] Specifically, the coefficient on *Communist countries* for translations from Western languages is -3.249, and its interaction with post is 0.687, so Soviet translations of Western titles remain at 8% ($e^{-2.562}$) of Western levels.

[37] Literature is the primary exception, where flows account for roughly half the titles translated.

Table 3 shows our difference-in-differences regressions separately for flows and stocks. Both translations of stocks and flows of Western titles show large increases in Communist Europe upon the collapse of Communism. This suggests Communist countries both began catching up on older titles, and increased their rate of translation of current titles. Moreover, Communist countries overtook the West in their translation of both newer and older titles. This suggests both a convergence in the flow of new ideas, and a catching up on older ideas.

To illustrate these phenomena graphically, Figure 5 replicates Figure 3 for flows and stocks separately. The figure illustrates how the Satellite's translations of new titles almost converge to their Western levels even without controlling for GDP, and their translations of old titles overshoot the levels in the West.

### 5.5. The collapse of Communism did not affect original publications of books

One potential concern 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 and difference-in-differences specifications such as in equations (1) and (2) with the total number of original books published as the dependent variable.[38] 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, 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.

[38] 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.

### 5.6. Further robustness checks

*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 A 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 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 B shows the equivalent difference-in-differences regressions to Table 2, 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 C, which also describes the data and empirical strategy used in this analysis, that Communist countries that transitioned more away from Communism increased their translations of Western European titles more. 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 translations into countries' secondary languages*

As a robustness check, we also include translations into secondary languages. 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. As shown in Appendix Table D this does increase translations of Western titles in the Soviet countries post collapse, but they still lag behind such translations in the Satellite countries.

*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, shown in Appendix Table D.[39]

*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.

[39] 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).

## 6. The effect of the collapse by book field

In this section we investigate how the effect of the collapse of Communism on book translations varied by field. First we show the change in translations per capita over time graphically for each of the eight book fields Philosophy, Religion, Social Science, Exact Science, Applied Science, Arts, Literature, and History. We then run difference-in-difference regression specifications for each of the eight fields separately, to test which fields were affected the most. Finally, we disaggregate further each of the eight fields by searching for the most commonly used keywords in the book titles, grouping these keywords by subfield such as mathematics, physics and chemistry, and testing the effect of the collapse of Communism on each subfield.

### 6.1. Graphical evidence

The eight panels of Figure 6 show translation patterns for each book field. Translations from the West into Communist countries jump in all fields, and in Satellite countries converge to or even overtake Western translations in every field but Arts and History. It is interesting to note that translations of Religion titles were almost non-existent before the collapse. This is consistent with religion being considered an enemy of Communism, and with the fact religious freedom was severely restricted in most Communist countries.[40] When Communism collapsed, Satellites' translations of Religion books increased dramatically from Western European languages, and somewhat from other Communist sources. The rapidity of the increase suggests demand for these translations existed under the Communist regime, but was unable to be satisfied. Soviet countries' translations of religious books from Western European languages, however, increased only a little, again reflecting their Russian rather than Western orientation.

In contrast, Communist countries before the collapse already translated Exact Science titles in levels similar to the West, although most of their translations came from fellow Communist countries. This is consistent with research in Exact Science receiving a lot of governmental support under the Communist regime, probably because it tended to be unthreatening to Communism and was vital for Soviet power on the world stage. Perhaps surprisingly given the advanced state of Exact Science in Communist Europe, Western translations of Communist Exact Science titles were always very low. When Communism

[40] Riasanovsky and Steinberg (2005).

collapsed, Exact Science translations between Communist countries fell away, but were gradually replaced by translations from Western European languages.

More generally, Satellite translations of Western titles converged to Western levels in all fields except for Art and History. Before the collapse of Communism, differences in translation rates between Eastern and Western Europe reflected both the effect of censorship in the Communist countries and differences in tastes. However, when the Communist regime collapsed official censorship was abolished, thus post-collapse differences are likely indicative of consumer preferences that differ considerably between the two halves of Europe. Titles in Arts and History seem likely to contain pervasive culture-specific aspects, which makes differences in preferences probable and explains the lack of convergence of their translations post collapse.

### 6.2. Regression analysis by book field

We next estimate our second specification from Table 2 separately for translations in each of the eight fields. We run for each field a difference-in-differences regression predicting the log of translations plus one.[41] Figure 7 plots the coefficients on the two interactions of interest against each other. The axes in the figure are the coefficients of interest multiplied by 100, which can approximately be thought of as percentage changes in translation when Communism collapsed.[42]

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

The axes, which show the extent to which translations "rebounded" when Communism collapsed, can be approximately thought of as the extent to which the translation of such ideas was suppressed under Communism. Religion translations, in the top right hand corner of the graph, were most highly suppressed under Communism. Natural Science translations, in the lower left hand corner, were the most encouraged under Communism from both types of

[41] 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 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.

[42] When we allow the effect of the collapse of Communism to differ for Soviet countries relative to Soviet satellites (figure not presented), the relative positions of the subjects are similar for the two types of Communist countries, though the points for the Soviet countries are all shifted to the left.

language. However, the comparatively small increases in translations of Western Arts and History titles likely reflect a lack of taste for these books in Eastern Europe rather than a lack of suppression of them under Communism. Another subject of particular interest is Social Science, which was relatively suppressed from Western European sources under Communism, but was among the most encouraged from Communist languages. This seems to suggest that Communist countries had their own version of Social Science, but they substituted away from it and towards the Western version when Communism collapsed.

### 6.3. Regression analysis by book subfield

While our translation data divide titles into eight aggregate fields, we disaggregate further each of these eight fields by searching for the most commonly used keywords in the book titles, and grouping these keywords by subfields such as mathematics, physics and chemistry. We then test the effect of the collapse of Communism on each subfield. 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).[43] To select the keywords for which we search in each field, we first identified the words that appear most frequently in titles translated in that field (e.g. physics, chemistry, earth, and universe). We then discarded those that select titles that are not primarily on a consistent topic. To the remaining informative common keywords we added related keywords that also returned consistent topics.[44] We then aggregated our keyword searches into cohesive subfields.[45] [46] The percentage of titles captured by this process ranges from roughly 20% to 55% in the

[43] Our results for the subfields identified by keyword searches are not 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.

[44] Note our searches also capture variant forms and spellings of the keywords (e.g. British and American spellings), and obvious typographical errors.

[45] The aggregated subfields for each field are as follows. For Religion and Theology: Christian, Judeo-Christian, Judaism, theology, Islam, Eastern religions; for Education, Social Science and Law: economics, communism, political science, sociology and anthropology, and education; for Natural and Exact Science: mathematics, physics, chemistry, biology, geology; for Applied Science: computers, business, medical, engineering, food, gardening. We do not present results from subfield keyword searches in the fields Arts, Games and Sports, Literature, History, Geography, and Biography, or Philosophy and Psychology because they are largely uninformative.

[46] Notice individual titles might be captured by more than one search, in which case they are attributed to both.

various fields.[47] 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.

To test which subfields jumped the most post collapse, within each field we run a difference-in-differences regression that compares the effects across constituent subfields. 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 8, which suggests that even within fields, certain subfields increased more post collapse. We find that within the field of Exact Science, mathematics titles jumped less than titles in geology, physics, chemistry and especially biology. Within the Social Science field, books related to economics jumped the most post collapse. Medical titles jumped more than any other titles in the Applied Science field; engineering titles jumped the least. Within the field of Religion, books with Christian-related words in their titles jumped more post collapse than Eastern Religion books and books with Jewish-related or Islamic-related words in their titles. Titles in the field History, Geography and Biography were difficult to categorize by keyword because of the manner in which such books are titled. However, we were able to isolate early history titles (approximately the prehistoric period until the renaissance), a period about which we expect Western and Eastern Europe to largely agree, and indeed Communist translations of this category increased very little.

## 7. The effect of the collapse on translations of influential titles

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

[47] 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".)

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.

A glance at the countries that translated the influential titles in the pre and post periods reveals their translation in the Communist countries greatly increased after the collapse of Communism. Furthermore, 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 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. Our sample of the titles most frequently translated in Western Europe was also strongly affected; 30% were translated in the Communist region in the pre period, and 66% post.

