

A Dissection of Trading Capital:
Cultural persistence of trade in the aftermath of the fall of
the Iron Curtain
!!! VERY PRELIMINARY VERSION !!!

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Abstract

We show that the countries of the former Austro-Hungarian monarchy trade significantly more with one another in the aftermath of the collapse of the Iron Curtain than predicted by a standard gravity model. This trade surplus disappears steadily over time. We argue that these findings suggest that decaying cultural forces explains a significant part of trading capital. We document the rate of decay of these cultural forces.

JEL classification: F14, F15

Keywords: Trade, Gravity, Culture, Habsburg Empire

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1 Introduction

One of the central themes in empirical international trade has been the search for the determinants of bilateral trade flows. Much progress has been made as evidenced by the richness of the gravity literature. However, one factor that remains notoriously difficult to measure is the cultural proximity between countries. There have been a number of recent studies showing that the degree to which such cultural forces influence trade seems to be large (Algan et al. 2010, Disdier and Mayer 2007, Guiso et al. 2009, and Michaels and Zhi 2010). Linkages between countries are highly persistent once built up (see for example McCallum 1995 and Anderson and Van Wincoop 2003), and trade once interrupted takes a long time to recover (Nitsch and Wolf 2011, Felbermayr and Gröschl 2013). There even have been suggestions that culture matters more for trade than either institutions or borders (Becker et al. 2011). In this paper, we disentangle the components of trade costs that relate to cultural forces by studying trade between members of the former Habsburg Empire in recent years. We provide evidence that helps to quantify the importance of cultural forces to facilitate or block trade, and our results help to assess the importance of cultural similarity in the building of trading capital.

We study European trade in the aftermath of the collapse of the Soviet Union. In a standard gravity equation setting after 1989 we introduce variables that indicate membership in the Habsburg Empire¹ at the beginning of the 20th century, and document that the countries that belonged to the Habsburg monarchy indeed trade more after the fall of the Iron Curtain. This trade surplus however declines linearly and rapidly and becomes statistically insignificant in the year 2010 in our main specification. We argue that what we observe are the components of trading capital that relate to cultural memory, and we observe the decay of this memory. This example might contribute to our understanding of the importance of factors that determine bilateral international trade. This estimation of dynamic effects of culture on bilateral trade complements existing studies of the static importance.

¹Throughout this paper we use the terms ‘Habsburg monarchy’, ‘Habsburg Empire’ and ‘Austro-Hungarian monarchy’ interchangeably. We usually refer to the Empire in its extension shortly before World War I, as displayed in Figure 1.

The term ‘trading capital’ is used by Head, Mayer and Ries (2010, from here on we refer to this paper as HMR) who show that after independence former colonies continue to trade for a long period with their colonizers, at a declining rate. They suggest that this observation might point to the presence of some sort of trading capital that is built up during colonization, and deteriorates after independence. The determinants as well as the relative strength of the constituent components of trading capital remain an open question. Historical circumstances offer a natural experiment setting in which trade between members of the former Habsburg Empire permits us to disentangle some of the components of trading capital. At the beginning of the century the Habsburg monarchy was a politically and economically integrated country. In the second half of the century it was split into two parts that were strictly separated for 44 years by the Iron Curtain. This division cut all formal business relationships, almost all trade between East and West, and made personal contacts very costly. We argue that the declining trade surplus of Habsburg countries after 1989 is comparable to the dissolving trading capital described by HMR, but given the history of Central Europe only relates to that part of trading capital that was not isolated by the Iron Curtain.

We speculate that trading capital may consist of three broad categories that facilitate trade: (i) physical capital, such as roads and railway lines or pipelines that connect countries and directly facilitate trade, (ii) capital relating to communication and human interaction, and trust built up in repeated games, such as provided in structures of multi-national firms, frequent personal contacts and established trust, and (iii) a cultural component, which might include elements such as trust not based on personal interaction but cultural familiarity, cultural norms or branding and advertising associated with consumers’ familiarity with products from a region, trust based on similarity and familiarity of people.

We argue that the history of Central Europe led to the decay of physical capital connecting countries in the east and west of the Iron Curtain and all formal institutions of the Empire ceased to exist as there were several waves of drastic institutional changes especially east of the Iron Curtain, and specific infrastructure was destroyed. We also argue that the history of

Central Europe successfully destroyed personal relationships and multinational firms connecting east and west. Any surplus trade observed after 1989 must thus relate to the parts of trading capital that relate to point (iii) above. We show that these forces explain a quantitatively large part of trading capital, and that they deteriorate at a rate smaller than suggested for all trading capital by HMR.

Our paper adds to a growing literature which emphasizes the long persistent effects of borders, institutions and culture. Ostrom (1998) emphasizes the importance of trust in institutions in facilitating collective action. Acemoglu, Johnson and Robinson (2001) as well as North (1990) study the long term impact of institutions on economic growth. Guiso et al. (2009) establish the importance of trust and cultural similarity on economic exchange. Egger and Lassmann (2013) and Melitz and Toubal (2012) document the importance of common languages. However, it is difficult to distinguish between cultural similarity and ease of communication. Cultural proximity is inherently difficult to measure. A number of recent studies have thus used proxy measures such as voting behavior in the Eurovision Song Contest (Felbermayr and Toubal 2009) or the United Nations General Assembly (Dixon and Moon 1993, Umana Dajud 2012). Lameli et al (2013) show that the similarity of German dialects is an important predictor of trade within Germany.

Our contribution to this literature is that we study the importance of these cultural ties in a dynamic rather than static setting. Thus we do not solely prove the existence of the importance of cultural forces for trade, but can give an example of the decay of these forces, and quantify the speed of its decay. As HMR, we control for formal external institutions such as membership in the EU, regional trade agreements or currency unions. We also take as given changes in internal institutions by controlling for country-year fixed effects. Thus we focus on the effects of unobserved informal external institutions and dissect these.

Studies that analyze trade in Europe in the aftermath of the Iron Curtain include Redding and Sturm (2008) who study the development of towns in West Germany, and Egger and Egger (2003) who study readjustments in Austrian labor markets. Nitsch and Wolf (2011) document

that it takes between 33 to 40 years to eliminate the impact of the Iron Curtain on trade within Germany. Djankov and Freund (2002) document that Russian regions continued to trade with each other's 60 percent more in the period from 1994 to 1996, which is broadly consistent with our findings. Schulze and Wolf (2009) study trade within the Habsburg monarchy in the late 19th century and find that borders that later emerge become visible in price data long before the collapse of the Empire. Marin (2006) studies offshoring and outsourcing to Eastern Europe of Austrian and German firms. Rodney and Walsh (2002) study the effect of Anglo-Irish monetary dissolution. Becker et al. (2011) also present evidence on the importance of the Habsburg Empire on cultural norms. When comparing individuals living left and right of the long-gone Habsburg border, they find that people living on territory of the former Habsburg Monarchy have higher trust in courts and police. They argue that the former Empire had an enduring effect on people's values through its decentralized, honest and widely accepted state bureaucracy.

