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A Dissection of Trading Capital: Cultural persistence of trade in the aftermath of the fall of the Iron Curtain

Matthias Beestermöller and Ferdinand Rauch*†

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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 declines linearly and monotonically over time. We argue that these findings suggest that decaying cultural forces explain a significant part of trading capital. We document the rate of decay of these cultural forces.

JEL classification: *F14, F15, N33, N34, N94*

Keywords: *Trade, Gravity, Culture, Borders, Habsburg Empire, Persistence*

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1 Introduction

A central theme in empirical international trade has been the quantification of the determinants of bilateral trade flows. Much progress has been made, mainly through a large literature following the gravity equation. One factor that remains notoriously difficult to measure is the cultural proximity between countries. In this paper, we disentangle the components of trade costs that relate to cultural forces in a dynamic setting 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 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 Empire[1] at the beginning of the 20^{th} 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 disappears some time around the year 2005 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. Cultural forces can survive decades of separation. 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.

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

[1]Throughout this paper we use the terms 'Habsburg monarchy', 'Habsburg Empire' and 'Austro-Hungarian monarchy' interchangeably, knowing that Austro-Hungary is only valid since 1867. We usually refer to the Empire in its extension shortly before World War I, as displayed in Figure 1.

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 through reduced bilateral trade costs, (ii) capital relating to personal communication and human interaction, trust built up in repeated games, such as provided in structures of multi-national firms or joint ventures, by frequent personal contacts and trust won through repeated interaction, and (iii) a cultural component, which might include elements such as trust not based on personal interaction but cultural familiarity, such as transported by cultural norms, language, history, consumers' familiarity with products, trust based on similarity and familiarity of people. This third category may also include past decisions on institutional design and standards such as which side of the road to drive on or what type of light bulbs to adapt.

We argue below that the history of Central Europe led to the decay of physical capital connecting countries in the east and west of the Iron Curtain. Further, all formal institutions of the Empire ceased to exist as there were several waves of drastic institutional changes especially east of the Iron Curtain. Moreover, specific infrastructure was destroyed. We also argue that the history of Central Europe destroyed most 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 literature 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 (McCallum 1995 and Anderson and Van Wincoop 2003), and trade once interrupted takes a long time to recover (Felbermayr and Gröschl 2013, Nitsch and Wolf 2011). There have been suggestions that culture matters more for trade than either institutions or borders (Becker et al. 2011). Our paper also adds to a growing literature which emphasizes the long persistent effects of borders, institutions and culture. Ostrom (1990) 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.

Our paper also relates to recent contributions in economic history documenting the persistence

of cultural forces of trust and mistrust (Durante 2010, Nunn and Wantchekon 2011), gender roles (Alesin et al. 2013), preferences for redistribution (Luttmer and Singhal 2008) and racism (Voigtlander and Voth 2012).

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. Our paper mirrors Nitsch and Wolf (2011): While they show that borders remain visible in trade statistics long after they are abolished we demonstrate that borders take a long time to diminish trade when newly erected. Djankov and Freund (2002) document that Russian regions continued to trade with each other's 60 per cent 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 19^{th} 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 east and west 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 it's 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 discuss our empirical strategy in Section 3 and present our estimates of the trade boost and its decline among former Habsburg countries in Section 4. Section 5 discusses its implications and Section 6 additional robustness checks. Section 7 concludes.

2 Historical overview

Figure 1
Austro-Hungarian Empire in 1910 and modern country boundaries

Source: Habsburg map is from Jeffreys (2007), the country boundaries come from Eurostat (2013).

In the 13^{th} century Rudolf von Habsburg acquired the thrones of Austria and Styria, which his family held until the first half of the 20^{th} century. The Habsburg monarchy expanded over the centuries mainly through skillful marriage policy, but also frequently lost territory in battle. The territory ruled by this family always incorporated different languages, customs and religions, which especially in the early years were allowed to flourish locally with little superstructure. Unification attempts and the introduction of a centralized administration came fairly late, and were introduced by emperors Maria Theresia and Josef II. helped by chancellors Kaunitz and Metternich only in the course of the 18^{th} century.

In 1913 the Austro-Hungarian empire consisted of 53 million people, 13 per cent 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 monarchy had a large degree of ethnic and linguistic diversity, not only across the empire as a whole, but also within major sub-state regions and cities. The parts 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 19^{th} 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 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 20^{th} 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. The importance of the attachment of people to their government is highlighted by Clark (2013): "[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." This suggests that before the collapse the monarchy had strong, functioning institutions, respected by citizens throughout.

[2]For 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.

The end of World War I brought about a number of declarations of independence, which were sealed by the treaties of Saint Germain (1919) and Trianon (1920). New borders were drawn, new countries invented, following considerations of ethnicity, language and trade networks. Yet all the newly founded democracies on the territory of the former monarchy included large numbers of sudden ethnic and linguistic minorities. 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.

