

Testing Supraterritoriality:

Border Effects on Trade, Prices, and Factor Flows

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THERE is a great volume of literature heralding the arrival of a highly integrated world economy. Trade, price, and factor linkages are frequently said to be in the process of transcending nations and becoming truly global. This claim can be empirically tested by measuring the effect of national borders on trade, price, and financial patterns. The first influential attempts to do so were Martin Feldstein and Charles Horioka's 1980 study of international savings and investment and the Honourable John McCallum's 1995 study of Canada-US trade patterns. McCallum's results led to a growing body of work suggesting internal trade and factor flows are persistently greater than international flows. Herein I will review what has been learned about the border effect, or "home bias," arguing that the last decade of findings rebuts the belief that nations are obsolete. Then I will consider whether border effects impede growth and welfare or are, as John Helliwell argues, optimal arrangements for satisfying local tastes and degrees of trust.

One of the pillars of globalization is the supraterritoriality hypothesis: that nation states and national borders have a small and shrinking impact on the world economy. In 1980, Feldstein and Horioka discovered financial capital flows did not seem to be globally integrated, but the supraterritoriality hypothesis went otherwise untested until 1995. McCallum's work, a startling response to the rising trend of regional free trade agreements, raised interest in studying globalization empirically. Since 1995, trade economists have begun to reveal large, lingering national influences on a variety of economic flows, including goods trade, price covariability, and factor movements.

The national influence is most commonly measured using the gravity model which has been so successful in explaining patterns of trade. Based on the gravity of Newtonian physics, the gravity model predicts a volume of trade between two places which is proportional to their "masses" (incomes, usually) and inversely

proportional to the distance between them. Before 1995, economists used the gravity model only to consider international trade, treating countries as discrete units and disregarding the volume of activity going on inside. Internal trade patterns are, even today, poorly measured. Most countries do not track how far goods move internally, making it difficult to use the gravity model to understand the intensity of internal trade. One country that does keep track is Canada, which monitors the trade balance of each province and the volume of interprovincial trade. In the early 1990s, the same sort of data began to appear measuring trade between provinces and US states, giving economists their first opportunity to measure the relative intensity of internal and international trade. McCallum was the first to do so.

Assuming a globally integrated economy with no national bias, the gravity model predicts a Canadian province will trade equally as much with another province as with a US state which is equally distant and equally productive. If the state has a larger economy, trade with the state should be greater. Helliwell and Schembri (2005) highlight the example of Ontario's trade with BC and with California. If the border had no influence (that is, if gravity

explained all the variation in trade), Ontario should be seen to trade with California about ten times as much as with BC. Canada was thought to be, if not fully integrated, one of the most open economies in the world following GATT reductions in trade barriers. McCallum describes what was thought at the time:

Though few economists would agree with Kenichi Ohmae's statement that borders have 'effectively disappeared'... many have argued that regional trading blocs... are making national borders less important. (1995)

Using 1988 data, McCallum found Ontario to trade goods with California less than half as much as with BC, twenty times less than would be the case given perfect integration. In general, McCallum found a border effect of 22. That is, provinces seemed to trade with each other 22 times as intensely as with equally distant, equally productive states. McCallum's finding upset the belief that the removal of formal barriers leads to full openness. Helliwell cites

...survey evidence showing that trade experts, students of economics, and others without special training in economics generally thought that trade linkages were at least as tight between provinces and states as among provinces. (1998)

Helliwell describes his own reaction to McCallum's analysis: "When I first saw it, I thought this is either the most important thing I've seen in international economics, or it's wrong." (2008)

Helliwell and others set to replicating the study using data from the CUSFTA period, when trade links between Canada and the US were expected to grow stronger. Their studies show a large remaining border effect on trade. Helliwell (1998) finds that the effect of the Canada-US border fell from 17 in 1988 to 12 in 1993 and then remained at 12 through 1996. Anderson and van Wincoop (2000) specify a more rigorous multilateral gravity model which incorporates the opportunity to trade with other partners. For interprovincial trade, they find a border effect of 10.7 in 1993, well below the 16.4 which McCallum's model would predict; for interstate trade, the border effect was 2.24. US states are not necessarily more globally integrated than Canadian provinces. Rather, the result suggests borders have a greater impact on smaller economies (Helliwell and Schembri 2005). Consider trade between a large partner and a small one. Suppose barriers limit the volume of trade between them, and national product is constant so that all the forgone international trade is

diverted to internal trade. The volume of diverted trade is the same in both countries, but it is a greater fraction of the smaller country's product, so the smaller country will be seen to have a larger border effect. Thus, despite the lower difference between the intensities of interstate and state-province trade, Anderson and van Wincoop's results demonstrate a considerable national influence on the volume of Canada-US trade.