This paper proceeds as follows: After a brief historical overview concerning the decline of the Habsburg Empire, the Iron Curtain and the reunion of the continent as far as these events concern our study in Section 2 we present our estimates of the trade boost and its decline among former Habsburg countries in Section 3 and discuss its implications. Section 4 concludes.

2 Historical overview

In the 13th century Rudolf von Habsburg acquired the thrones of Austria and Styria, which his family held until the first half of the 20th century. The Habsburg monarchy expanded mainly through skillful marriage policy, but also frequently lost territory in battle. The territory always incorporated different languages, customs and religions, which especially in the early years were allowed to flourish locally. Unification attempts and the introduction of a centralized administration were introduced by empress Maria Theresia and the chancellor Metternich in the course of the 18th century.



Figure 1: Outline of the Austro-Hungarian Empire in 1910 and modern country boundaries. The source for the Habsburg map is Jeffreys (2007), the country boundaries come from Eurostat (2013).

In 1913 the Austro-Hungarian empire consisted of 49 million people, 13 percent of the total European population producing 10 per cent of Europe’s GDP. As these numbers imply, the economic condition of the Austro-Hungarian monarchy in its final decades before 1913 was poor in comparison to other European countries.² Despite this economically difficult situation there is large consensus that the monarchy maintained a large, stable and well integrated market with large internal trade flows throughout its last decades. The countries of the monarchy were linked by a common official language common legal institutions and administration and an expanding rail network. Great emphasis on free-trade strengthened the economic integration and trade flows within the country throughout the 19th century (Good 1984). The monarchy possessed a fully integrated monetary union with full control maintained by the Austro-Hungarian bank in Vienna. Fiscally the Empire was run as a joint fiscal operation, with separate budgets in

²For example Schulze (2000) documents poor performance in terms of GDP per capita growth for the monarchy between 1870 and 1913, and even uses the term ‘great depression’ to describe the situation in the western half of the Empire in 1873.

Country	Share of land that was Habsburg	East	Year of EU accession	Year of Euro adoption
Austria	1.00		1995	1999
Bosnia and Herzegovina	1.00	1		
Croatia	1.00	1	2013	
Czech Republic	1.00	1	2004	
Hungary	1.00	1	2004	
Italy	0.05		1952	1999
Poland	0.12	1	2004	
Romania	0.44	1	2007	
Serbia	0.25	1		
Slovakia	1.00	1	2004	2009
Slovenia	1.00	1	2004	2007
Ukraine	0.12	1		

Table 1: Share of land that was Habsburg denotes the share of the area of the modern country that was part of the Habsburg monarchy in the year 1910. Missing values in the last two columns indicate no membership in 2013.

Austria and Hungary contributing to the same common imperial expenditures and debt services (Dornbusch 1991). Some internal trade barriers became visible in price data at the end of that century, before the collapse of the Empire, and nationalism was on the rise long before the collapse, and contributed to it (Schulze and Wolf 2009 and 2012). Yet these studies highlight that the Empire possessed a heavily integrated internal market at the beginning of the 20th century regardless of these tendencies. The monarchy further consisted of a well functioning administration that unified the workings of many institutions across the countries it governed. In the words of Christopher Clark: “[The administration] was an apparatus of repression, but a vibrant entity commanding strong attachments, a broker among manifold social, economic and cultural interests. [...] most inhabitants of the empire associated the Habsburg state with the benefits of orderly government: public education, welfare, sanitation, the rule of law and the maintenance of a sophisticated infrastructure.” Or in other words: with unifying institutions.

The end of the First World War brought about a number of declarations of independence, which were sealed by the treaties of Saint Germain (1919) and Trianon (1920). The newly founded Republic of Austria was left with 23 per cent of the population of the former monarchy. Yet trade

between countries of the former monarchy remained high in the 1920s. De Menil and Maurel (1994) present some evidence for strong trade in the years 1924-26 among successor states of the former monarchy, roughly of the magnitude of trade within the British Empire at that time. The reasons that this study lists are a common history, shared linguistic and cultural ties, and it mentions the importance of business and personal relations and networks. Institutional drift, however, started. New and different currencies were introduced. For example, Hungary replaced the Austro-Hungarian korona by its own korona after independence only to replace it again by the pengo in 1925 and forint in 1946 following hyperinflation. The Austrian-Hungarian national railways was also split into multiple corporations, but traffic across the former monarchy continued at a significant pace.

The Second World War disrupted trade substantially, and it did not recover in the aftermath. Beginning in 1947, communist regimes in Central and Eastern Europe emerged that were rigorously subjected to Soviet rule. The Sovietization of these economies caused a breakdown of their trade relations with the West, foreign trade was organised as a strict state monopoly. Much of this remaining trade was organised from Moscow, and negotiated at the highest political level, often as part of political bargains. An example for this was the export of goods worth 6.6 billion Austrian schillings in the aftermath of its independence in 1955 to the Soviet Union (Resch 2010). Pogany (2010) writes on the relationship between Austria and Hungary: ‘Economic ties [...] became insignificant in the years following the Second World War. Centuries-old relations were reduced to a minimal level [...].’ While Moscow controlled trade on the Eastern countries, also on the Western side trade was heavily politically influenced. The main driver of this was the Co-ordinating Committee for Multilateral Export Controls (COCOM), established in 1949, an institution to organise embargoes against Soviet countries. Austria did not formally become a COCOM member, but its Eastern trade was influenced heavily by it under the obligations coming from the granting of Marshall aid to Austria (Resch 2010). Large parts of infrastructure especially the railways were destroyed by the war - they would only partially be rebuilt taking into account the new borders that had emerged. An anecdote might highlight the poor recovery of infrastructure. The two closest capitals in Europe are Vienna and Bratislava, at a distance

of less than 60 kilometers. In the monarchy there was a tramway that connected both cities, the “Pressburger Bahn”. There has been no similar connection attempt since 1990, and thus the time to travel from one city to the other is now larger than it was in 1900.