World War II 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 arranged 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 World War II. Centuries-old relations were reduced to a minimal level [...].' While Moscow took control of trade in 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). Economic cooperation was politically motivated and largely symbolic.

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. During the time of 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.[3]

The most substantial cut to trade relations was brought about by the erection of the Iron Curtain, whose construction begun in 1949. The new border run right through the former Habsburg countries, splitting Austria and the formerly Austrian parts of Italy from the rest. After the Hungarian Uprising of 1956 the already very limited possibility of transit ceased. The border was sealed by barbed wire, land mines, high voltage fences, self shot systems and other means. Only people with appropriate restrictions were allowed close to the border. The Iron Curtain presented a completely sealed border that cut all local economic activity (Redding and Sturm 2012). All local economic activity either side of the Curtain was suppresed.

Furthermore, the economies of Hungary and Czechoslovakia switched to central planning. 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

[3]The discussion of the results below includes further examples of abandonned infrastructure between East and West.

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. Given its coastal location, 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), which suggests that trade between Yugoslavia and Austria was not particularly developed during the cold war.

Table 1
Habsburg Members

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		

Notes: 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.

We only mention two properties of the fall of the Iron Curtain which are important here, namely

that it happened fast and took everyone by surprise (Redding and Sturm 2012).

These large changes of the map of Central Europe in the course of the 20^{th} 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 per centage 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, to which we count the countries of former Yugoslavia. 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 Empirical Strategy and Data

To investigate whether Habsburg trade displays persistence after decades of Cold War separation we largely follow the methodology applied by HMR. This is helpful to compare our estimates to theirs. We estimate gravity equations, to which we add $Habsburg \times year$ dummies, which are our principal variables of interest, where we use the boundaries of the Habsburg Empire in its last days. The gravity framework captures the counterfactual multilateral 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:

$$X_{int} = G_t C_{it}^{ex} C_{nt}^{im} \phi_{int} \tag{1}$$

where X_{int} denotes importer n's total expenditure on imports from origin i in year t, 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.[4]

Since there is no set of parameters for which equation 1 will hold exactly, the conventional approach is to add a stochastic term and estimate after log-linearizing. We follow the commonly practiced gravity approach (Head and Mayer 2013, Egger 2000 or Rauch 2014 provide overviews of this technique including a number of theoretical foundations which yield gravity equations). In particular, we estimate the following equation:

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

where 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. We interact some variables with year that are commonly thought of as time-invariant, given that the political situation in Europe changed a few of these dummies over time.

The main variables of interest are the bilateral coefficients on the interaction term, H_{int}, which turns on if both countries were part of the Austro-Hungarian monarchy in year t. Since we are only interested in Habsburg trade that crosses the Iron Curtain, we also include a H_{int}^{east} variable, which captures all trade east of the Curtain (there is only Austria west of the Curtain in our baseline specification). 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

[4]We follow HMRs notation here.

were only partly part of the Empire, such as Italy, may pick up effects not specific to the Habsburg relationship.

Trade is only one of many other measures that could be influenced by cultural persistance. Migration and FDI might be others. Like HMR we chose to dicuss this effect in terms of trade given that trade is measured in a more consistent way and at a higher frequency than these other measures. It is also less influenced by political decisions. For example migration in Europe remained heavily politically regulated until the EU enlargement, and migration numbers are thus politically constraint.

If we were to control for attributes of the exporter and importer using GDP per capita and populations our specification would suffer from the biased caused by omission of "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, which is to introduce exporter-year and importer-year fixed effects.[5] 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 relevent to our European data set which is balanced.[6] We therefore adopt the full fixed effects approach, even though this approach has the disadvantage that we can not observe the coefficients of some in gravity models typical right hand side variables.

We also address the issue of missing and zero trade observations. Zero and missing observations may be due to mistakes or reporting thresholds, but bilateral trade can actually be zero. We treat all missing trade obserations as zero trade. Our linear-in logs specification of equation 2 removes all observations of zero trade, thus introducing a potential selection bias.

In the literature, it has been common to either drop the pairs with zero trade or estimate

[5] see Feenstra (2004, 153-163) who addresses different techniques to take care of mulitlateral resistance within the gravity framework.

