

Macroeconomic Determinants of International Trade

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Comments Welcome

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Introduction

Much research on international trade patterns focuses on deep primitive causes of trade, such as differences in national factor endowments, preferences, or technologies. In much of my recent research in the area, I examine less traditional causes of trade flows. In particular, I've tended to focus mostly on the macroeconomic determinants and consequences of trade.

How much does Monetary Union Stimulate Trade?

A number of countries in the Americas and Europe have engaged in monetary unions of late. This is usually to the chagrin of academic economists who point out that joining a monetary union means giving up the tool of independent monetary policy which can be used to smooth idiosyncratic business cycles. This cost seems high, and there are others. Where are the benefits of currency union?

Perhaps currency union brings the benefit of higher international trade within the union. If there's a single issue that economists agree on, it's that trade should be as free and unfettered

as possible. And two countries with different monies are separated by a monetary barrier to trade, otherwise known as the exchange rate. That barrier might be small if exchange rate costs are small or easy to hedge; but the barrier might be large. After all, the one thing we know about exchange rates is that they tend to change, usually in unpredictable ways. Quantifying the impact of currency unions and exchange rate uncertainty on trade is thus an empirical exercise of importance.

In “One Money, One Market” I quantified the impact of currency union on trade, and found it to be remarkably large.¹ In particular, I estimated that two countries that share a common currency trade over three times as much as an otherwise comparable pair of countries, holding other things equal. This effect is large – implausibly large – but my extensive sensitivity analysis simply couldn’t reduce it substantially. All I could do was gird my loins and prepare for the onslaught of criticism.

My work was based on a model that I have tended to use as the workhorse for much of my work in international trade, namely the bilateral “gravity” model of trade. The gravity model has enjoyed a resurgence of use in the last decade, since it provides a useful model with solid theoretical foundations and admirable empirical performance. Stripped to its essence, the gravity model states that trade between a pair of countries is inversely proportional to the distance between them, and proportional to their combined economic mass (usually proxied by GDP).² The model fits the data well and produces plausible coefficient estimates that tend to be similar across different studies and authors, an unusual combination in Economics. Consequently, the gravity model provides a good defensive shield for controversial results!

¹ Rose, Andrew K. (1999) “One Money, One Market: Estimating the Effect of Common Currencies on Trade” *NBER Working Paper 7432*.

² For more discussion, see Anderson, James E. and Eric van Wincoop (2001) “Gravity with Gravitas: A Solution to the Border Puzzle” *NBER Working Paper 8079*.

One of the issues with the gravity model is that it is intrinsically a cross-sectional model, relying on variation across pairs of countries. That's a disadvantage for inherently time-series questions such as "What is the Effect on Trade of Leaving or Joining a Currency Union?" To address such important questions, Reuven Glick and I gathered a data set covering over 200 countries and 50 years.³ This enabled us to use a variety of conventional panel data techniques, including the "fixed-effects" estimator which uses only time-series variation within a pair of countries. We found that the impact of leaving a currency union was still large; countries that dissolve currency unions see their trade shrink dramatically, *ceteris paribus*. Assuming symmetry, a pair of countries joining a common currency experiences a near doubling of trade. Still a big effect!

My estimates of the effect of currency union on trade are high, implausibly so to many researchers (and often to me). Consequently, a number of critiques of my work have started to circulate. I have tried to list and respond individually to many of these criticisms on my website. Still, it is also interesting to summarize the mass of this research as a whole. One way to do this objectively is by using "meta-analysis" a set of tools that can quantitatively survey the literature. The key part is to construct a vector of estimates (of the effect of currency union on trade), one estimate from each study. There are currently 34 studies in the area, each differing in a number of dimensions (most critical of my work!). This set of (34) estimates can then be summarized and linked to the features of the underlying studies. The meta-analysis shows that the literature as a whole finds a statistically significant and economically large effect of currency union on trade, averaging around 60%, but with considerable variation.⁴

³ Glick, Reuven and Andrew K. Rose (2001) "Does a Currency Union Affect Trade? The Time Series Evidence" *NBER Working Paper 8396*.

⁴ Rose, Andrew K. (2004a) "A Meta-Analysis of the Effects of Common Currencies on International Trade" *NBER Working Paper 10,373*.