The most substantial cut to trade relations was brought about by the erection of the Iron Curtain, the erection of physical barriers begun in 1949. The border run right through the former Habsburg countries, splitting Austria and the formerly Austrian parts of Italy from the rest. The border zone of Austria’s east provided by the River Enns was complemented by a state frontier towards Czechoslovakia and Hungary. The Iron Curtain presented a completely sealed border that cut all local economic activity (Redding and Sturm 2012). Multilateral companies were split, personal interaction and communication over the border became increasingly difficult and rare. To put the decline of trade in numbers, Austrian imports from Hungary fell from 10% in 1929 to 2% in 1959 and 1% in 1988, from Czechoslovakia from 18% to 4% and 1% in the same period (Butschek (1996), Stiefel (2010) numbers indicate shares of total Austrian imports). At the same time, Hungarian imports from Austria went from 77% in 1911-13 to 60% in 1920, to 5% in 1946 and then to below 4% in 1974 (Pogany 2010). This collapse in trade includes estimates of black market activity.

The relationships of the West with Yugoslavia were different from those with Hungary and Czechoslovakia as Yugoslavia despite being socialist and autocratic maintained looser ties with Moscow (Lazerevic 2010). This allowed the United States to contribute to aid programs from 1952. Eventually this even led to the accession of Yugoslavia to GATT in 1966. Yugoslavia maintained sizable trade relationships with the West, which in some years even exceeded its trade levels with the Comecon countries. Its main trade partners in the West between 1955 and 1986 were the EEA countries (Belgium, Luxembourg, France, Italy, the Netherlands, West Germany, Great Britain, Denmark and Ireland). For example, in 1986 Yugoslav exports to the EEA countries were over 7 times as large as exports to EFTA (Austria, Norway, Portugal, Sweden and Switzerland) (Lazerevic 2010).

These large changes of the map of Central Europe in the course of the 20th century are displayed

in Figure 1. The map shows modern country boundaries and a map of the Habsburg Empire as of 1910. Table 1 shows the percentage of modern territory that was part of the Austro-Hungarian Empire for modern countries. As the table shows, most of the countries that were part of the Empire are in the East, by which we indicate countries that were on the eastern side of the Iron Curtain. These are Bosnia and Herzegovina, Croatia, the Czech Republic, Hungary, Slovakia, Slovenia as well as parts of Poland, Romania, Serbia and the Ukraine. On the western side of the Iron Curtain we only find Austria and South Tyrol, which is now a part of Italy.

3 The decline of the Habsburg coefficient after 1990

To investigate whether Habsburg trade displays persistence after decades of Cold War separation we largely follow the methodology applied by HMR. We estimate a gravity equation with $Habsburg \times year$ dummies - the principal variable of interest. The gravity equation is the common practice for modelling “expected” bilateral trade had there been no Habsburg relationship. The $Habsburg \times year$ indicators capture any trade in excess of what the model would predict. The well-known empirical and theoretical formulations of the gravity equation can be represented in the following multiplicative form:

$$X_{int} = K_t C_{it}^{ex} C_{nt}^{im} \phi_{int} \quad (1)$$

where G_T are year-specific common trade determinants. C_{it}^{ex} and C_{nt}^{im} are origin and destination attributes in a specific year, and ϕ_{int} measures bilateral effects on trade. The conventional approach is to take logarithms of the equation and we follow the commonly practiced gravity approach (Head and Mayer (2013) and Egger (2000) provide a comprehensive overviews of this technique including a number of theoretical foundations which yield gravity equations). In

particular, we estimate the following equation:

$$\ln(X_{int}) = \mu_{it} + \mu_{nt} + \gamma D_{int} + \delta_{int} H_{int} + \epsilon_{int}, \quad (2)$$

where X_{int} denotes importer n 's total expenditure on imports from origin i in year t . μ_{it} and μ_{nt} denote *origin* \times *year* fixed effects and *destination* \times *year* fixed effects respectively, matrix D_{int} denotes pairwise covariates that may be time varying or not. They include measures for the distance between the capitals of both countries, indicators for a shared border, an officially joint language, a joint spoken language, common legal institutions, common religion, common currency, the presence of a regional trade agreement as well as indicators if both are members of the EU, the Euro zone, or on the east of the Iron Curtain. Since geopolitics change much over this period we cautiously interact all time-invariant bilateral variables by year.

The crucial bilateral variables of interest are the coefficients on the interaction term, H_{int} , which turns on if both countries were part of the Austro-Hungarian monarchy in year t . Intuitively we estimate how the fraction of Habsburg surplus trade, if there is any, evolves over time. We use a comprehensive set of indicators to capture the different types of Habsburg trade. First, we restrict our measure of Habsburg economies to only those which were fully part of the Habsburg monarchy: Austria, Hungary and former Czechoslovakia. We argue that this is the safest approach as including other economies which were only partly part of the Empire, such as Italy, may pick up effects not specific to the Habsburg relationship. Second, we include both a measure of all Habsburg economies and one for all Habsburg members east of the curtain. The coefficient of interest on the all-Habsburg indicators thus captures all Habsburg trade between Habsburg economies that crosses over the curtain. All Habsburg indicators are interacted with year to capture the dynamic effect.

If we were to control for attributes of the exporter and importer using GDP per capita and populations, as has been done in hundreds of papers, our specification would suffer from a serious flaw namely the ‘‘multilateral resistance’’ terms (Anderson and van Wincoop 2003).

Multilateral resistance terms are functions of the whole set of ϕ_{int} from equation 1. We thus adopt the preferred method of the literature exporter-year and importer-year fixed effects ³. This full fixed effects approach absorbs the exporting and importing specific effects (see Egger (2000)). Exporter- and importer-year fixed effects do not work for unbalanced two-way panels as pointed out by Baltagi (1995, p. 195). If actual bilateral data are not balanced, as is the case in HMR (2010), one should use the least square dummy variable (LSDV) approach. However, this concern is not relevant to our European data set which is balanced⁴. We therefore adopt the full fixed effects approach, even though this approach has the disadvantage that we can not observe the coefficients of these in gravity models typical right hand side variables.

Furthermore, we can also express equation 2 as

$$X_{int} = \exp(\mu_{it} + \mu_{nt} + \gamma D_{int} + \delta_{int} H_{int}) u_{int}, \quad (3)$$

where $u_{int} = \exp(\epsilon_{int})$.

We estimate this equation using the Poisson Pseudo-Maximum-Likelihood (PPML) estimator. Our linear-in logs specification of 2 removes all observations of “zero” trade, thus introducing a potential “selection bias”. Zero observations may be due to mistakes or reporting thresholds, but bilateral trade can actually be zero. On the one hand, PPML incorporates “zeros”. On the other hand, the parameters can be estimated consistently, provided the expectation of u conditional on the covariates equals one.⁵ Therefore PPML is preferable to other estimators without further information on the heteroscedasticity. However, it may be “severely biased” when a large number of zeros is handled in this way (Martin and Pham (2009)). A natural step would be to use Tobit which incorporates the zeros, but it assumes log normality and homoskedasticity on the error term, so we prefer PPML as advocated by Santos, Silva and Tenreyro (2006), and as also used by HMR.