To formally test the effect of the collapse on influential titles, we run the following title- and author-level difference-in-differences specification:[48]

$$\left\{\begin{array}{l} Y_{ijt} = \alpha_i + \gamma_i Post_t + \beta_1 Post_t \times Communist_j \times AntiComm\_Author_i \\ +\beta_2 Post_t \times Communist_j + \beta_3 Communist_j \times AntiComm\_Author_i \\ +\beta_4 Communist_j + \varepsilon_{ijt} \end{array}\right\} \quad (7)$$

where $Y_{ijt}$ is the log of the number of countries translating title $i$ or alternatively author $i$ (plus one). The dependent variable is defined over the two periods pre (1980-1988) and post (1989-2000) and the two regions Western Europe and Communist Europe.[49] $Post_t$ is a dummy for post

[48] OLS regressions that compare Communist countries before and after the collapse yield similar results (not shown).

[49] 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 because some anti-Communist authors were translated as

Communism's collapse, and $AntiComm\_Author_i$ is a dummy for whether the author of title $i$ voiced explicitly anti-Communist opinions. We also include title (or author) fixed effects to test the effect of the collapse within a title (or an 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 $\beta_1$, which tests the extent to which the translations of anti-Communist authors increased more than the translations of other authors post collapse.

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 in Section 2.2. 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 Online Appendix, are more likely to be classics or popular works, and less likely to be academic. 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.

Table 5 presents the estimation results for our preferred sample of countries and years. The first six columns are author- and title-level regressions of influential titles, and the last three columns present results from title-level regressions for the most translated titles. We find that overall Communist translation of titles and authors considered influential in the West and of the most translated titles increased sharply and significantly post collapse.

Furthermore, compared with other influential titles, titles written by Nobel laureates and titles first published during the Communist period were both translated less pre collapse and

---

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 Satellites until 1991.

increased more post collapse. Similarly, titles whose authors voiced anti-Communist opinions were translated less in Communist countries than other influential titles pre collapse (significantly in the author specification), but their translation increased more post collapse to the point they were actually translated more than other titles. These patterns suggest such titles were more threatening to the Communist regime, and later increased in popularity, likely because of their immediate relevance to the recent shift away from Communism.

## 8. Conclusions and discussion

Despite the importance of the international diffusion of ideas for economic growth, idea flows have received limited attention from empirical economists because they are inherently difficult to measure. Furthermore, many proxies for idea flows such as trade, migration, and foreign direct investment do not capture the properties of ideas upon which hinge the predictions of the new growth theory literature, namely non-rivalry and disembodiment. We tackle this empirical challenge by introducing book translations as a measure of non-rival, disembodied idea flows between Eastern and Western European countries. 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 that the collapse of Communism resulted in a sevenfold increase in translations of Western European titles in the Satellite countries, suggesting a huge increase in the inflow of Western ideas, and a threefold decrease in translations of Communist titles, suggesting a decline in the flow of ideas between Communist countries. These patterns also imply a substitution of Satellite countries away from Communist ideas and towards Western ideas.

Furthermore, we find evidence consistent with a surprising degree of cultural convergence of Satellite countries and Western Europe. Given censorship was lifted with the collapse of Communism, these differences likely reflected differences in tastes for certain ideas between Eastern and Western Europe. Since the end of Communism in Eastern Europe, the traditionally more Western-looking Satellite countries have increased their translations of Western European titles to Western levels. We find both an increase in Satellites' translations of older titles and a jump in translations of newer titles, which reached Western levels. These 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 the diffusion of new Western ideas. In contrast, we find that the collapse of Communism had little effect on Western translations in Soviet countries, suggesting the diffusion of Western ideas into these countries was limited.

The effects of the collapse of Communism varied substantially by book field. Specifically, we find evidence consistent with some types of Western ideas flowing more than others into Communist countries. First, Western ideas that were more suppressed under Communism jumped more after the collapse. The translation of religious and philosophy titles was heavily suppressed under Communism and jumped substantially post collapse, but the translation of scientific titles was affected to a much smaller degree. When focusing on a subset of titles considered the most influential, we find titles whose authors voiced anti-Communist opinions, titles written during the Communist era, and titles written by Nobel Laureates were translated less than other titles under Communism, and experienced larger increases in translation post collapse.

Second, 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 Art and History, which are more cultural, did not increase by as much.

A key lesson from our study is that incentives play a major role in shaping the international flow of knowledge. Distortion of these incentives by institutions can have long-lasting effects that can only be remedied by institutional change.

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.[50] Finally, ideas in books must by definition be

[50] 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.

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.

**References**


Abramitzky, Ran, "The Limits of Equality: Insights from the Israeli Kibbutz," *Quarterly Journal of Economics,* 123(3) (2008).

Aghion, Philippe, and Olivier Blanchard, "On the Speed of Transition in Central Europe in Central Europe," *NBER Macroeconomics Annual*, Volume 9 (1994).

Alesina, Alberto, and Nicola Fuchs-Schündeln, "Good Bye Lenin (Or Not?): The Effect of Communism on People's Preferences," *American Economic Review*, 97(4) (2007).

Bernstein, Robert, Mark Carroll, W. Bradford Wiley, and Robert W. Frase, *Book Publishing in the USSR: Reports of the Delegations of U.S. Book Publishers Visiting the U.S.S.R. October 21 – November 4, 1970 August 20 – September 17, 1962*, Harvard University Press, Cambridge, Massachusetts (1971).

Bertrand, Marianne, Esther Duflo, and Sendhil Mullainathan, "How much should we trust differences-in-differences estimates?" *Quarterly Journal of Economics*, 119(1) (2004).

Blanchard, Olivier, "Transition in Poland," *The Economic Journal*, 104:426 (1994).

Blanchard, Olivier, "Theoretical Aspects of Transition," *The American Economic Review, Papers and Proceedings*, 86(2) (1996).

Blanchard, Olivier, *The Economics of Post-Communist Transition.* Oxford, UK: Oxford University Press (1997).

Coe, D.T., and Elhanan Helpman, "International R&D spillovers," *European Economic Review* 39: pp. 859-887 (1995).

Fletcher, Erin, and Murat Iyigun, "The Clash of Civilizations: A Cliometric Investigation," working paper (2010).

Frye, Timothy, and Edward Mansfield, "Fragmenting Protection: The Political Economy of Trade Policy in the Post-Communist World," *British Journal of Political Science* (2003).

Fuchs-Schündeln, Nicola, "The Response of Household Saving to the Large Shock of German Reunification," *American Economic Review*, 98(5) (2008).

Fuchs-Schündeln, Nicola, and Matthias Schündeln, "Precautionary Savings and Self-Selection: Evidence from the German Reunification 'Experiment," *Quarterly Journal of Economics*, 120(3) (2005).

Garton Ash, Timothy (ed), *Freedom for publishing, publishing for freedom: the Central and East European Publishing Project*, Budapest: Central European University Press (1995).

Greif, Avner, "Cultural Beliefs and the Organization of Society: a Historical and Theoretical Reflection on Collectivist and Individualist Societies," *Journal of Political Economy* (1994).

Goldberg, Pinelopi, Amit Khandelwal, Nina Pavcnik, and Petia Topalova, "Trade Liberalization and New Imported Inputs," *American Economic Review* (2009).

Grossman, Gene, and Elhanan Helpman, "Quality Ladders in the Theory of Growth," *Quarterly Journal of Economics* 106 (1991), 557–586.

Guiso, Luigi, Paola Sapienza, and Luigi Zingales, "Long Term Persistence," working paper (2008).

Harrison, Mark, "Soviet Industry and the Red Army Under Stalin: A Military-Industrial Complex?" Les Cahiers du Monde russe 44:2-3 (2003).

Harrison, Mark, "Economic Information in the Life and Death of the Soviet Command System." In *Reinterpreting the End of the Cold War: Issues, Interpretations, Periodizations*, pp. 93-115. Edited by Silvio Pons and Federico Romero. London: Frank Cass (2005).

Helpman, Elhanan, *The Mystery of Economic Growth*, Cambridge, MA: Belknap Press of Harvard University Press (2004).

Jaffe, Adam, and Manuel Trajtenberg, "International Knowledge Flows: Evidence from Patent Citations," *Economics of Innovation and New Technology* (1999).

Jaffe, Adam, and Manuel Trajtenberg, *Patents, Citations and Innovations: A Window on the Knowledge Economy*, Cambridge: MIT Press (2002).

Jaffe, Adam, Manuel Trajtenberg, and Michael Fogarty, "Knowledge Spillovers and Patent Citations: Evidence from A Survey of Inventors," *American Economic Review*, *Papers and Proceedings* (2000).