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

the model using $X_{int} = 1$ for obserations with $X_{int} = 0$ as the dependent variable.[7] In our baseline specification we choose to drop the zero pairs, but also run a robustness check replacing zeros as ones. We also adopt the Poisson Pseudo-Maximum-Likelihood(PPML) estimation technique. 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. PPML incorporates "zeros" and parameters can be estimated consistently with structural gravity as long as the data are consistent, i.e. provided the expectation of ϵ conditional on the covariates equals one. Santos Silva and Tenreyro (2006) develop a full rationale for using the PPML estimation method. The estimation method is consistent in the presence of heteroskedasticity[8], and provides a natural way to deal with zero value of the dependent variable. We believe this preferable to other estimators without further information on the heteroscedasticity. However, it may be "severly biased" when a large number of zeros is handled in this way (Martin and Pham 2009). Fortunately, there are only 53 missing trade observations out of 13,200 observations since we focus on estimating trade among European economies. The majority of missing trade values involve Albania as a trading partner for which trade may indeed be zero or so small that it falls below a minimum reporting threshold.[9]

The estimation equation for the Poisson Pseudo-Maximum-Likelihood (PPML) estimator expresses equation 2 as

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

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

Even though we include all the "usual controls" our vector of bilateral variables remains incomplete. Unobserved linkages end up in the error term. To capture possible omitted variables in ϵ_{int}, we estimate two additional econometric techniques: A lag dependent variable specification

[7] See for example Felbermayr and Kohler 2006.

[8] Consistency of estimating equation 2 depends critically on the assumpotion that ϵ_{int} is statistically independent of the explanatory variables.

[9] Please refer to the Data Appendix for more details on the data set.

and a specification with origin-destination (bilateral) fixed effects. The lagged dependent variable would absorb unobserved influences on trade that evolve gradually over time. Including a lagged dependent variable biases coefficient estimates in short panel models.[10] Monte Carlo experiments suggest that the bias can be non-negligible with panel lengths of T=10 or even T=15 (Dell et al. 2013). However, the time series dimension of our panel (T=21) is likely long enough such that biases can probably be safely considered second-order. Furthermore, the lagged dependent variable technique will not deliver consistent estimates if there is a fixed component in the error term that is correlated with the control variables. We thus also run a specification with bilateral fixed effects. We can still obtain estimates of our coefficients of interest as our variation of interest is also varying over time (the Habsburg dummies are interacted by year). The bilateral fixed effects specification identifies the effect of Habsburg membership based on temporal (within-bilateral) variation. In the bilateral fixed effects specification, all time invariant bilateral variables drop out.

To summarize, we estimate the Habsburg coefficients of interest using four different estimation techniques closely following HMR: simple OLS, Poisson Pseudo Maximum Likelihood (PPML), Lag dependent variable specification and Dyadic Fixed Effects. Each with a strong set of fixed effects. Our typical estimation has in excess of 13,000 observations, and is robust to heteroscedasticity.

The discussion of the data we use can be brief, as all data we use and our treatment of them is standard throughout the related literature. The sources and details related to the construction of our dataset are documented in Appendix A. Here we just summarize a few decisions that we take. The dataset we use contains all countries of Europe in the years from 1990 until 2011, the first year for which Comtrade data is available for all the countries of Europe after the fall of the Iron Curtain and the last year for which we found a complete set of data when we embarked on this project. We clean Comtrade data using the methodology of Feenstra (2005). We use data for Europe only as we think that it provides a cleaner sample of countries to run the tests

[10] Nickell (1981) shows that the bias declines at rate $\frac{1}{T}$.

we have in mind than the entire world would, for example since shipping technology in Europe might be different to shipping technology elsewhere. The first OLS assumption that the correct model is specified is easier to justify in a sample of more similar countries. We aggregate a few countries to maintain a balanced panel, see Table 6.