³see Feenstra (2004, 153-163) who addresses different techniques to take care of multilateral resistance within the gravity framework

⁴In Appendix A, we list our data sources and discuss our approach to minimize data inaccuracies.

⁵Refer to Santos, Silva and Tenreyro (2006) who develop a full rationale for using the Poisson PMLE estimation method.

Even though we control for all the “usual controls” our vector of bilateral variables remains incomplete. The unobserved linkages end up in the error term. To capture possible omitted variables in ϵ_{int} , we estimate two additional econometric techniques: Lag dependent variable specification and a specification with origin-destination (bilateral) fixed effects. The lagged dependent variable would absorb unobserved influences on trade that evolve gradually over time. However, this technique will not deliver consistent estimates if there is a fixed component in the error term that is correlated with the control variables. We can include bilateral fixed effects because our variation of interest the Habsburg dummies are interacted by year and our variables of interest is also varying over time. The bilateral fixed effects specification identifies the effect of independence based on temporal (within-bilateral) variation. In the later specification, any time invariant bilateral variables drop out.

To summarize, we estimate the Habsburg coefficients of interest using five different estimation techniques. Our typical estimation has 14,000 observations, and is robust to heteroscedasticity.

4 Results

Tables 2 and 3 display our main results. In these tables we estimate the model described in the last section by the four estimation methods discussed there, simple OLS, Poisson Pseudo Maximum Likelihood (PMLE), Lag dependent variable specification and Dyadic Fixed Effects. These estimators correspond directly to the ones in HMR. Each of the four columns in Table 2 corresponds directly to the column with the same number in Table 3. These columns show results from the same regression split by coefficients. Table 2 shows the standard gravity control variables, and Table 2 the Habsburg trade surplus H_{int} coefficients, our main coefficients of interest. These coefficients are referred to as *Habsburg - year fixed effects* in the tables.

It is worth emphasizing that we use origin times year fixed effects and destination times year fixed effects separately in all of these regressions. We also include time varying bilateral indica-

tors for shared border, similar official common language, similar spoken language, and common legal institutions. We include these variables as time varying dummy variables to account for the many changes in the cultural and political climate in Europe during this period, and in a spirit to include as detailed fixed effects as possible, to distill the main effect of interest as precisely as possible. These strong sets of control variables make it redundant to control for the standard right hand side variables measuring the size of countries, such as population and income, and allow only to include bilateral variables that vary over time. The Habsburg trade surplus coefficients are bilateral and vary on annual basis by construction and thus are not multicollinear with the inclusion of this strong set of control variables. All these standard bilateral control variables are taken from the standard source for this type of estimation, and precise definitions are given there (Mayer and Zignago 2005).

<i>Dependent variable</i>	(1) ln(x_{int}) OLS	(2) x_{int} PPML	(3) ln(x_{int}) Lag DV	(4) ln(x_{int}) Bilateral FE
<i>Time fixed dyadic effects</i>				
Log distance	-1.380*** (0.0274)	-0.638*** (0.0114)	-0.249*** (0.0238)	
Common religion	0.844*** (0.0420)	0.124*** (0.0307)	0.151*** (0.0216)	
Shared border - year	Yes	Yes	Yes	Yes
Official common language - year	Yes	Yes	Yes	Yes
Common language spoken - year	Yes	Yes	Yes	Yes
Common legal institutions - year	Yes	Yes	Yes	Yes
<i>Time varying dyadic effects</i>				
Common currency	0.156*** (0.0489)	0.0259 (0.0338)	0.0631*** (0.0215)	-0.0828* (0.0438)
Regional trade agreement	0.0925 (0.0575)	0.292*** (0.0545)	0.0118 (0.0445)	0.249*** (0.0624)
Both EU	0.143*** (0.0467)	-0.0445 (0.0275)	0.0427* (0.0240)	0.0561** (0.0272)
Both Euro	-0.0342 (0.0292)	0.259*** (0.0312)	-0.0328* (0.0172)	-0.00356 (0.0440)
Both East	0.724*** (0.0550)	0.123*** (0.0460)	0.00933 (0.0337)	
Lagged exports			0.834*** (0.0133)	
origin country - year fixed effects	Yes	Yes	Yes	Yes
destination country - year fixed effects	Yes	Yes	Yes	Yes
Habsburg - year fixed effects	Yes	Yes	Yes	Yes
Observations	13,993	13,993	13,248	15,361
R-squared	0.928	0.966	0.979	0.969

Table 2: Coefficients of control variables. All columns provide estimates of equation 2. Column 2 from equation 3. Stars denote statistical significance on the level of one (***) , five (**) and ten (*) percent. Robust standard errors used.

First we discuss Table 2. As expected, distance negatively impacts trade in all specifications where we can include this control variable. The displayed time varying dyadic effects tend to show the expected sign, but coefficients vary across specifications. The latter is expected, as these specifications differ in many respects, for example the PPML code is written to be estimated using levels rather than natural logarithms of the left hand side variable.

The table of central interest to our study is Table 3. This table shows the Habsburg \times year coefficients. These coefficients are also depicted in Figure 2. All four estimation methods show a steady decrease of the Habsburg trade bonus over time. The downward slope of the trend (given in Figure 2) is strongly significant in all of the specifications, and also the slope is remarkably similar in these specifications. Thus the main results, namely that the cultural component of trading capital declines over time, is insensitive to our estimation method. Note that the Habsburg trade bonus is large in the first year after the collapse of the Iron Curtain. For example, in the specification of column (1) the additional trade in the year 1990 is 0.64, which is about four times as large as the trade bonus from two countries having a common currency (0.156), or both being part of the EU (0.143). This trade boost declines steadily and becomes statistically insignificant about 10 years after the fall of the Iron Curtain.