In the rest of the world, the intensity of internal trade is more difficult to measure. Unlike Canada, most nations do not record the pattern of trade between parts of the country. We are forced to derive estimates from their national accounts, making crude guesses about the distances involved in internal trade. Helliwell (1998) surveys merchandise trade among and within 22 OECD nations, acknowledging the arbitrariness in estimating internal distances. Helliwell finds the average OECD member faced a border effect of ten; and the average EU member, six. Countries sharing a language tended to trade over 50% more intensely with each other, and countries with higher GDP per capita tended to face lower border effects. Nitsch (2000), using a different distance assumption, finds average border effects in western

Europe declined from nine in 1982 to seven in 1990; or, if Portugal and Spain are included, from twelve down to ten. Brenton and Vancauteren (2001) compare the technical barriers in sectors of the European economy. They find high, persistent border effects, even where technical regulations do not pose barriers to trade, although the effects in these sectors are lower within the EU. There is consensus that border effects on trade flows are surprisingly large and cannot be explained by the presence of explicit barriers alone.

Price dispersion is another facet of economic integration which has not gone according to the supraterritorial plan. Engel and Rogers (1998) argue that the volume of trade is a flawed measure of openness and that we must also consider the extent to which the prices of goods and services in different locations converge. In their first paper on the subject (1996), Engel and Rogers look at consumer prices in Canadian and US cities from 1978 to 1994. They find a strong association linking the distance between cities to the degree of price dispersion, except where the border is concerned. Pairs consisting of one Canadian and one US city experience a degree of price divergence so high that the border's

presence is equivalent to 75 000 miles' extra distance between cities. State and provincial borders, by contrast, have zero impact. In their 1998 paper, Engel and Rogers note that the border effect on prices is declining no faster than the distance effect, implying that falling trade barriers are not responsible. They also find that a border effect persists when purchasing-power rates are used instead of nominal exchange rates, allowing us to dismiss the idea that exchange rate volatility is solely responsible for the price dispersion between Canada and the US. Helliwell (2002) calculates the border effect on prices to be effectively infinite, concluding there is zero effective short-term convergence of prices over the border.

Feldstein and Horioka (1980) produced perhaps the first modern result contradicting the supraterritoriality hypothesis when they found a surprisingly strong correlation between domestic savings and investment rates in the OECD between 1960 and 1974. If globalization has resulted in the free international flow of liquid capital, then most of a country's savings should be seen to be invested in other countries. If, on the other hand, capital is not mobile, we should see a strong "home bias": savings stay in their

home country, and domestic rates of saving and investment are close. Feldstein and Horioka found the latter to be the case. On average, about 0.9 of incremental savings were reinvested in the same country; and variation in the saving rate explained 0.9 of the variation in the investment rate. Feldstein and Horioka had to conclude that most savings in most countries is not available for international arbitrage.

By itself, the Feldstein-Horioka puzzle is not evidence that a border effect exists. If savings are similarly immobile within countries, then the home bias could be said to be based purely on remoteness. Helliwell and McKittrick (1999) attempt to answer this question using domestic savings and investment rates from 1961 to 1993 between OECD members and between Canadian provinces. Unlike the persistent, slowly falling international constraint on investment, there was no interprovincial constraint. Savings arising in one province are not likely to be invested there; in fact, they are equally likely to be invested anywhere in Canada. Financial capital is perfectly mobile and unbiased within Canada. Helliwell and McKittrick cite similar results from studies of Japan. Investment seems to be a national phenomenon, not a local or global one.

The evidence from trade, prices, and financial flows demonstrates that even the world's most passable national borders impose large and lasting constraints on commerce. Surprisingly, we prefer to deal in domestic markets—sometimes even when the foreign ones are larger and closer. Despite the great post-WWII removal of the formal barriers to global integration, we cannot claim to have a world economy. Some border effects are declining but still too high to be easily explained. Why do national markets still matter in the free trade world? Do inefficient barriers to trade still exist? Or are border effects the optimal response to national differences in tastes and problems of incomplete information?