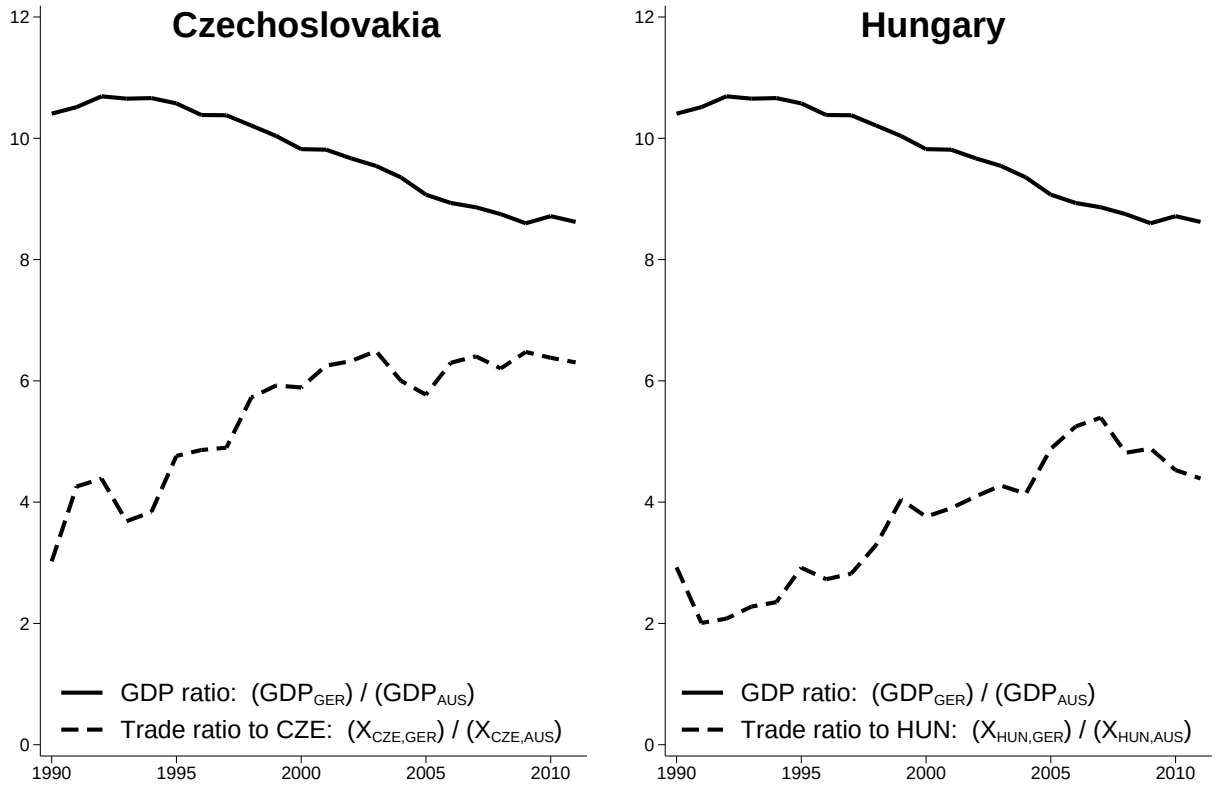
Before turning to the regression results, we present some descriptive statistics which document the Habsburg trading surplus. Table 2 considers Germany, Austria, Czechoslovakia and Hungary. Czechoslovakia borders on both Germany (both East and West) and Austria, thus differences in distance seem negligible. Moreover, changes in multilateral resistance should also be fairly similar.[11] We plot the ratio of German to Austrian GDP $\left(\frac{GDP_{Gt}}{GDP_{At}}\right)$ and ratio of German trade with Czechoslovakia to Austrian trade with Czechoslovakia $\left(\frac{X_{GCt}}{X_{ACt}}\right)$. If Habsburg did not matter we would expect the ratio of trade to mirror the ratio of GDP (using GDP as measure for market and production size). However, we observe a large gap. In 1990 the German economy is roughly ten times as large as the Austrian economy. At the end of our sample period this ratio falls to about 8.5. However, trade with Czechoslovakia is only three times as large for Germany but over the sample period this ratio rises to over 6. In the right panel of Table 2, we conduct the same exercise for Hungary - yet another core Habsburg member - and find an even starker gap. The trade ratio rises from approximately two to 4.5. These graphs highlight that Austrias trade with these two eastern countries was overproportional given its size relative to Germany, but that this surplus steadily lowered over time.

4 Results

We document our main results in three ways: 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. Each of the four columns in Table 2 corresponds directly to the column with the same number in Table

[11] A surge in French or Spanish GDP would have similar effects on Germany and Austria.

Figure 2
Descriptive GDP and trade ratios
(ratios on year)



3. Figure 3 plots these Habsburg coefficients over time.

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 indicators 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).

Table 2
Evolution of Habsburg surplus trade - coefficients of control variables

	(1)	(2)	(3)	(4)
	OLS	PPML	Lag DV	Bilateral FE
Dependent variable:	$\ln(x_{int})$	x_{int}	$\ln(x_{int})$	$\ln(x_{int})$
Time fixed dyadic effects:				
Log distance	-1.181***	-0.641***	-0.213***	
	(0.0239)	(0.0113)	(0.0215)	
Common religion	0.344***	0.108***	0.0614***	
	(0.0336)	(0.108)	(0.0162)	
Both East	0.419***	0.116***	-0.0358	
	(0.0491)	(0.0455)	(0.0304)	
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
Time varying dyadic effects:				
Common currency	-0.197***	0.00541	-0.00482	-0.0192
	(0.0358)	(0.0339)	(0.0188)	(0.0307)
Regional trade agreement	0.237***	0.288***	0.0576	0.344***
	(0.0560)	(0.0531)	(0.0411)	(0.0570)
Both EU	-0.0119	-0.108***	0.0175	-0.00553
	(0.0396)	(0.0319)	(0.0198)	(0.0222)
Both Euro	-0.0862***	0.271***	-0.0451***	-0.0302
	(0.0280)	(0.0311)	(0.0157)	(0.0363)
Lagged exports			0.831***	
			(0.0126)	
Origin country - year fixed effects	Yes	Yes	Yes	Yes
Destination country - year fixed effects	Yes	Yes	Yes	Yes
Bilateral fixed effects	No	No	No	Yes
Habsburg - year fixed effects	Yes	Yes	Yes	Yes
Habsburg - east - year fixed effects	Yes	Yes	Yes	Yes
Observations	13,147	13,200	12,518	13,147
R-squared	0.937	0.966	0.982	0.976

