

Tear down this wall: on the persistence of borders in trade

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The fall of the Berlin Wall 20 years ago created a number of 'natural experiments' that economists have exploited to advance our understanding of fundamental issues. This column reviews the use of German data to examine the surprisingly large impact that international borders have in dampening geographically buying and selling patterns. Results show that the biggest barriers to trade stem from economic fundamentals rather than technological and political barriers. Infrastructure and tariffs can come done quickly; it takes at least a generation to tear down the wall in our minds.

Twenty years ago, the German economy experienced a massive "integration shock" (Siebert, 1992) that caught most economic agents by surprise. While the reaction to the shock in terms of movements of capital and labour has attracted considerable attention by economists (Akerlof et al 1991, Burda 2006, Hunt 2006 among many others), the nature of the shock itself – a sudden and complete removal of barriers to trade and mobility between East and West – was taken for granted. In a [recent paper](#), we show for two separate and very large sets of intra-German trade flows that the Iron Curtain was lifted much more slowly and, in fact, that it is still with us. This suggests that the biggest challenge to globalisation is neither technological nor political barriers to trade, but barriers stemming from economic fundamentals.

Since McCallum (1995) many economists have documented the significant and very persistent effects of political borders on trade in an integrating world economy (Anderson and van Wincoop 2004, Chen 2004, Nitsch 2000). In a nutshell, there are three explanations on offer for these "border effects". We term them the "political barriers" approach, the "fundamentals" approach and the "artefact" approach, respectively.

According to the "political barriers" approach, borders continue to affect trade mainly because of the existence of non-tariff barriers that diminish trade even after the complete removal of tariffs or the elimination of exchange rate fluctuations. While the formation of a free trade area or a currency union is expected to remove some "political barriers" to trade, political unification eliminates most or even all of these barriers.

By contrast, according to the "fundamentals" approach, border effects stem largely from some source of heterogeneity between regions that exist independently of the political border and may very well predate it. For example, ethno-linguistic, social or business networks can drive border effects, partly because political and administrative borders often tend to follow the geography of those networks (Combes, Lafourcade and Mayer 2005, Schulze and Wolf 2009) and partly because political systems can reinforce such networks (Alesina and Fuchs-Schuendeln 2007). In contrast to the "political barriers", it will be much more difficult and time-consuming to remove the effect of such fundamental factors.

Finally, it has been argued that border effects are at least to some extent a statistical artefact due to difficulties in separating the impact of border-related trade barriers from the impact of geographical distance (Head and Mayer 2002, Hillberry and Hummels 2008) and that of non-directional multilateral barriers to trade (Anderson and van Wincoop 2003). While improved data on distance (such as time-varying and transport-mode-specific distance measures) as well as appropriately refined estimation

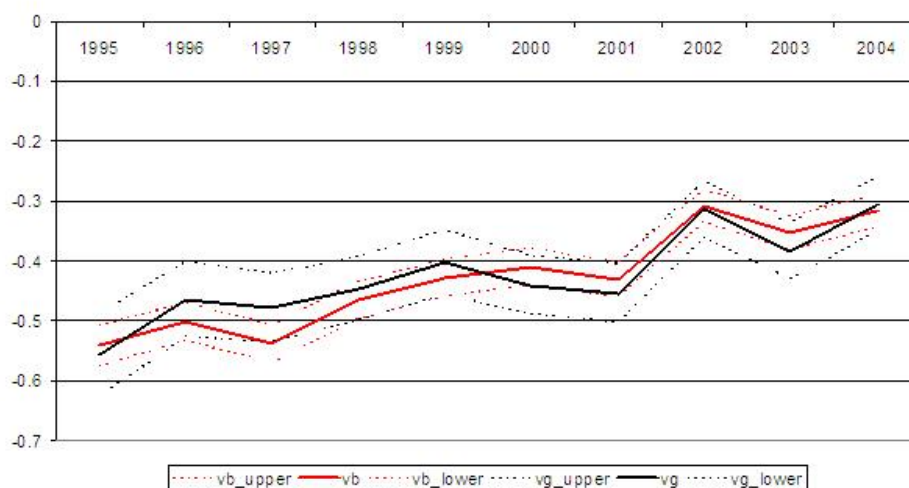
techniques might help to reduce these problems, the remaining border effect could still be driven by problems of statistical aggregation (Hillberry and Hummels 2008).

We explore variation in two distinct sets of panel data that span from 1995 to 2004 and extend over the former intra-German border (“Iron Curtain”) to distinguish between the three approaches described above. The two data sets encompass trade between regions of Germany, distinguished by industry and mode of transportation. Crucially, they differ radically with respect to their levels of geographical detail and industry aggregation but both allow us to identify the effect of the former East-West border after controlling for the effect of administrative borders between the 16 German *Bundesländer* (such as Bavaria and Hesse) on trade. Moreover, to control for the effects of distance, we use extremely detailed data on shipment distances and shipment times that is specific for modes of transportation and updated over time to reflect changes in infrastructure.

Reviewing the set of hypotheses aimed at explaining observed border effects on trade, any border effect that arises from unaccounted heterogeneity in terms of “political barriers” to trade (such as remaining differences in taxation between states) should be captured by a time-varying control for state borders. More specifically, over the period 1995-2004, we have no reason to expect the continued existence of any administrative barrier to trade along the former Iron Curtain in addition to barriers along state borders. However, if border effects arise due to heterogeneity in terms of “fundamentals”, we might well find a persistent impact of the former border on trade. For example, social and business networks in East and West Germany might adjust only slowly to the border change, while some purely geographical barriers might not adjust at all. Hence, an East-West border effect stemming from “fundamentals” would decline only gradually over time. Finally, if estimates of border effects are indeed a statistical artefact, the estimates of the border effect should differ across the two data sets but should not systematically decline over time.

Our findings are surprisingly clear-cut (see figure, dotted lines show confidence bands based on robust clustered standard errors). However estimated, the former Iron Curtain is clearly visible in the data after controlling for state borders, time-varying and transport-mode specific distance that takes improvements in infrastructure into account as well as time-varying region effects.

The Iron Curtain, 1995-2004



The results are robust to variations in model specifications and several further controls such as migration. Notably, it makes hardly any difference whether we analyse data for 101 regional units and 10 industry groups or 27 regional units and 24 industry groups: the trade effect of the former Iron Curtain across Germany continued to be highly significant throughout the period under investigation, although this effect clearly declined over time. Given that we can extrapolate the results, we estimate that it would take between 33 and 40 years, or roughly one generation, to remove the effect of the former political border entirely.

These findings are difficult to square with the “political barriers” or the “artefact” explanation of border effects but strongly suggest that some fundamentals are driving the effect. We conclude that the biggest challenge to globalisation is neither technological nor political barriers to trade, but barriers stemming from economic fundamentals. While we can change infrastructure and even remove political borders, it takes at least a generation to tear down the wall in our heads.

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