Jaffe, Adam, Manuel Trajtenberg, and Rebecca Henderson, "Geographic Localization of Knowledge Spillovers as Evidenced by Patent Citations," *Quarterly Journal of Economics* (1993).

Jones, Charles, "Was the Industrial Revolution Inevitable? Economic Growth Over the Very Long Run," *Advances in Macroeconomics*, 1(2), (2001).

Jones, Charles, "Growth and Ideas" in P. Aghion and S. Durlauf (eds.) *Handbook of Economic Growth*, pp. 1063-1111 (2005).

Jones, Charles, and Paul Romer, "The New Kaldor Facts: Ideas, Institutions, Population, and Human Capital," *American Economic Journal: Macroeconomics* (2010).

Jones, Derek (ed.), *Censorship: a World Encyclopedia.* Chicago: Fitzroy Dearborn (2001).

Keller, Wolfgang, "Geographic Localization of International Technology Diffusion," *American Economic Review* (2002).

Keller, Wolfgang, "International Technology Diffusion," *Journal of Economic Literature* (2004).

Keller, Wolfgang, "International Trade, Foreign Direct Investment, and Technology Spillovers," in the *Handbook of the Economics of Innovation*, edited by B. Hall and N. Rosenberg (2009).

Klenow, Pete, and Andrés Rodríguez-Clare, 'Externalities and Growth," *Handbook of Economic Growth*, volume 1A, P. Aghion and S. Durlauf, eds., chapter 11 (2005).

Kuznets, S., *Modern Economic Growth: Rate, Structure and Spread*, New Haven, CT: Yale University Press, (1966).

Mokyr, Joel, *The Gifts of Athena: Historical Origins of the Knowledge Economy*, Princeton University Press, (2003).

Mokyr, Joel, "The Contribution of Economic History to the Study of Innovation and Technical Change" in the *Handbook of Technological Change*, edited by B. Hall and N. Rosenberg (2009).

Mokyr, Joel, *The Enlightened Economy: an Economic History of Britain 1800-1950*, Yale University Press, (2010).

Münich, Daniel, Jan Svejnar, and Katherine Terrell, "Returns to Human Capital Under the Communist Wage Grid and During the Transition to a Market Economy," *The Review of Economics and Statistics,* 87(1) (2005).

Nunn, Nathan, "The Importance of History for Economic Development," *Annual Review of Economics* (2009).

Nunn, Nathan, and Leonard Wantchekon, "The Slave Trade and the Origins of Mistrust in Africa," working paper (2009).

Riasanovsky, Nicholas V., and Mark D. Steinberg, *A History of Russia*, seventh edition, New York: Oxford University Press (2005).

Romer, Paul, "Increasing Returns and Long-Run Growth," *Journal of Political Economy*, 94(5) (1986).

Romer, Paul, "Endogenous Technological Change," *Journal of Political Economy*, 98 (1990).

Romer, Paul, "Idea Gaps and Object Gaps in Economic Development," *Journal of Monetary Economics*, 32(3) (1993).

Romer, Paul, "Which Parts of Globalization Matter for Catch-Up Growth," NBER Working Paper (2010).

Skelly, Eva, and Vladimir Stabnikov, *Russia: a survey of the book market*, The British Council (1993).

Tabellini, Guido, "Culture and institutions: economic development in the regions of Europe," working paper (2007).

Walker, Gregory, *Soviet Book Publishing Policy*, Cambridge University Press, Cambridge (1978).