Notes: All columns provide estimates of equation 2. Column 2 from equation 3. Stars denote statistical significance on the level of one (***), five (**) and ten (*) per cent. 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. Santos Silva and Tenreyro (2006) also find a significantly smaller effects of geographical distance. Some of the coefficients show unexpected signs, such as a negative coefficients for common currency and "Both EU". This might reflect that some wealthy economies such as Norway and Switzerland are not part of EU and Euro. Curiously, our PPML coefficient of distance exactly corresponds with that of HMR

Our main table is Table 3. This table shows the Habsburg × year coefficients. These coefficients are also depicted in Figure 3. All four estimation methods show a steady decrease of the Habsburg trade bonus over time. We confirm that the first and last estimated coefficients are statistically significantly different to each other.[12] The downward slope of the trend (given in Figure 3) 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 0.69, which is about three times as large as the trade bonus from two countries having a regional trade agreement (0.24), two times as large as both countries having the same religion (0.34) and 1.6 times as large as both countries being located in Eastern Europe. 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

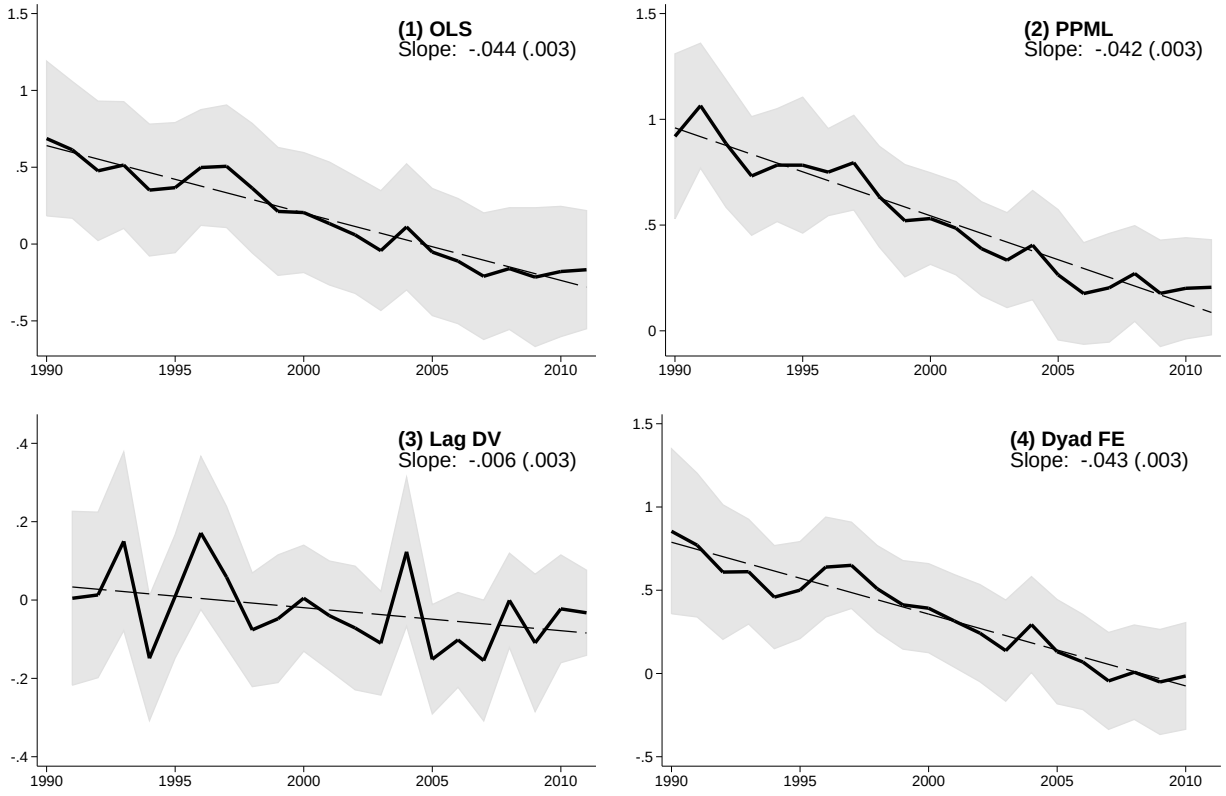
[12] F-test Prob > F values are OLS: .008; PPML: .001; Lag DV: .768; and Dyad FE: .000.