The floating exchange rate currency regime is one factor which is assumed to amplify the border effect. The risk in holding volatile foreign currency and the cost of converting it should reduce the opportunities for international arbitrage and, consequently, the volume of trade. By how much has been the subject of debate. Early studies had found almost no connection between exchange rate volatility and trade. Rose (2000) fills a gap in the literature by studying the volume of trade between countries which do and do not share currencies. His paper, at odds with the early studies,

claims a surprisingly high border effect: pairs of countries sharing a currency traded over three times more than similar pairs of countries which did not. Rose concludes that having a common currency does much more for trade flows than does removing exchange rate volatility. Nitsch (2002) finds numerous flaws in Rose's dataset, reducing the effect to 2.5. Noting the limited and widely variable data, Nitsch casts doubt on using Rose's model in the currency union debate. In any case, no causal relationship is seen. Subsequent work has further reduced the border effect of currencies. Helliwell (2005) cites a recent review of the literature in which Rose settled on a 30-90% effect and acknowledged the danger of drawing causal conclusions and policy advice from cross-sectional data. Time-series data have been used to study countries which adopted common currencies, most recently the Eurozone 12. None of these studies find a causal currency-union effect on trade greater than 10% (ibid). Thus, despite a promising start, there is only tenuous empirical support for trade gains from entering currency unions.

What is left? If other, more effective barriers remain, we do not have a clear picture of what they are. Industry subsidies, such as

the US's enormous agricultural subsidies, are one interesting possibility. But it bears repeating that even in the EU, which was designed to be a single fully integrated economy, trade is still thought to be five or six times more intense within than between members (Helliwell 2008). There is a way to test whether border effects are inefficient. Suppose the border effects that remain in the free trade world are barriers which reduce the volume of external trade more than they raise the volume of internal trade—that is, suppose they destroy trade and reduce income. Then we should find smaller countries to be worse off, since international trade is a greater fraction of their economies. In fact, there is no significant correlation between the sizes and per-capita incomes of OECD economies (ibid), implying that some of the border effect is no barrier at all. On the contrary, internal trade seems to be somehow inherently more efficient than international trade. Let us consider why.

Social patterns like tastes and personal networks are likely to constrain the geography of trade. Markets are efficient only when participants have good information. Incomplete information—ignorance of what is being demanded or supplied—limits the

trade that can be made. The less familiar the market, the harder it is to serve. Thus, trade is likely to occur between people whose cultural or personal ties give them better market information. The importance of shared culture and institutions is a key part of the distance effect in the gravity model in trade. Language and tastes are less uniform, and personal networks sparser, the more distant or dispersed the market is. But these differences might also help explain the persistent border effects which are seen between all national economies no matter how open to trade. Though shared languages visibly raise the volume of trade, Helliwell speculates they may be just part of the total cultural impact on trade. Helliwell writes at length about the possible uncertainties of engaging in foreign trade, concluding

...that as long as national institutions, populations, trust, and tastes differ as much as they do, the industrial organization and other institutional literatures would predict that transaction costs will remain much lower within than among national economies, even in the absence of any border taxes or regulations affecting the movements of goods and services. (1998)

The differences Helliwell mentions are not as easily erased as the tariffs of yesteryear. Migrants, not ministers at summit meetings, bridge the world's cultural divides. Helliwell cites early evidence

that increased trade flows tend to follow in the wake of migration patterns. International migration is more restricted today than a century ago, a fact supraterritorialists do not dispute, though they may underestimate its importance. Helliwell calculates that for every resident of a Canadian province born in the US, there are almost a hundred born in other provinces (1998). This suggests a kind of sclerosis limiting the international flow of culture-specific market information. We do not live in a global village, though we might gradually create one. The Schengen zone of free travel and migration in Europe is a promising new direction for policy and an important research opportunity. In most of the world, issues of trust seem to prevent similar measures from being considered.

The evidence has not been kind to supraterritoriality. Border effects have been seen to decline with income and with the removal of formal barriers to trade, up to a point. They bottom out at a surprisingly high level of influence on goods trade, prices, and factor flows. The literature on this problem is still young, however. Only a few economists have contributed to it, and we must do a great deal more research before we fully understand the national nature of economies.

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