One concern about these results might be that the opening of the trade relations between East and West might be dynamic (increasing or decreasing) in the first years after the opening of the Iron Curtain because of various reasons other than the decline of cultural ties. For example, the installation or reuse of transport infrastructure might suggest a dynamic trade relationship between an eastern and a western country, or the slow establishment of personal exchange and interaction. In both these examples we would expect an increasing relationship, but there may be others. To mitigate concerns that such effects drive our results we run a placebo exercise in which we estimate “Habsburg” effects on a relationship other than Habsburg, for which we do not expect the same decay of cultural ties. We chose Germany as the placebo country, which shares the language with Austria, and also a direct border with many Eastern countries. When we estimate the trading relationship with Germany instead of Austria being the “Habsburg”

<i>Dependent variable</i>	(1) ln(x_{int}) OLS	(2) x_{int} Poisson PMLE	(3) ln(x_{int}) Lag DV	(4) ln(x_{int}) Dyad FE
1990	0.636** (0.266)	1.017*** (0.214)		0.735** (0.293)
1991	0.627*** (0.223)	1.042*** (0.153)	0.0225 (0.115)	0.655*** (0.252)
1992	0.569** (0.231)	0.910*** (0.149)	0.0587 (0.105)	0.621** (0.248)
1993	0.596*** (0.211)	0.734*** (0.142)	0.143 (0.120)	0.496** (0.212)
1994	0.423* (0.235)	0.778*** (0.136)	-0.0594 (0.0795)	0.367 (0.235)
1995	0.523** (0.246)	0.737*** (0.180)	0.123 (0.146)	0.441** (0.214)
1996	0.601*** (0.221)	0.776*** (0.107)	0.183 (0.119)	0.555** (0.235)
1997	0.587*** (0.216)	0.795*** (0.116)	0.0331 (0.106)	0.541*** (0.194)
1998	0.443** (0.217)	0.649*** (0.116)	-0.0569 (0.0791)	0.426** (0.211)
1999	0.389* (0.217)	0.528*** (0.134)	-0.0485 (0.0883)	0.379* (0.217)
2000	0.348* (0.209)	0.561*** (0.124)	-0.00856 (0.0720)	0.265 (0.213)
2001	0.383* (0.230)	0.479*** (0.112)	0.0942 (0.104)	0.188 (0.209)
2002	0.264 (0.217)	0.372*** (0.112)	-0.0762 (0.0848)	0.278 (0.215)
2003	0.139 (0.222)	0.307*** (0.115)	-0.0794 (0.0714)	0.173 (0.212)
2004	0.342 (0.238)	0.357*** (0.131)	0.134 (0.0942)	0.348 (0.228)
2005	0.104 (0.224)	0.291** (0.142)	-0.153** (0.0749)	0.0522 (0.226)
2006	0.0794 (0.225)	0.201 (0.135)	-0.122* (0.0734)	0.0780 (0.211)
2007	-0.0860 (0.225)	0.214 (0.131)	-0.128 (0.0798)	-0.102 (0.207)
2008	-0.0171 (0.209)	0.268** (0.120)	0.0264 (0.0651)	-0.113 (0.218)
2009	-0.0924 (0.236)	0.237 (0.145)	-0.0731 (0.0899)	-0.0827 (0.217)
2010	0.0561 (0.239)	0.184 (0.117)	0.0577 (0.0807)	0.0167 (0.230)
2011	0.0103 (0.240)	0.240** (0.116)	-0.0588 (0.0884)	

Table 3: Habsburg coefficients. All columns provide estimates of equation 2. Column 2 from equation 3. Stars denote statistical significance on the level of one (***) , five (**) and ten (*) percent. Robust standard errors used.

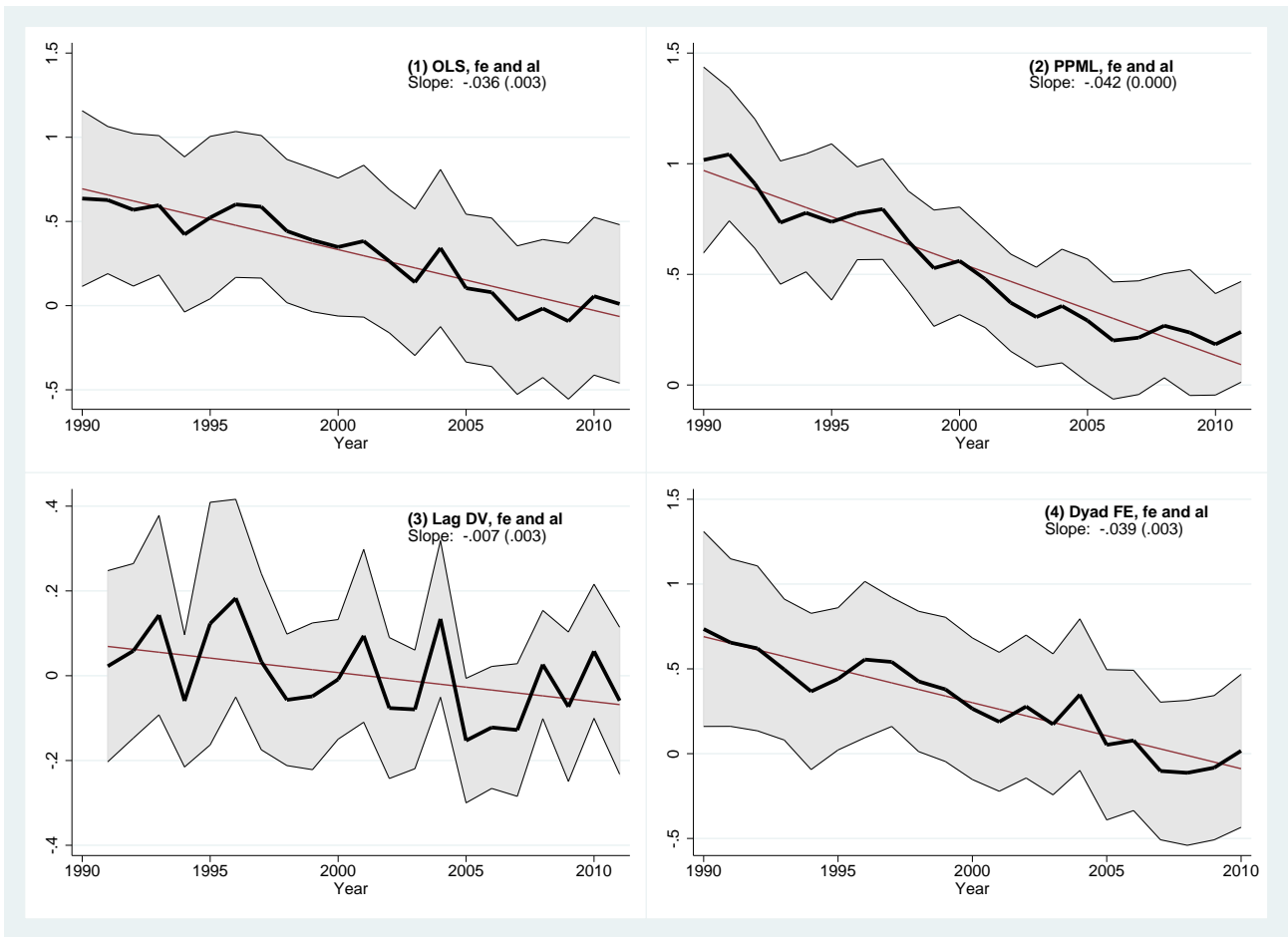


Figure 2: **Evolution of Habsburg surplus trade - fixed effects specification:** Coefficients of the $H_{in} \times year$ interaction term, $H_{in} \times n_t$, in equation 2 and equation 3 with 95 percent confidence intervals. Line of best fit with slope and s.e. are also recorded. Restricted sample: includes only countries that were fully part of the Habsburg monarchy: Austria, Hungary, former Czechoslovakia and former Yugoslavia. Coefficients of control variables are reported in table

country west of the curtain, we do not find significant relationships. These results are reported in Table 4, and in this table we use the same specification as applied in Tables 2 and 3. Most of the coefficients in this table are not statistically significant. We interpret this finding to cast doubt on the relevance of other dynamic effects shaping initial trade relationships.