Table 3
Evolution of Habsburg surplus trade - Habsburg coefficients

	(1) OLS	(2) Poisson PMLE	(3) Lag DV	(4) Dyad FE
Dependent variable:	$\ln(x_{int})$	x_{int}	$\ln(x_{int})$	$\ln(x_{int})$
1990	0.687***	0.919***		0.854***
	(0.257)	(0.199)		(0.253)
1991	0.613***	1.065***	0.00457	0.771***
	(0.227)	(0.151)	(0.113)	(0.220)
1992	0.477**	0.885***	0.0131	0.609***
	(0.232)	(0.154)	(0.108)	(0.206)
1993	0.514**	0.732***	0.150	0.612***
	(0.210)	(0.143)	(0.116)	(0.160)
1994	0.351	0.784***	-0.149*	0.459***
	(0.219)	(0.136)	(0.0812)	(0.158)
1995	0.367*	0.783***	0.00948	0.501***
	(0.216)	(0.164)	(0.0804)	(0.149)
1996	0.498***	0.750***	0.171*	0.639***
	(0.192)	(0.105)	(0.0997)	(0.153)
1997	0.506**	0.795***	0.0584	0.650***
	(0.203)	(0.114)	(0.0921)	(0.153)
1998	0.363*	0.634***	-0.0761	0.509***
	(0.215)	(0.122)	(0.0740)	(0.132)
1999	0.212	0.521***	-0.0477	0.412***
	(0.212)	(0.135)	(0.0831)	(0.136)
2000	0.205	0.531***	0.00470	0.392***
	(0.199)	(0.110)	(0.0690)	(0.136)
2001	0.134	0.485***	-0.0399	0.316**
	(0.204)	(0.112)	(0.0712)	(0.142)
2002	0.0599	0.388***	-0.0714	0.242
	(0.194)	(0.113)	(0.0805)	(0.149)
2003	-0.0428	0.334***	-0.110	0.137
	(0.199)	(0.114)	(0.0675)	(0.155)
2004	0.112	0.405***	0.123	0.294**
	(0.209)	(0.132)	(0.0969)	(0.147)
2005	-0.0520	0.265*	-0.151**	0.131
	(0.211)	(0.157)	(0.0712)	(0.160)
2006	-0.111	0.176	-0.102*	0.0691
	(0.208)	(0.123)	(0.0617)	(0.146)
2007	-0.209	0.203	-0.154**	-0.0448
	(0.210)	(0.131)	(0.0786)	(0.149)
2008	-0.159	0.271**	-0.000727	0.00778
	(0.202)	(0.115)	(0.0614)	(0.145)
2009	-0.215	0.177	-0.109	-0.0509
	(0.230)	(0.128)	(0.0895)	(0.161)
2010	-0.179	0.201*	-0.0225	-0.0150
	(0.216)	(0.122)	(0.0702)	(0.163)
2011	-0.167	0.206*	-0.0325	
	(0.196)	(0.115)	(0.0554)	

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

Figure 3
Evolution of Habsburg surplus trade - Habsburg coefficient plots



Notes: Coefficients of the Habsburg × year interaction term $H_{in} \times n_t$ in equation 2 and equation 3 with 95 per cent 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 3.

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" 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.

Table 4
Germany Placebo Coefficients

	(1) OLS	(2) Poisson PMLE	(3) Lag DV	(4) Dyad FE
Dependent variable:	$\ln(x_{int})$	x_{int}	$\ln(x_{int})$	$\ln(x_{int})$
1990	-0.230	0.342		-0.130
	(0.375)	(0.225)		(0.238)
1991	-0.287	0.113	-0.213**	-0.278
	(0.285)	(0.213)	(0.0981)	(0.181)
1992	-0.140	0.196	0.0853	-0.0514
	(0.294)	(0.171)	(0.0944)	(0.175)
1993	0.106	0.431***	0.228***	0.186
	(0.286)	(0.167)	(0.0809)	(0.162)
1994	-0.158	0.358**	-0.227	-0.110
	(0.318)	(0.142)	(0.196)	(0.155)
1995	-0.0570	0.317*	0.108	-0.0191
	(0.346)	(0.180)	(0.0817)	(0.150)
1996	-0.0678	0.304*	-0.0319	-0.0151
	(0.307)	(0.184)	(0.0632)	(0.138)
1997	-0.00333	0.395**	-0.000351	0.0679
	(0.296)	(0.183)	(0.0804)	(0.132)
1998	-0.0299	0.490***	-0.0406	0.0433
	(0.291)	(0.177)	(0.0752)	(0.141)
1999	-0.00454	0.506***	0.0522	0.104
	(0.313)	(0.177)	(0.0796)	(0.137)
2000	-0.0777	0.416**	-0.0934	0.0192
	(0.330)	(0.178)	(0.0848)	(0.143)
2001	-0.0327	0.460***	0.0385	0.0688
	(0.305)	(0.170)	(0.0572)	(0.134)
2002	-0.0519	0.530***	-0.0353	0.0493
	(0.329)	(0.158)	(0.118)	(0.169)
2003	0.0254	0.544***	0.0483	0.133
	(0.274)	(0.144)	(0.0480)	(0.138)
2004	0.0509	0.462***	0.0112	0.160
	(0.263)	(0.159)	(0.0753)	(0.133)
2005	-0.0569	0.316*	-0.106	0.0521
	(0.281)	(0.189)	(0.0753)	(0.136)
2006	-0.115	0.268	-0.0585	-0.00521
	(0.310)	(0.184)	(0.0903)	(0.139)
2007	-0.145	0.214	-0.0530	-0.0417
	(0.287)	(0.175)	(0.0634)	(0.134)
2008	-0.183	0.154	-0.0743	-0.0802
	(0.288)	(0.172)	(0.0656)	(0.136)
2009	-0.156	0.0905	-0.00779	-0.0530
	(0.291)	(0.166)	(0.0813)	(0.143)
2010	-0.147	0.0673	-0.0296	-0.0469
	(0.291)	(0.166)	(0.0813)	(0.143)
2011	-0.102	0.102	0.0114	
	(0.323)	(0.170)	(0.103)	