**Figure 1: Translation dates of three influential titles**

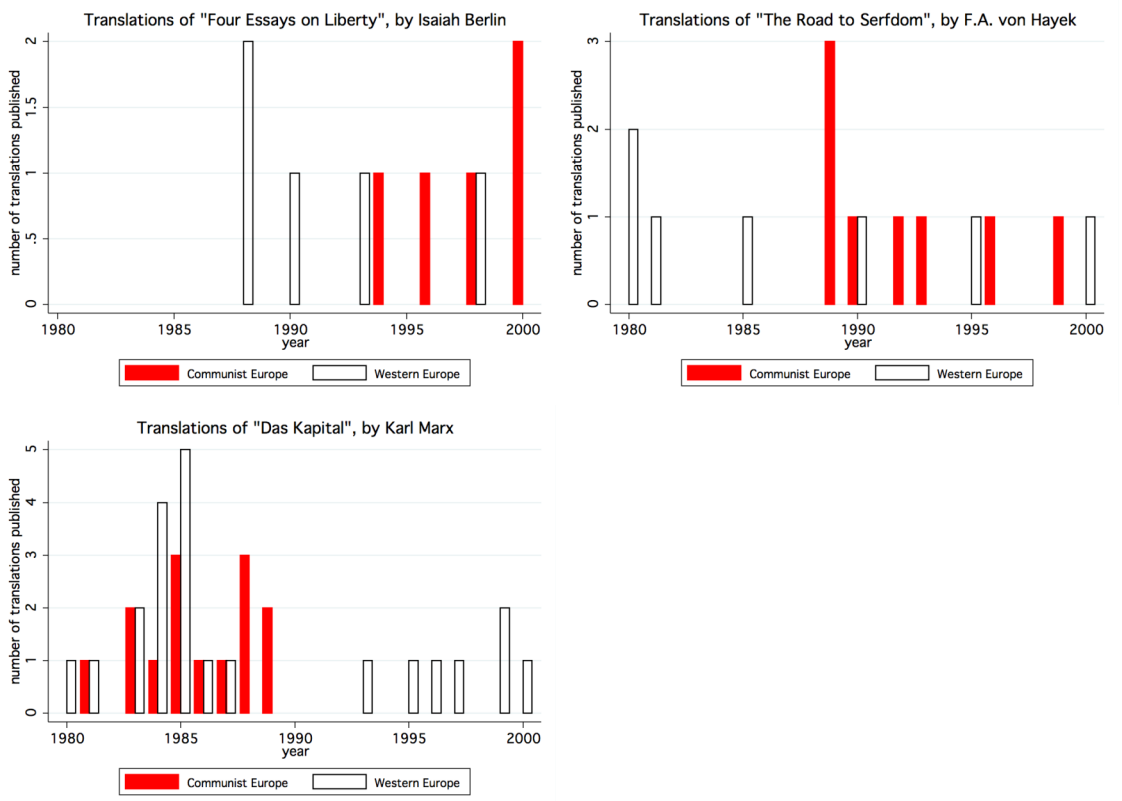



**Figure 2: Communist and Western Europe**

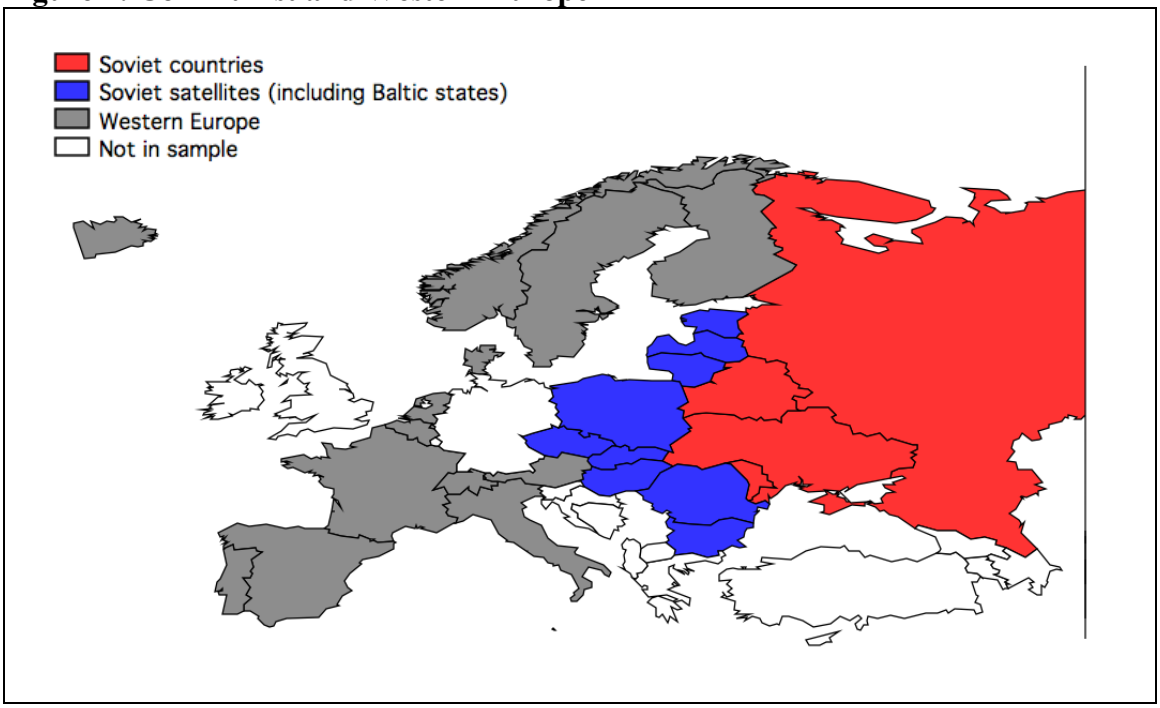
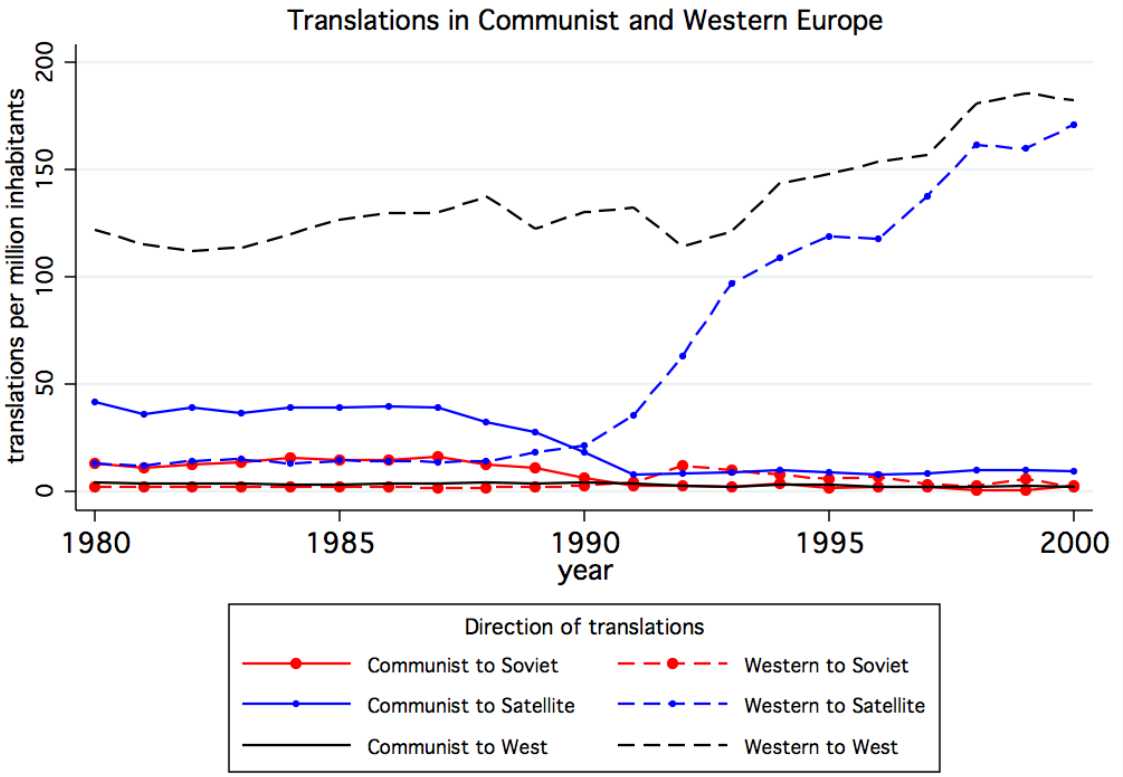
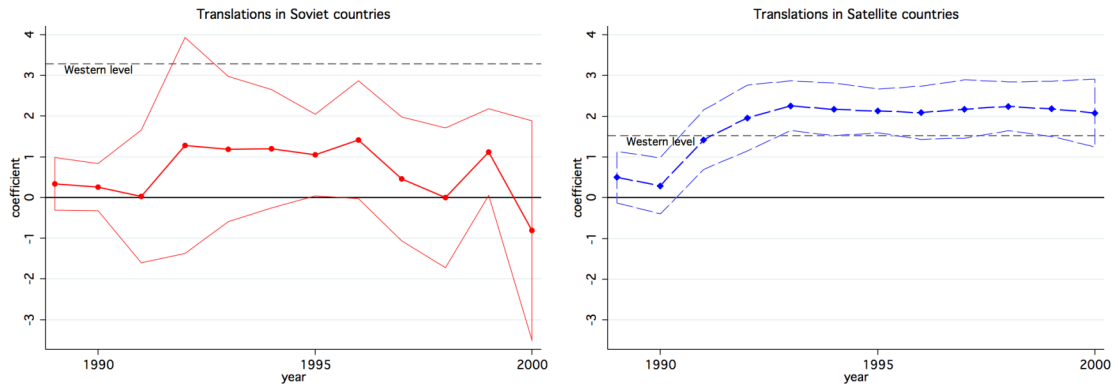


**Figure 3**



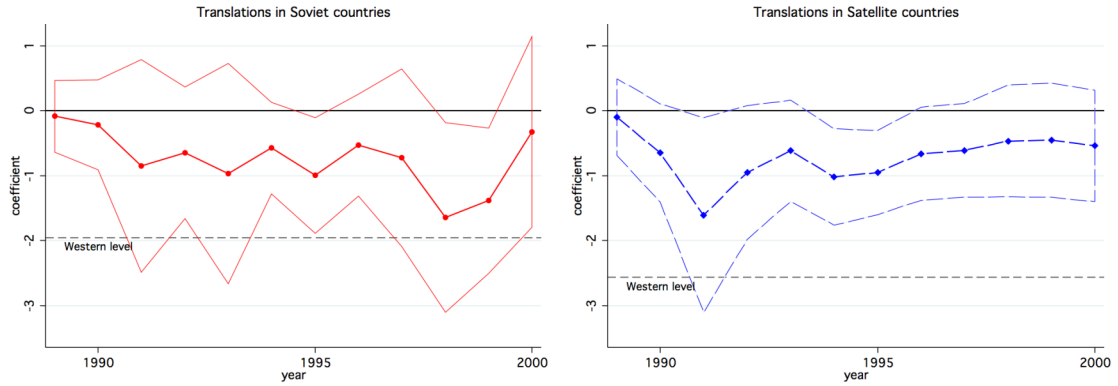

This figure shows translations from Western European and Communist languages in the former Soviet countries, the Satellite countries, and Western European countries. The values are averages over the countries in the regions, and include translations into the main language of the country only.

## Figure 4A: The effect over time of the fall of Communism on translations from Western European languages



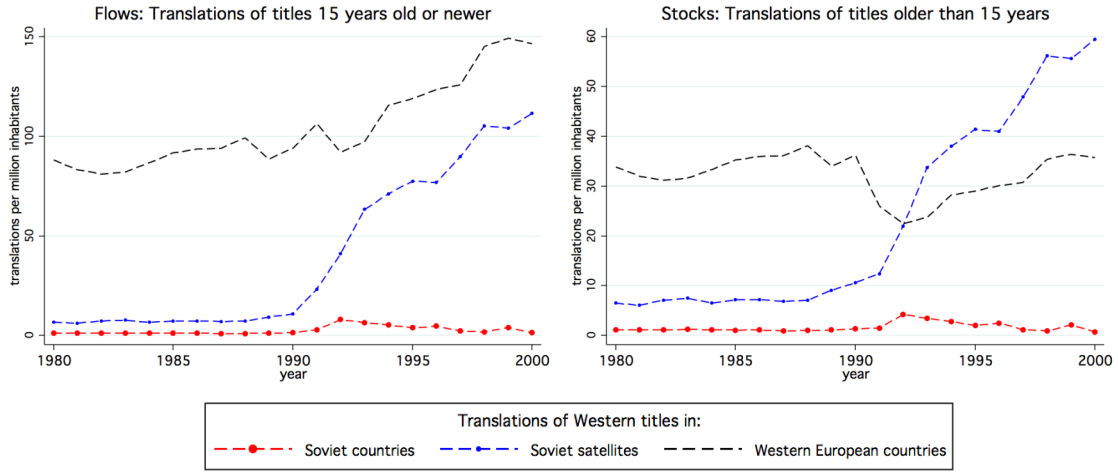

The coefficients plotted are from the estimation of a version of equation (4) in which the post dummy and its interactions have been replaced by year dummies (for 1989-2000) and their equivalent interactions. Controls for population and GDP per capita are also included. The figures show coefficients and 95% confidence intervals on interactions of the year dummies with Western 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).