Suppose that currency union *does* indeed lead trade to rise. Should we care? Jeffrey Frankel and I investigate that question by linking the effect of currency union on trade to the effect of trade on output. We find that the indirect effects of currency union on output can be large, and come through trade promotion, rather than more stable macroeconomic policies.⁵ For instance, we estimate the potential long-run output stimulus from accession to the Euro could be over 20% for countries like Hungary, Poland, Sweden, and the UK. Even if our estimates are off by a factor of even five, policy-makers ignore such effects at their peril.

There is also an interesting self-fulfilling feedback loop that's possible. Suppose currency union tends to stimulate trade, and that more trade tends in turn to make business cycles more synchronized. In this case, entering into currency union lowers the main cost of currency union, namely foregone monetary independence. A pair of countries with business cycles that are dissimilar *ex ante* (making currency union look costly), might have more coherent business cycles *ex post* because the increase in trade stimulated by currency union tends to synchronize business cycles. Frankel and I discovered in "The Endogeneity of the Optimum Currency Area Criteria" that this is more than an academic point.⁶ Even after controlling for endogeneity, we found strong evidence that two countries with more international trade tend to have more synchronized business cycles.

Are there Strong Effects of the Multilateral Trade System on Trade ?

Most economists now agree that "institutions" are important determinants of the standard of living, growth rates, and other key macroeconomic phenomena. Typically these institutions

⁵ Frankel, Jeffrey A. and Andrew K Rose (2000) "Estimating the Effect of Currency Union on Trade and Output" *NBER Working Paper 7857*.

⁶ Jeffrey A. Frankel and Andrew K Rose (1996) "The Endogeneity of the Optimum Currency Area Criteria" *NBER Working Paper 5700*.

are measured as the presence (or lack) of domestic political, legal, or financial constraints on the ability of economic agents to engage in harmful activities. It is interesting to exploit the existence of comparable international institutions. For instance, researchers have studied how the activities of the International Monetary Fund (IMF) and the World Bank affect growth, inflation, poverty, inequality, and the environment.

One interesting gap in the literature concerns the role of the World Trade Organization (WTO) and its predecessor the General Agreement on Tariffs and Trade (GATT). The success (or lack) of IMF and World Bank programs has been much studied by researchers both inside and outside the beltway. But there has been essentially no comparable research on the effects of the WTO. This is odd but perhaps understandable. Economists like free trade, and accordingly the institution in charge of freeing trade is by far the most popular and least controversial of the Bretton Woods trinity (IMF, World Bank, and GATT/WTO). Still, some evaluation of an important institution like the WTO is better than none. This is especially true since the WTO has lately (if unfairly) acquired a notorious reputation as a result of disastrous meetings in Seattle and Cancun.

In “Do We Really Know that the WTO Increases Trade?” I examine the performance of the GATT/WTO in terms of its own mandate of trade promotion.⁷ At any point in time, there are countries both inside and outside the system; similarly, many countries that began outside the system have subsequently acceded. Thus there is both time-series and cross-sectional variation available to estimate the effect of membership on trade. Using both a gravity approach and aggregate data, I find that countries that are formal members of the GATT/WTO seem to engage in amounts of trade that are similar to those of countries outside the system. Accession to the system seems to raise trade, but by an amount that is economically small compared with

intuition, the effects of regional trade agreements, and the hype surrounding WTO negotiations. But extensive robustness checks left few signs that members of the GATT/WTO had substantially higher trade than outsiders.

This negative result seems hard to believe initially; after all, one of the most well-known facts in international economics is that trade consistently grows faster than income. That might be the result of dropping transportation costs. Still, it seems hard to believe that the multilateral trade system is irrelevant, especially the GATT sponsored eight successful “rounds” of multilateral trade negotiations.

Then again, perhaps not. “Most Favored Nation” status might seem like the great prize of GATT/WTO membership. But it turns out that MFN status is typically given freely away to most countries outside the GATT.⁸ Further, many believe that the GATT historically made few demands on most countries in terms of trade liberalization, since most entrants to the system have been developing countries eligible for special and differential treatment (a synonym for most “special and differential treatment” is “protectionism”). That is, many developing countries joined the GATT without substantial changes in their trade policies.