Notes: Placebo exercise: Habsburg coefficients with Germany instead of Austria. All columns provide estimates of equation 3. Stars denote statistical significance on the level of one (***), five (**) and ten (*) per cent. Robust standard errors used.

5 Discussion of estimates

We 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. A highly structural approach of the kind we employ is easily prone to introduce noise when looking at specific bilateral trade volumes. If for example we would overestimate the distance between Austria and the eastern countries the residuals for these bilateral observations in a standard gravity model would be positive.[13] 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. It is further worth pointing to the placebo exercise that replaces Austria with Germany, which would react equally sensitive to purely mechanical problems with the approach we employ. In addition, we re-estimate our main specification with similar results using different measures for distance: the distance between the most populated city, and two measures of weighted distances.

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 degenerated. The main rail lines connecting Austria with the East were abandoned, for example the track connecting Bratislava and Vienna, the Pressburger Bahn, in 1945 the rail to the Czech Republic via Laa an der Thaya in 1945 and the connection via Fratres-Slavonice, also in 1945. All these lines have not been revived until today. Transcontinental connections such as Vienna-Hamburg or Vienna-Berlin have switched permanently to run via Passau instead of Prague. There is also evidence that reconstruction

[13] Given the location of Vienna in the east of Austria we are more likely to underestimate the distance.

and construction of new networks was slow after 1990, for example in Hungary "there were no significant changes in the lengths of the linear transport network in the first half of the 1990s" (Erdösi 1999). Further, 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. Thus 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 in the presence of the would-have-been-emperor Otto von Habsburg), things moved rapidly after that. The first symbolic opening on August 19^{th} 1989 was less than three months before the opening of borders within Germany on November 9^{th}. The first time Germans could flee was on September 10^{th} and 11^{th}. Most of the people who fled in the two months before the broader opening were East Germans. Thus the head start was neither long, nor specificly benefitial to the Austrian economy.

Forth, it may be that language barriers are initially favorable for bilateral trade from Austria to the East, given that citizens in the eastern countries still speak German with higher proportion than in other European countries. This explanation is similar to the interpretation we favor, however the placebo exercise using Germany suggests that the German language can not explain this trade surplus, and in fact does not seem to contribute to its decline.

Fifth, there could be cultural factors other than the monarchy that help to foster trust between the countries that we call Habsburg countries. It might be for instance that Austria's political neutrality helped to win trust of eastern trading partners. This however should predict a general increased trade for Austria with all eastern countries, rather than the selected members of the former monarchy, and would be absorbed by the interactions of Austria with all of Eastern Europe that we include. Further, we would not expect this or similar effects to decline over

time, as contrary to the monarchy, Austria's political neutrality persists.

Sixth, 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 of Western Europe establish relationships based on trust with the East the Austrian advantage disappears. At the same time the last inhabitants on both sides of the Iron Curtain who personally remember the monarchy died in the two decades after 1990, which further may contribute to weaken the importance of the monarchy in culture.

In 1989, when the Iron Curtain fell surprisingly, and when geopolitics were changing at an unprecedented speed compared to decades of communism, many of the actors involved are likely to have been challenged by a new level of complex decisions. In this context, the observed trade patterns might reflect an orientation on the familiar and the known recognized in former Habsburg partners. The observed reduction in the Habsburg trading surplus, may then be interpreted as a reorientation to new partners as the new world order becomes normality.

To interpret the magnitude of the effect and compare it to HMR we conduct a few simple calculations using our estimates. 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 69 per cent in year zero and 21 per cent in year 10. 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 3[14], and implies declining slopes of 5.3 for the decay of trading capital, and 4.8 for the decay of the cultural part of it. We can conclude that the decay of the cultural component of trading capital is 10 per cent slower than the decay of all trading capital.