## Figure 4B: The effect over time of the fall of Communism on translations from Communist languages



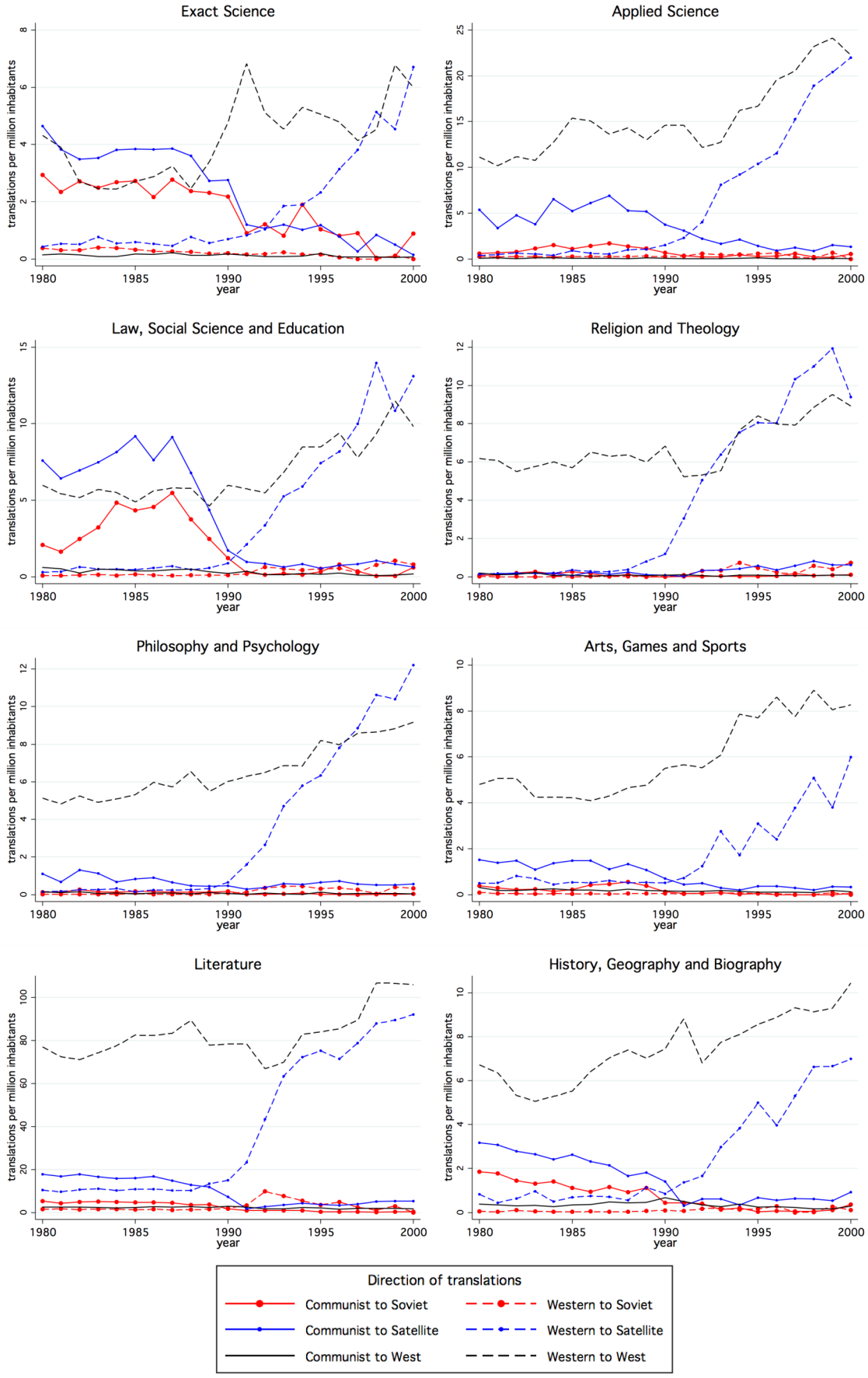

See the notes for Figure 4A.

## Figure 5



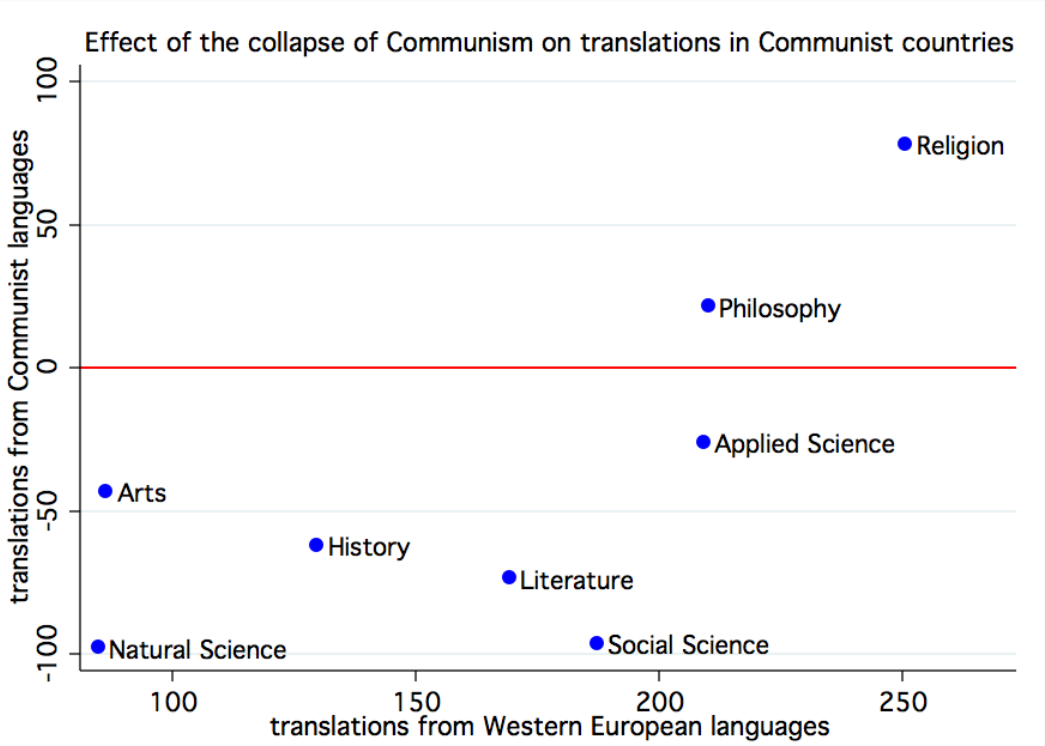

This figure shows translations of recent (left panel) and older (right panel) titles from Western European languages in the former Soviet countries, the Satellite countries, and Western European countries. The values are averages over the countries in the regions, and include translations into the main language of the country only.

**Figure 6: Translations by field**



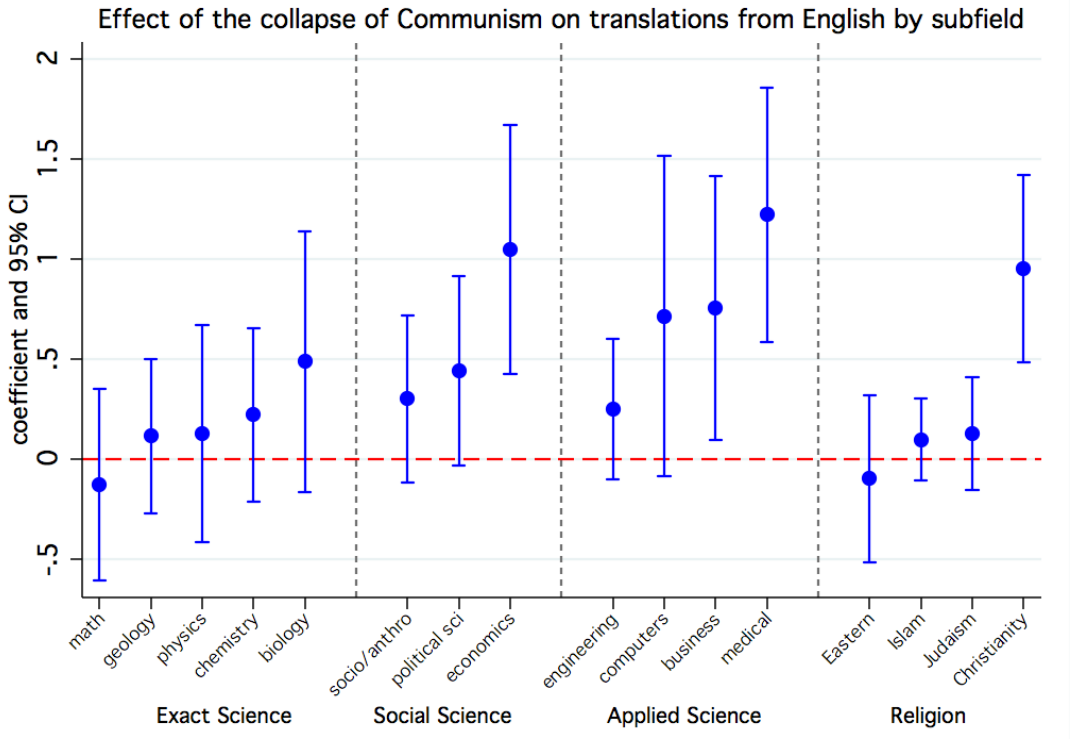

See the notes for Figure 3.