Let us consider a number of possible explanations why the countries of the monarchy trade more with each other in the first years after the collapse of the Iron Curtain. First, this result might just be a consequence of a miss-specification of the gravity equation. If for example we would underestimate the distance between Austria and the eastern countries the residuals for

<i>Dependent variable</i>	(1) $\ln(x_{int})$ OLS	(2) x_{int} Poisson PMLE	(3) $\ln(x_{int})$ Lag DV	(4) $\ln(x_{int})$ Dyad FE
1990	-0.251 (0.292)	-0.0424 (0.257)		-0.596*** (0.205)
1991	-0.0882 (0.222)	0.0348 (0.154)	-0.0173 (0.102)	-0.399* (0.216)
1992	0.0796 (0.226)	0.185 (0.118)	0.132* (0.0718)	-0.184 (0.221)
1993	0.0989 (0.248)	0.293** (0.143)	-0.0109 (0.139)	-0.122 (0.191)
1994	0.0205 (0.280)	0.186 (0.126)	-0.0158 (0.0852)	-0.308 (0.193)
1995	0.151 (0.258)	0.241* (0.143)	0.150* (0.0785)	-0.209 (0.187)
1996	0.159 (0.243)	0.154 (0.139)	-0.00812 (0.0499)	-0.216 (0.182)
1997	0.206 (0.260)	0.293** (0.136)	0.0778 (0.0904)	0.00682 (0.185)
1998	0.234 (0.222)	0.394*** (0.128)	0.0263 (0.0537)	0.0339 (0.186)
1999	0.331 (0.249)	0.396*** (0.134)	0.0813 (0.0708)	0.0279 (0.184)
2000	0.303 (0.249)	0.337** (0.134)	0.000459 (0.0573)	0.00369 (0.181)
2001	0.329 (0.246)	0.340*** (0.128)	0.0549 (0.0459)	-0.0700 (0.184)
2002	0.303 (0.233)	0.361*** (0.130)	0.0448 (0.0639)	-0.113 (0.185)
2003	0.278 (0.225)	0.377*** (0.121)	0.0326 (0.0473)	-0.122 (0.196)
2004	0.368 (0.260)	0.423*** (0.121)	0.0632 (0.0802)	-0.0258 (0.182)
2005	0.226 (0.241)	0.217 (0.149)	-0.0882 (0.0703)	-0.266 (0.194)
2006	0.214 (0.310)	0.190 (0.147)	0.00222 (0.0888)	-0.193 (0.189)
2007	0.151 (0.298)	0.139 (0.139)	-2.19e-05 (0.0733)	-0.221 (0.191)
2008	0.146 (0.282)	0.111 (0.139)	-0.00496 (0.0582)	-0.250 (0.186)
2009	0.152 (0.274)	0.0847 (0.131)	0.0164 (0.0573)	-0.105 (0.190)
2010	0.204 (0.291)	0.0626 (0.130)	0.0556 (0.0727)	-0.0369 (0.198)
2011	0.230 (0.350)	0.0911 (0.131)	0.00338 (0.0929)	

Table 4: Placebo exercise: Habsburg coefficients with Germany instead of Austria. All columns provide estimates of equation ?. Stars denote statistical significance on the level of one (***), five (**) and ten (*) percent. Robust standard errors used.

these bilateral observations in a standard gravity model would be positive. A highly structural approach of the kind we employ is always prone to introduce noise when looking at specific bilateral trade volumes. Or it might be that there is some natural geographic advantage that facilitates trade between these countries, and this reason might have brought about both the Monarchy before 1918 and the trade surplus after 1989. However, explanations and examples of this type could cast doubt on the existence of a static Habsburg trade surplus. What we observe is a dynamic trade bonus that declines linearly and monotonically over time, and it does so robustly across a number of very different estimation methods. This dynamic result is hard to explain as a simple statistical property of miss-specification or measurement error.

Second, this difference might have to do with better existing transport infrastructure dating back to the times of the monarchy. However, most of this infrastructure was unused and lay bare during the Cold War and by 1989 was somewhat degenerated. Much of this infrastructure was destroyed permanently and have not been rebuilt to this day. Examples include the such as the track connecting Bratislava and Vienna, the Pressburger Bahn, which was better developed 100 years ago than it is today. Even if a degenerated rail line provides a strong advantage to trade we would not expect this surplus to contribute immediately given the time it takes to renovate such a network. Furthermore, we would expect a slight rise of the Habsburg bonus in the first years, as this infrastructure is brought back to full capacity.

Third, this trade bonus might just reflect the specific history of bilateral developments after 1989 that are unconnected to history. Austria might have had a starting advantage, after all it was between Austria and Hungary that the Iron Curtain first opened. While it is true that the Iron Curtain was symbolically opened first between Austria and Hungary (curiously enough on initiative by the would-be-emperor Otto von Habsburg), things moved rapidly after that. The first symbolic opening on August 19th 1989 was less than three months before the opening of borders within Germany on November 9th. The first time Germans could flee was on September 10th and 11th. Most of the people who fled in the two months before the broader opening were East Germans.

Forth, it may be that language barriers are initially favorable for bilateral trade from Austria to the east, if citizens in the eastern countries still speak German. This explanation is similar to the interpretation we favor, however the placebo exercise using Germany suggests that the German language can not explain this effect, and in fact does not seem to contribute to it

Fifth, there may be cultural forces that help trust between these countries. Consider for example that the prime minister of Austria for most of the 1990s was called Vranitzky, a typical Czech last name (it means in Czech so much as from the town of Vranice), while the prime minister of the Czech Republic had the last name of Klaus, which is a German first name. Such historic, cultural and genetic similarities establish trust which in turn supports trade relationships. This is the explanation that we favor. Why should this trade bonus deteriorate relative to other countries over time? The answer lies in HMR. These factors are part of trading capital, and as other forms of trading capital they tend to deteriorate linearly over time. In this particular case, as other countries establish relationships based on trust as well the advantage disappears.