I pursue this idea in “Do WTO Members have More Liberal Trade Policy?”⁹ In particular, I used almost 70 quantitative measures of trade policy – all that I could find in the literature – to ask whether membership inside the GATT/WTO system is associated with less protectionism. The answer is a deafening silence; there is essentially no substantive evidence that WTO members have systematically lower or less widespread tariffs, non-tariff barriers, and

⁷ Rose, Andrew K. (2002a) “Do We Really Know that the WTO Increases Trade?” *NBER Working Paper 9273*.

⁸ For instance, as of August 2004, only six countries (Afghanistan, Cuba, Laos, North Korea, and Serbia - Montenegro, and Vietnam) did not have normal trade relations (the equivalent of MFN status) with the United States, even though many countries were not in the WTO (Russia and Saudi Arabia being perhaps the most prominent non-members); <http://www.itds.treas.gov/mfn.html>.

⁹ Rose, Andrew K. (2002b) “Do WTO Members have More Liberal Trade Policy?” *NBER Working Paper 9347*.

so forth. Membership in the WTO seems to have few privileges in the form of higher trade, but it comes with few responsibilities in terms of more liberal trade policy.

The WTO is an institution that was designed by its creators to be toothless; it cannot use sticks since it does not hold any carrots (such as conditional IMF loans). And perhaps the WTO is not even interested in higher trade, only greater trade stability. In “Does the WTO Make Trade More Stable?” I investigate the hypothesis that membership in the system makes trade more predictable.¹⁰ Unfortunately for the WTO, both bilateral and multilateral evidence reveals few consistent signs that membership in the GATT/WTO reduces the volatility of trade flows.

Why do Countries Repay Sovereign Debts?

One of the ongoing mysteries in international finance is why investors are willing to export capital, especially to governments of developing countries. After all, sovereigns default on their debts frequently, and have done so for hundreds of years, in many countries. When a sovereign (such as Argentina) defaults, there are few sanctions that can be applied by foreigners (such as Americans). Debtors like Argentina don't have much collateral that Americans can seize even in principle. Invading to enforce debt contracts is unthinkable. And there are so many serial defaulters that it's hard to take any concerns about reputation seriously, given the prevalence of repeat offences. Why then does Argentina ever service its debts? And equivalently, why do Americans ever lend to Argentina?

One thing that Americans can do to encourage repayment is to threaten to damage Argentina's trade in the case of default. This threat might be explicit, in the forms of tariffs and trade sanctions intended to deter default. But such threats are rarely observed. More likely, any threat is implicit; country risk insurance rates rise in the case of default and trade credit tends to

shrink. For whatever reason, debtors like Argentina might fear being cut off from the fruits of international trade following default. Is this fear reasonable? Does trade typically shrink following sovereign default?

In “One Reason Countries Pay their Debts: Renegotiation and International Trade” I answer this question using another large panel data set, including the dates of over 200 “Paris Club” debt renegotiations to measure default.¹¹ Controlling for a host of other factors, it turns out that trade does indeed shrink after default. The shrinkage in trade only amounts to eight percent a year, but it’s a highly persistent effect, lasting over a decade. That is, countries have at least one solid reason to repay their debts, since they risk losing out on international trade in the case of default.

If default tends to lower trade, it stands to reason that creditors should lend more to countries with which they trade closer trade links. That way the linkage between default and trade can be as tight as possible. In “A Gravity Model of Sovereign Lending: Trade, Default, and Credit” Spiegel and I provide a simple theoretical model of this idea and test it empirically.¹² We use BIS data on international banking claims between 20 creditor and 149 debtor countries between 1986 and 1999 and show that there is a robust positive link between bilateral trade and lending patterns. That is, debtors tend to borrow more from creditors with whom they share more international trade.

¹⁰ Rose, Andrew K. (2004b) “Does the WTO Make Trade More Stable?” *NBER Working Paper 10,207*.

¹¹ Rose, Andrew K. (2002c) “One Reason Countries Pay Their Debts: Renegotiation and International Trade” *NBER Working Paper 8853*.

¹² Rose, Andrew K. and Mark M. Spiegel (2002) “A Gravity Model of Sovereign Lending: Trade, Default and Credit” *NBER Working Paper 9285*.