**Figure 7**




This figure plots the coefficients (x100) on $Communist_i \times Post_t \times WesternLang_j$ (x axis) and $Communist_i \times Post_t \times CommunistLang_j$ (y axis) from equation (4) (with controls for log population and GDP per capita) run separately for each subject. The dependent variable is the log of translations plus one. These coefficients (approximately) measure the percentage change in Communist translations caused by the collapse of Communism.

**Figure 8**




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 6.3.

**Table 1: Before/after analysis: The effect of the collapse of Communism on book translations**

| Dependent variable: log number of translations | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| Post | 0.439 | 0.926*** | 0.799** | | | | | | |
| | (0.293) | (0.216) | (0.267) | | | | | | |
| **Translations from Western original languages interacted with:** | | | | | | | | | |
| Post | | | | 1.589*** | 2.014*** | 1.761*** | 0.270 | 0.893* | 0.806** |
| | | | | (0.259) | (0.226) | (0.179) | (0.274) | (0.483) | (0.333) |
| Satellite country * post | | | | | | | 1.741*** | 1.271** | 1.168*** |
| | | | | | | | (0.330) | (0.452) | (0.336) |
| **Translations from Communist original languages interacted with:** | | | | | | | | | |
| Post | | | | -1.370*** | -0.945*** | -1.160*** | -1.776*** | -1.154** | -1.421*** |
| | | | | (0.179) | (0.113) | (0.186) | (0.411) | (0.445) | (0.453) |
| Satellite country * post | | | | | | | 0.559 | 0.091 | 0.206 |
| | | | | | | | (0.445) | (0.375) | (0.484) |
| **Other controls:** | | | | | | | | | |
| Real GDP per capita (ln) | | 1.716*** | 1.266* | | 1.494*** | 0.691* | | 0.989* | 0.288 |
| | | (0.397) | (0.616) | | (0.290) | (0.331) | | (0.552) | (0.353) |
| Population (ln) | | 0.624*** | -8.621** | | 0.549*** | -4.953** | | 0.717*** | -2.930 |
| | | (0.092) | (3.242) | | (0.091) | (2.096) | | (0.156) | (1.810) |
| Western original language dummy | | | | Yes | Yes | Yes | Yes | Yes | Yes |
| Communist original language dummy | | | | Yes | Yes | Yes | Yes | Yes | Yes |
| Satellite country * Western original language | | | | | | | Yes | Yes | |
| Satellite country * Communist original language | | | | | | | Yes | Yes | |
| Country fixed effects | | | Yes | | | | | | |
| Country fixed effects * Western original language | | | | | | Yes | | | Yes |
| Country fixed effects * Communist original language | | | | | | Yes | | | Yes |
| R-Squared | 0.028 | 0.356 | 0.740 | 0.245 | 0.422 | 0.869 | 0.425 | 0.661 | 0.880 |
| Observations | 256 | 256 | 256 | 511 | 511 | 511 | 511 | 511 | 511 |
| An observation is a: | | country, year | | | country, year, original language (Western or Communist) | | | | |

Notes: All columns are OLS regressions using annual data for the period 1980-2000. Columns 1-3 estimate equation (1) from the paper; columns 4-6 estimate equation (3); columns 7-9 estimate equation (5). The countries used in the analysis are Russia, Belarus, Estonia, Latvia, Lithuania, Moldova, the Ukraine, Bulgaria, the Czech Republic, Hungary, Poland, Romania, and Slovakia. 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 26. We include translations into the main language of the country only. *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.

**Table 2: Difference-in-differences analysis: The effect of the collapse of Communism on book translations**

| Dependent variable: log number of translations | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| **Translations from Western original languages in:** | | | | | | | | | | |
| Communist country * post | 1.268*** | 1.897*** | 1.361*** | 0.799** | 1.428*** | -0.050 | 0.687 | 0.409 | 0.192 | 0.508 |
| | (0.283) | (0.269) | (0.233) | (0.344) | (0.256) | (0.296) | (0.511) | (0.361) | (0.607) | (0.407) |
| Satellite country * post | | | | | | 1.741*** | 1.337*** | 1.183*** | 0.864 | 1.137*** |
| | | | | | | (0.323) | (0.410) | (0.325) | (0.530) | (0.337) |
| Communist country | -2.608*** | -1.739*** | | | | -3.371*** | -3.249*** | | | |
| | (0.484) | (0.498) | | | | (1.056) | (0.905) | | | |
| Satellite country | | | | | | 1.102 | 1.777** | | | |
| | | | | | | (1.076) | (0.678) | | | |
| Post | 0.321** | 0.043 | 0.380** | 0.138 | | 0.321** | 0.110 | 0.379** | 0.135 | |
| | (0.125) | (0.135) | (0.153) | (0.129) | | (0.125) | (0.150) | (0.154) | (0.129) | |
| **Translations from Communist original languages in:** | | | | | | | | | | |
| Communist country * post | -1.253*** | -0.582*** | -1.095*** | -1.349*** | -1.009*** | -1.659*** | -0.880* | -1.354** | -1.159 | -1.251** |
| | (0.235) | (0.206) | (0.267) | (0.469) | (0.292) | (0.431) | (0.482) | (0.492) | (0.784) | (0.507) |
| Satellite country * post | | | | | | 0.559 | 0.158 | 0.221 | -0.276 | 0.195 |
| | | | | | | (0.435) | (0.354) | (0.469) | (0.720) | (0.469) |
| Communist country | 1.775*** | 2.583*** | | | | 1.846*** | 1.907*** | | | |
| | (0.331) | (0.424) | | | | (0.436) | (0.471) | | | |
| Satellite country | | | | | | -0.102 | 0.573 | | | |
| | | | | | | (0.395) | (0.502) | | | |
| Post | -0.117 | -0.437** | -0.084 | 0.124 | | -0.117 | -0.369** | -0.086 | 0.121 | |
| | (0.157) | (0.160) | (0.174) | (0.191) | | (0.157) | (0.172) | (0.172) | (0.191) | |
| **Other controls:** | | | | | | | | | | |
| 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 |
| Country fixed effects * Western original language | | | Yes | Yes | Yes | | | Yes | Yes | Yes |
| Country fixed effects * Communist original language | | | Yes | Yes | Yes | | | Yes | Yes | Yes |
| Country-specific time trends * Western original language | | | | Yes | | | | | Yes | |
| Country-specific time trends * Communist original language | | | | Yes | | | | | Yes | |
| Year fixed effects * Western original language | | | | | Yes | | | | | Yes |
| Year fixed effects * Communist original language | | | | | Yes | | | | | Yes |
| R-Squared | 0.579 | 0.673 | 0.921 | 0.942 | 0.928 | 0.641 | 0.764 | 0.925 | 0.943 | 0.932 |
| Observations | 1,000 | 964 | 964 | 964 | 964 | 1,000 | 964 | 964 | 964 | 964 |
| An observation is a country, year, original language (Western or Communist) | | | | | | | | | | |

Notes: 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. Columns 1-5 estimate equation (4) from the paper; columns 6-10 estimate equation (6). The Communist countries used in the analysis are Russia, Belarus, Estonia, Latvia, Lithuania, Moldova, the Ukraine, Bulgaria, the Czech Republic, Hungary, Poland, Romania, and Slovakia. The Western European countries used are Austria, Belgium, Switzerland, Denmark, Spain, Finland, France, Iceland, Italy, the Netherlands, Norway, Portugal, and Sweden. 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 26. We include translations into the main language of the country only. *Post* is a dummy for 1991 onwards. *Population and GDP controls* are the logs of population and of real GDP per capita. *Country-specific time trends* are linear. Standard errors, in parentheses, are clustered at the country level. * p<0.10, ** p<0.05, *** p<0.01.