To understand the magnitude of the effect and compare it to HMR we conduct two simple calculations using our estimates. We are interested in the change of the additional Habsburg trade bonus over time, relative to total trade levels, we denote this change by Δ_H . The exact mathematical expression for the term we are looking for is thus $\Delta_H = \frac{\partial \partial X_{int}}{\partial t \partial H_{in}} \frac{1}{X_{int}}$, following the notation used in equation 3 where X_{int} denotes the total trade value from origin i to destination n at time t , and H_{in} indicates if both countries are former members of the Habsburg monarchy. To this we might take the discrete approximation differentiating time from $t - 1$ to t

$$\Delta_H \approx \frac{\partial X_{int+1}}{\partial H_{int+1}} \frac{1}{X_{int+1}} - \frac{\partial X_{int}}{\partial H_{int}} \frac{1}{X_{int}} = \frac{\partial \ln X_{int+1}}{\partial H_{int+1}} - \frac{\partial \ln X_{int}}{\partial H_{int}}. \quad (4)$$

What is useful about the last expression in equation 4 is that it has a direct equivalence in the log-linear estimation equation we estimate following equation 3. Noting that $\partial \ln X_{int} / \partial H_{int} =$

γ_{int} we can estimate Δ_H as

$$\hat{\Delta}_H = \hat{\gamma}_{int+1} - \hat{\gamma}_{int}. \quad (5)$$

HMR imply that the difference between their γ_{int} equivalents is 1.722 over 60 years in their OLS specification, which divided by 6 gives 0.287. By our own estimate in column (1) of Table 3 we get a difference for 1990-2000 of 0.288. Over 20 years we see a difference of 0.5799, which divided by two gives 0.290. These three numbers (0.287, 0.288 and 0.29) seem remarkably similar, which would suggest that the decrease of the cultural parts of the decline of trading capital is similar to the decay of trading capital overall. These numbers however have to be treated with care, as the longer period considered by HMR (60 years versus 20 or 10) makes the approximation introduced in equation 4 cruder.

We thus follow a second quantification exercise, which gives a more direct comparison with HMR. HMR write that on average trade remains 31 per cent higher after 60 years following their OLS specification, which they obtain by exponentiating the surplus trade effect and subtracting one. Using this same methodology and the numbers provided in their paper, this implies that colonial relationships lead to a trade boost of 350 per cent in the year of colonial break up. We can use our estimates directly to produce equivalent estimates. Following again column (1) in Table 3 our corresponding numbers are surplus trade of 88 percent in year zero, 41 per cent in year 10, and 6 per cent in year 20. We can not compare our year zero with HMR's year zero directly, as 1989 is not the end of the colonial relationship. In fact, we do not know the end we should use in our example, as we do not know if the heavy involvement of the Soviets in the east sped up cultural memory loss, or froze it compared to a situation in the free market. We can however impose some ad-hoc structure to compare these numbers meaningfully. We may assume for mathematical convenience and sake of simplicity that the decay is linear. This assumption is consistent with the graphs provided by HMR, and by our own Figure 2, and implies declining slopes of 5.3 for the decay of trading capital, and 4.1 for the decay of the

cultural part of it. If we assume that the linear decay becomes zero at the same point that the flatter linear decay of trading capital becomes zero, this would suggest that cultural forces are about three quarters of trading capital.

Of course both these quantitative exercises have to be treated with care. They are nevertheless suggestive that cultural forces explain a large large share of trading capital.

5 Robustness

We verify that our results are robust to a number of alternative specifications and estimation methods. We (i) cluster errors by bilateral country pairs, (ii) define an inclusive Habsburg measures which includes all countries that are at least partly former Habsburg members. All results remain fairly similar.

6 Conclusion

Our results connect two strands of empirical results in recent years. On the one hand there have been suggestions that attitudes and trust are important determinants of bilateral trade (see among many others Algan and Cahuc, Disdier and Mayer 2007, Guiso, Sapienza and Zingales 2009, Michaels and Zhi 2010). We add to this discussion by combining it with the suggestive idea by HMR that bilateral trade accumulates a stock of trading capital, that seems to deteriorate linearly over time. We argue that trust is part of trading capital, and we suggest estimates of its rate of decay.

The historic case study of European trade in the aftermath of the Iron Curtain gives us the opportunity to study a subsample of the cases considered by HMR with a specific shock that lets us dissect the components of trading capital, and observe the isolated decay of some parts of it. The part we observe is all that the Iron Curtain could not separate, the part of trading capital that is not cross-border ownership, not multinational firms, not vertical trade linkages,

not personal interaction, not political cooperation. What is left could be called the residual of trust, cultural memory, sympathy, that survived the years of a split Europe. Consistent with the recent empirical literature on trust mentioned, our estimates suggest that the part of trading capital that must be attributed to these factors is large.

Large decaying historic effects imply that trade should be studied in dynamic rather than static contexts. They also highlight that history can not be safely ignored in economic studies, as it frequently is. Of course these observations might apply outside of a trade context.

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7 Appendix A: Data

The main source we rely on to obtain bilateral trade flows is the standard United Nations Commodity Trade Statistics Database (COMTRADE). While a cleaned version of these data are available (Feenstra 2005) we use the raw data as it gives us more years after 2000, up to 2011. We undertake some data cleaning ourselves, as described below. We verify that our main results are robust to using the Feenstra data up to 2000.

We download both aggregate, industry and product level data.⁶ Our original sample of annual aggregate trade flow contains 32,386 observations reported as imports from 47 European economies over the period 1990 to 2011. The year 1990 marks the fall of the Iron Curtain and 2011 is the most recent year for which a full set of reported trade statistics are available. We use the 4-digit Standard International Trade Classification, revision 2, commodity code (SITC2) as it is the most detailed product classification for which the COMTRADE database offers data spanning back to 1989, and it is the same as used by Feenstra (2005). At the industry level our original dataset contains 227,462 observation. Individual observations are identified by origin-destination-year dimensions, and by origin-destination-year-product dimensions in the case of product data. Table 5 lists all countries in the dataset.

The first problem we encounter is that of missing reported trade values. These are especially common in early years after a break-up or creation of an economy in the aftermath of the fall of the Iron Curtain. For example, Slovakia only starts reporting its trade flows in 1994, one year after the break-up of Czechoslovakia. Following the approach taken by Feenstra (2005) we prefer importer reported statistics, assuming these are more accurate than those trade values reported as exports. Wherever possible we use exporter reported trade flows if the import reported trade flows is missing for a country-pair. By this method we replace 2,293 missing observations in the total trade dataset and 12,706 observations within the industry level dataset - about ten percent of observations.

⁶COMTRADE data are revised over time. The data described here were accessed on June 23, 2013 via the website <http://comtrade.un.org>.