Remarks on the estimated share of the stock of trading capital that is cultural are less precise, as we do not know which year we should use as the year of the colonial break up of the Habsburg monarchy. 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 estimate the year in which the stock of cultural trading capital is exhausted, which is when the curves in Figure 3 becomes zero, around 2010. If we assume that the Soviet Union worked as a freezer of cultural capital and count the years 1918 - 1945 and 1990-2010 as years of decay we end up with an expected boost of 225.6 per cent in year 0, compared to 350 per cent implied in HMR, which would amount to 65 per cent. This is our favorite estimate, yet it should be used with caution.[15]

6 Robustness

We verify that our results are robust to a number of alternative specifications and estimation methods. We omit the detailed numbers and figures for these robustness tests for reasons of space, they are available upon request.

First, we cluster standard errors by bilateral country pairs. We verify that this does not change

[14] As an additional robustness check, we repeat our analysis including a year trend and Habsburg $\times$ year interaction term. This is a more parametric analysis compared to our main specification as it forces the slope to be linear. We find a statistically significant negative slope on the interaction term in all specifications.

[15] Assuming that after the Iron Curtain fell people looked to the year before the wars and communism and that the decay was only for 20 years 1990-2010 we estimate that the cultural component amounts to 27 per cent of trading capital, if we normalize the start year such that trading capital and its cultural component become zero at the same point in time we estimate four fifths.

the significance of coefficients reported in Figure 3 in a meaningful way. It should be quite apparent from the monotonic downward slope visible in that figure that the significance of this downward slope is strongly robust to other or even more demanding specifications.

Second, we define the Habsburg measure in different ways. We include all countries that are at least partly former Habsburg members, thus adding Italy, Poland, Romania, Serbia, Ukraine and Yugoslavia to the countries covered by the Habsburg fixed effects. The Habsburg coefficients remain fairly similar, yet become somewhat statistically weaker. This is as expected, given that this measure includes areas that were outside of the monarchy and thus should be weaker. We run a separate regression including only Yugoslavia as additional Habsburg member, and one in which we code Yugoslavia as being west of the Curtain. The monotonic downward slope is strongly robust to these specifications.

Third, we include Austria $\times$ East $\times$ year fixed effects. These specifications make clear that the Habsburg effect is specific to members of the former monarchy and does not extend to the relationship of Austria with other countries to the east of the Iron Curtain. This specification is important as it can address concerns that other features of Austria post 1990 such as its political neutrality might explain the favorable trading conditions. In this specification the slopes of the figure corresponding to Figure 3 become (1) -.045 (.003), (2) -.032 (.002), (3) -.008 (.004), (4) -.041 (.004), which is to say that they do not change much. Thus a strong and similarly declining trade bonus remains when we control for the trade of Austria with all countries in Eastern Europe.

Forth, we address the concerns brought forward by Anderson and Yotov (2012), that a disadvantage of pooling gravity data over consecutive years is that dependent and independent variables cannot fully adjust in a single year's time. We address this concern using the suggested methodology of keeping only years in 3 or 5 year intervals. The downward slope in Panel (1) in Figure 3 becomes -.038 (.004) when keeping only every third year from 1990, and -.034 (.002) when keeping only every fifth year. Our findings seem not to be much changed by this adjustment.

Finally, as discussed in earlier sections we repeat the analysis but treat zero and missing observations in different ways. We omit zeros from the sample and replace zeros by 1. Again, our findings do not seem to be altered by these specifications.

7 Conclusion

This paper connect two strands of empirical results in recent years. The first is a large number of suggestions that attitudes and trust are important determinants of bilateral trade. We add to this discussion by combining it with the another strand, the suggestive idea of HMR that bilateral trade accumulates a stock of trading capital, that deteriorates linearly over time. We argue that trust is a substantial part of trading capital, and we provide estimates of its rate of decay. The large decaying historic effects we find imply that trade should be studied in dynamic rather than static contexts. These findings also suggest that expectations on the short run success of trade policy should be cautioned, as large parts of trade are explained by forces of history which are difficult to steer through policy. These findings also highlight that history can not be safely ignored in economic studies, as it frequently is. All these observations might apply outside of a trade context.

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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.[16] 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 per cent of observations.

[16] COMTRADE 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 valuated CIF (cost, insurance and freight) and export reported data is valuated 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 per cent. 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 valuated 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.

Table 5
List of European Economies and our aggregation method

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	

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

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

Faroer Islds and Gibraltar. Table 6 reports the elements by year for the countries that involve aggregation for our dataset.)

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).[17] 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).[18] 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.[19] Finally, we construct dummy variables for EU and Eurozone membership.[20] This latest source also allows us to generate a variable that indicates membership in the common currency.

[17]These data are vailable at http://www.cepii.fr/anglaisgraph/bdd/distances.htm (accessed June 19, 2013)

[18]These data are available at http://strategy.sauder.ubc.ca/head/sup (accessed June 19, 2013).

[19]Here 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).

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