**Table 3: Convergence analysis: 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

| | Flows: titles 15 years old and newer | | | | | Stocks: titles older than 15 years | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| Post * Communist country | 1.417*** | 2.114*** | 1.485*** | 0.727* | 1.408*** | 1.263*** | 1.960*** | 1.331*** | 0.573 | 1.254*** |
| | (0.283) | (0.352) | (0.305) | (0.385) | (0.325) | (0.283) | (0.352) | (0.305) | (0.385) | (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*** | 0.236 | | -0.027 | -0.335* | 0.076 | -0.219 | |
| | (0.125) | (0.178) | (0.173) | (0.139) | | (0.125) | (0.178) | (0.173) | (0.139) | |
| Population and GDP controls | | Yes | Yes | Yes | Yes | | Yes | Yes | Yes | Yes |
| Country fixed effects | | | Yes | Yes | Yes | | | Yes | Yes | Yes |
| Country-specific time trends | | | | Yes | | | | | Yes | |
| Year fixed effects | | | | | Yes | | | | | Yes |
| R-Squared | 0.478 | 0.610 | 0.934 | 0.957 | 0.943 | 0.269 | 0.453 | 0.908 | 0.940 | 0.920 |
| Observations | 500 | 482 | 482 | 482 | 482 | 500 | 482 | 482 | 482 | 482 |
| An observation is a country, year | | | | | | | | | | |

Notes: All columns are difference-in-differences OLS 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. The dependent variable for columns 1-5 is translations of recent titles, and for columns 6-10 is translations of older titles. See the notes to Table 2 for the Communist and Western countries used. The Western original languages are given in footnote 26. We include translations into the main language of the country only. *Post* is a dummy for 1991 onwards. *Population and GDP controls* are the logs of population and of real GDP per capita. *Country-specific time trends* are linear. Standard errors, in parentheses, are clustered at the country level. * p<0.10, ** p<0.05, *** p<0.01.

**Table 4: Total publications: The effect of the collapse of Communism on total book publications**

Dependent variable: log total number of books published

| | OLS | | | | Difference-in-differences | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| Post * Communist country | | | | | -0.378* | -0.052 | -0.084 | -0.169 | -0.111 |
| | | | | | (0.218) | (0.149) | (0.122) | (0.105) | (0.113) |
| Post | -0.230 | 0.136 | 0.123 | -0.079 | 0.148 | 0.172* | 0.216** | 0.085 | |
| | (0.163) | (0.092) | (0.110) | (0.112) | (0.152) | (0.097) | (0.082) | (0.056) | |
| Real GDP per capita (ln) | | 0.729** | 0.463 | 0.189 | | 0.547** | 0.472* | 0.119 | 0.423* |
| | | (0.287) | (0.267) | (0.242) | | (0.230) | (0.234) | (0.235) | (0.207) |
| Population (ln) | | 0.555*** | -1.955 | -8.361* | | 0.572*** | -0.897 | -6.690** | -0.675 |
| | | (0.121) | (1.521) | (4.195) | | (0.080) | (1.232) | (2.998) | (1.267) |
| Communist country dummy | | | | | Yes | Yes | | | |
| Country fixed effects | | | Yes | Yes | | | Yes | Yes | Yes |
| Country-specific time trends | | | | Yes | | | | Yes | |
| Year fixed effects | | | | | | | | | Yes |
| R-Squared | 0.037 | 0.580 | 0.884 | 0.934 | 0.234 | 0.788 | 0.948 | 0.971 | 0.958 |
| Observations | 131 | 131 | 131 | 131 | 339 | 327 | 327 | 327 | 327 |
| An observation is a country, year | | | | | | | | | |

Notes: All columns use annual data for the period 1980-2000. Columns 1-4 are before/after OLS regressions using only the Communist countries (equation (1)); columns 5-9 are difference-in-differences OLS regressions where the region of interest is Communist countries and the comparison group is Western Europe (equation (2)). 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. *Country-specific time trends* are linear. Standard errors, in parentheses, are clustered at the country level. * p<0.10, ** p<0.05, *** p<0.01.

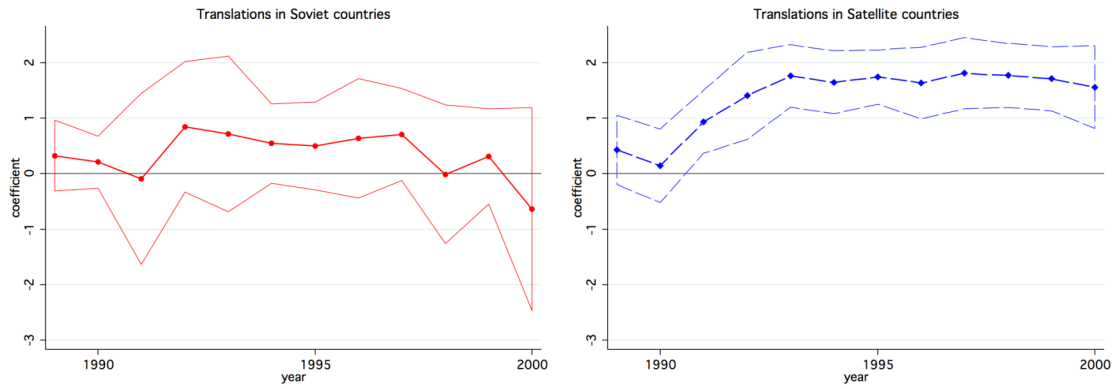
**Table 5: Title/author-level analysis: The effect of the collapse of Communism on the translation of influential titles/authors, and the most translated titles**

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

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

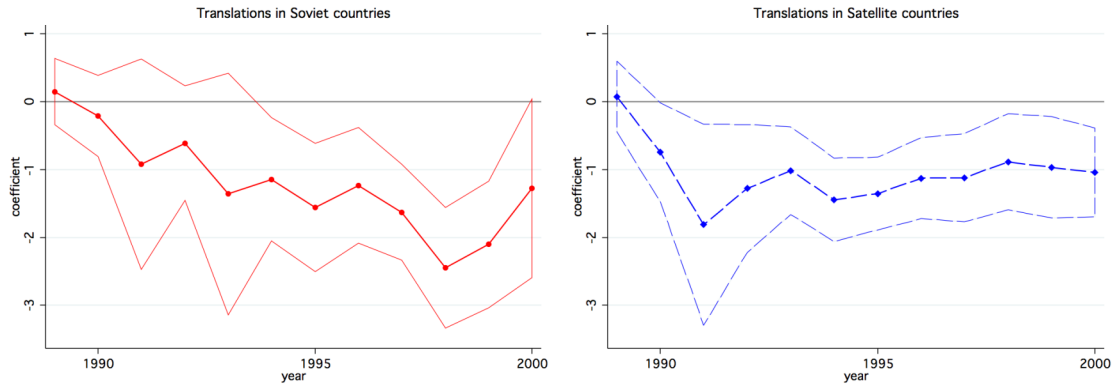
Notes: All columns are difference-in-differences OLS regressions using data aggregated to the pre/post collapse and Communist/Western Europe level (equation (7)), with Communist Europe as the region of interest and Western Europe as the comparison group. Columns 1-3 are run at the author level; columns 4-9 are run at the title level. 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.

## Appendix Figure 1A: The effect over time of the fall of Communism on translations from Western European languages, with country fixed effects




The coefficients plotted are from the estimation of a version of equation (4) in which the post dummy and its interactions have been replaced by year dummies (for 1989-2000) and their equivalent interactions. Country fixed effects and controls for population and GDP per capita are also included. The figures show coefficients and 95% confidence intervals on interactions of the year dummies with Western translations in Soviet countries (left panel) and in Satellite countriess (right panel).

## Appendix Figure 1B: The effect over time of the fall of Communism on translations from Communist languages, with country fixed effects




See the notes for Appendix Figure 1A.