Within Comtrade, import reported data is valued CIF (cost, insurance and freight) and export reported data is valued FOB (free on board). FOB-type values include the transaction value of the goods and the value of services performed to deliver goods to the border of the exporting country. CIF in addition includes the value of the services performed to deliver the goods from the border of the exporting country to the border of the importing country. Following the methodology of HMR we correct this discrepancy by discounting CIF values by 10 percent. We compare the import and exported reported trade statistics whenever both reports are available. If we ignore all exporter and importer reported values that differ by a factor of greater than two either way, we find that reports valued as CIF are, on average, exceed FOB reported values by a factor 1.12, which confirms the HMR methodology.

We use UN definitions (2013) to determine which countries to include as Europe. We start with all European countries, but undertake some aggregations to balance the data. Some of the nation break-ups following the fall of the Iron Curtain occur within key economies of the former Habsburg Empire. We prefer to work with a panel of stable country boundaries so that compositional differences do not drive our results. Fortunately these border changes consisted of splits in such a way that they can easily be mapped into larger units that remain stable over time. We aggregate trade flows to the smallest possible country which we can observe continually over the sample period. Table 5 lists all country groups and years that merge/split and that we aggregate. After aggregating we drop within country trade (i.e. trade flows that were formerly reported as Czech Republic to Slovakia). Note that we only observe trade statistics from the Former Yugoslav Republic of Macedonia starting in 1993. Usually COMTRADE country borders changes only occur at the beginning of a calendar year. There is one notable exception to this: Both Serbia and Serbia-Montenegro report trade data in 2005. We keep and aggregate these observations within the same year as it might be due to Serbia Montenegro breaking up at some point during the year, such that Serbia starts reporting its imports from some month when Serbia Montenegro ceases to do so. Consequently, our measure of Yugoslavia contains reports from former Yugoslavia in 1989-1991, reports from four countries in 1992, five countries from 1992 to 2004, six countries in 2005 where both Serbia and Serbia

Montenegro report data, and six countries from 2006 and thereafter as Montenegro replaces Serbia-Montenegro. We drop a number of countries of the former Soviet Union from the dataset (Belarus, Ukraine, Latvia, Lithuania and Estonia as well as the Russian Federation). With the dissolution of the Soviet Union these countries and the political turmoil these economies only appear in the trade statistics two years after the beginning of the sample period (in 1992). We decide that the cost of introducing noise by including them is greater than the benefit of gaining some more observations, especially as these countries are not directly relevant for the question we study. Given these changes, the resulting panel of countries we work with is balanced throughout all the years we study.

Albania	Fmr Yugoslavia	Poland
Andorra	France	Portugal
Austria	Germany	Rep. of Moldova**
Belarus**	Gibraltar*	Romania
Belgium***	Greece	Russian Federation**
Belgium-Luxembourg	Vatican City State*	San Marino*
Bosnia Herzegovina***	Hungary	Serbia***
Bulgaria	Iceland	Serbia and Montenegro***
Croatia	Ireland	Slovakia***
Czech Rep.***	Italy	Slovenia***
Czechoslovakia	Latvia**	Spain
Denmark	Lithuania**	Sweden
Estonia**	Luxembourg***	Switzerland
Faeroe Isds	Malta	TFYR of Macedonia***
Finland	Montenegro**	Ukraine**
Fmr Dem. Rep. of Germany***	Netherlands	United Kingdom
Fmr Fed. Rep. of Germany***	Norway	

Table 5: List of European Economies and our aggregation method.

* Only appear as partner. Do not report trade statistics themselves. Trade values estimated following the methodology of Feenstra (2005)

** Former Soviet Union with changing borders

*** Aggregated with another country to balance the sample

We drop reported destinations that are designated “bunkers” (UN code 837), “free zones” (838), “special categories” (839) and “areas not elsewhere specified (nes)” (899). Moreover, we drop the highly incomplete observations reporting trade with San Marino and the Vatican. Table 6 reports the elements by year for the countries that involve aggregation for our dataset.

Table 6: Aggregated Economies

Country	Years observed
Germany	
Germany	1991 - 2012
Fmr Dem. Rep. of Germany	1989 - 1990
Fmr Fed. Rep. of Germany	1989 - 1990
Czechoslovakia	
Czechoslovakia	1989 - 1992
Czech Rep.	1993 - 2012
Slovakia	1993 - 2012
Yugoslavia	
Fmr Yugoslavia	1989 - 1991
Slovenia	1992 - 2012
Bosnia Herzegovina	1992 - 2012
Croatia	1992 - 2012
TFYR Macedonia	1993 - 2012
Serbia and Montenegro	1992 - 2005
Serbia	2005 - 2012
Montenegro	2006 - 2012
Belgium-Luxembourg	
Belgium-Luxembourg	1989 - 1998
Belgium	1999 - 2012
Luxembourg	1999 - 2012

We add a number of standard control variables, relying on standard sources. We obtain data on aggregate GDP and populations from the World Banks World Development Indicators (2013). We compute GDP per capita as GDP divided by population, both as reported by the UN. Following our methodology of aggregating trade flows, we derive GDP and population measures for Yugoslavia and Czechoslovakia as the sum of GDP and populations of the underlying countries. For example, Czechoslovakia's population is calculated as the sum of the Czech Republics and Slovakian populations. GDP is measured in current US dollar (millions) and, in accordance to trade flows, not deflated. We obtain a number of gravity variables from the CEPII distance database used in Mayer and Zignago (2005).⁷ These include the country-specific variable landlocked as well as dyadic variables common border, common (official) language, shared language spoken by at least 9 per cent of the population, and distance. As measure of distance we use distance between capitals as it is a consistent measure we can apply to the aggregated economies. For example, we use Prague as the capital of Czechoslovakia throughout the sample period. The variables time difference, shared legal history, area and shared religion are from the gravity data set provided by HMR (2010).⁸ We also use this source to add time varying variables GATT/WTO membership, membership of RTAs (Regional Trade Agreements) and a common currency indicator. Since the HMR dataset only spans the years up to 2006, we update the time varying variables using data from the WTO.⁹ Finally, we construct dummy variables for EU and Eurozone membership.¹⁰ This latest source also allows us to generate a variable that indicates membership in the common currency.

⁷These data are available at <http://www.cepii.fr/anglaisgraph/bdd/distances.htm> (accessed June 19, 2013)

⁸These data are available at <http://strategy.sauder.ubc.ca/head/sup> (accessed June 19, 2013).

⁹Here we rely on two sources, http://www.wto.org/english/thewto_e for GATT/WTO membership and <http://rtais.wto.org/UI/PublicPreDefRepByEIF.aspx> for RTAs (both sites accessed June 19, 2013).

¹⁰We use the EU web site http://europa.eu/about-eu/countries/index_en.htm (accessed July 10, 2013)