**Appendix Table A: 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) | (7) | (8) | (9) | (10) |
| **Translations from Western original languages in:** | | | | | | | | | | |
| Communist country * post | 1.223*** | 1.822*** | 1.352*** | 0.716** | 1.396*** | 0.167 | 0.882* | 0.752** | 0.176 | 0.833** |
| | (0.258) | (0.252) | (0.211) | (0.343) | (0.248) | (0.274) | (0.479) | (0.343) | (0.622) | (0.385) |
| Satellite country * post | | | | | | 1.377*** | 0.973** | 0.767** | 0.770 | 0.719** |
| | | | | | | (0.301) | (0.374) | (0.314) | (0.535) | (0.319) |
| Communist country | -2.398*** | -1.648*** | | | | -3.226** | -3.285*** | | | |
| | (0.521) | (0.503) | | | | (1.160) | (0.967) | | | |
| Satellite country | | | | | | 1.197 | 1.985** | | | |
| | | | | | | (1.178) | (0.753) | | | |
| Post | 0.301** | 0.027 | 0.318* | 0.095 | | 0.301** | 0.089 | 0.317* | 0.094 | |
| | (0.138) | (0.145) | (0.159) | (0.135) | | (0.139) | (0.160) | (0.161) | (0.135) | |
| **Translations from Communist original languages in:** | | | | | | | | | | |
| Communist country * post | -1.240*** | -0.619*** | -1.056*** | -1.362*** | -0.995*** | -1.473*** | -0.738 | -1.050* | -1.067 | -0.965 |
| | (0.224) | (0.200) | (0.267) | (0.461) | (0.304) | (0.500) | (0.558) | (0.550) | (0.755) | (0.565) |
| Satellite country * post | | | | | | 0.319 | -0.082 | -0.076 | -0.422 | -0.106 |
| | | | | | | (0.504) | (0.440) | (0.512) | (0.696) | (0.514) |
| Communist country | 1.778*** | 2.490*** | | | | 1.795*** | 1.699*** | | | |
| | (0.354) | (0.431) | | | | (0.498) | (0.489) | | | |
| Satellite country | | | | | | -0.025 | 0.763 | | | |
| | | | | | | (0.442) | (0.519) | | | |
| Post | -0.147 | -0.442*** | -0.155 | 0.102 | | -0.147 | -0.380** | -0.156 | 0.100 | |
| | (0.140) | (0.143) | (0.162) | (0.186) | | (0.140) | (0.158) | (0.163) | (0.186) | |
| **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 |
| Country fixed effects * Western original language | | | Yes | Yes | Yes | | | Yes | Yes | Yes |
| Country fixed effects * Communist original language | | | Yes | Yes | Yes | | | Yes | Yes | Yes |
| Country-specific time trends * Western original language | | | | Yes | | | | | Yes | |
| Country-specific time trends * Communist original language | | | | Yes | | | | | Yes | |
| Year fixed effects * Western original language | | | | | Yes | | | | | Yes |
| Year fixed effects * Communist original language | | | | | Yes | | | | | Yes |
| R-Squared | 0.538 | 0.664 | 0.918 | 0.938 | 0.926 | 0.592 | 0.757 | 0.920 | 0.939 | 0.928 |
| Observations | 999 | 963 | 963 | 963 | 963 | 999 | 963 | 963 | 963 | 963 |
| An observation is a country, year, original language (Western or Communist) | | | | | | | | | | |

Notes: 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. Columns 1-5 estimate equation (4) from the paper; columns 6-10 estimate equation (6). The dependent variable includes pages from titles that are 49 or more pages long only. See the notes to Table 2 for the Communist and Western countries used. 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 26. We include translations into the main language of the country only. *Post* is a dummy for 1991 onwards. *Population and GDP controls* are the logs of population and of real GDP per capita. *Country-specific time trends* are linear. Standard errors, in parentheses, are clustered at the country level. * p<0.10, ** p<0.05, *** p<0.01.

**Appendix Table B: 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, with Communist Europe as the region of interest and Western Europe as the comparison group. Columns 1-3 estimate equation (4) from the paper; columns 4-6 estimate equation (6)."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 2 for the Communist and Western countries used. 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 26. We include translations into the main language of the country only. *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 C: 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.

### C.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 www.ebrd.com/country/sector/econo/stats/index.htm. 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".[1] These two variables are available for all the Communist countries in our sample for each year 1989 to 2000.

**C.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 C 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.

The two variables directly related to the political system, *institutionalized democracy* and *political competition*, are both positively and significantly related to

[1] These descriptions of the values are from www.ebrd.com/country/sector/econo/stats/timeth.htm.

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 25$^{th}$ percentile in 2000, to 9, the 75$^{th}$ 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.

**Appendix Table C: 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. 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 26. We include translations into the main language of the country only. 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 Section 2.3. *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: 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) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| **Translations from Western original languages in:** | | | | | | | | | | |
| Communist country * post | 1.390*** | 1.932*** | 1.532*** | 1.074*** | 1.578*** | 0.688 | 1.430*** | 1.225*** | 0.941*** | 1.304*** |
| | (0.230) | (0.207) | (0.192) | (0.255) | (0.233) | (0.424) | (0.392) | (0.388) | (0.319) | (0.426) |
| Satellite country * post | | | | | | 0.940** | 0.547 | 0.419 | 0.196 | 0.379 |
| | | | | | | (0.445) | (0.369) | (0.370) | (0.342) | (0.378) |
| Communist country | -2.388*** | -1.665*** | | | | -2.640*** | -2.425*** | | | |
| | (0.405) | (0.417) | | | | (0.780) | (0.602) | | | |
| Satellite country | | | | | | 0.363 | 0.934** | | | |
| | | | | | | (0.803) | (0.425) | | | |
| Post | 0.343*** | 0.103 | 0.347** | 0.164 | | 0.343*** | 0.130 | 0.346** | 0.166 | |
| | (0.117) | (0.122) | (0.143) | (0.129) | | (0.117) | (0.129) | (0.144) | (0.129) | |
| **Translations from Communist original languages in:** | | | | | | | | | | |
| Communist country * post | -1.181*** | -0.602*** | -0.968*** | -1.217*** | -0.909*** | -1.252*** | -0.473** | -0.741** | -0.819* | -0.663** |
| | (0.163) | (0.196) | (0.217) | (0.386) | (0.243) | (0.188) | (0.222) | (0.277) | (0.463) | (0.287) |
| Satellite country * post | | | | | | 0.107 | -0.284** | -0.325 | -0.560 | -0.344 |
| | | | | | | (0.173) | (0.116) | (0.242) | (0.449) | (0.245) |
| Communist country | 1.904*** | 2.569*** | | | | 2.027*** | 2.183*** | | | |
| | (0.321) | (0.373) | | | | (0.446) | (0.450) | | | |
| Satellite country | | | | | | -0.177 | 0.394 | | | |
| | | | | | | (0.383) | (0.382) | | | |
| Post | -0.040 | -0.317** | -0.071 | 0.186 | | -0.040 | -0.290** | -0.072 | 0.188 | |
| | (0.134) | (0.131) | (0.159) | (0.191) | | (0.134) | (0.137) | (0.159) | (0.191) | |
| **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 |
| Country fixed effects * Western original language | | | Yes | Yes | Yes | | | Yes | Yes | Yes |
| Country fixed effects * Communist original language | | | Yes | Yes | Yes | | | Yes | Yes | Yes |
| Country-specific time trends * Western original language | | | | Yes | | | | | Yes | |
| Country-specific time trends * Communist original language | | | | Yes | | | | | Yes | |
| Year fixed effects * Western original language | | | | | Yes | | | | | Yes |
| Year fixed effects * Communist original language | | | | | Yes | | | | | Yes |
| R-Squared | 0.656 | 0.759 | 0.922 | 0.940 | 0.929 | 0.670 | 0.785 | 0.924 | 0.941 | 0.930 |
| Observations | 1,001 | 965 | 965 | 965 | 965 | 1,001 | 965 | 965 | 965 | 965 |

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

Notes: 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. Columns 1-5 estimate equation (4) from the paper; columns 6-10 estimate equation (6). See the notes to Table 2 for the Communist and Western countries used. 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 26. We include translations into the main and secondary languages of the country. *Post* is a dummy for 1991 onwards. *Population and GDP controls* are the logs of population and of real GDP per capita. *Country-specific time trends* are linear. 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 (4)) 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 2 for the Communist and Western countries used. The Communist and Western original languages are given in footnote 26. We include translations into the main language of the country only. 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.