Trade Booms, Trade Busts, and Trade Costs[1]

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I. Introduction

What has driven trade booms and trade busts in the past 130 years? The goal of this paper is to address this question head on, by examining new data on bilateral trade flows and bilateral trade costs for a consistent set of 103 unique country pairs over the period from 1870 to 2000. Our key organizing principle is that the growth of world trade is driven by two primary forces: increases in global output and changes in the aggregate trade costs facing countries on international markets.

Trade costs are all the costs of transaction and transport associated with the exchange of goods across national borders. Although currently of great interest to the profession (James E. Anderson and Eric van Wincoop, 2004; Maurice Obstfeld and Kenneth S. Rogoff, 2000; David Hummels, 2007),[2] economists actually know little about the magnitude and determinants of trade costs, and especially in the long run. At the same time, an established literature in economic history does provide us with a rough outline of their trajectory.

For example, research on the nineteenth century trade boom has tracked certain costs like freight rates and tariffs reasonably well (Michael A. Clemens and Jeffrey G. Williamson, 2001; David S. Jacks and Krishna Pendakur, 2007; and Saif I. Shah Mohammed and Williamson, 2004). Likewise Barry Eichengreen and Douglas A. Irwin (1995) and Antoni Estevadeordal, Brian Frantz, and Alan M. Taylor (2003) have documented evidence on frictions during the interwar period, while Irwin (1995) and Hummels (2007) have done much the same for the post-

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[2] An indication of this interest is found on the website ideas.repec.org. As of February 2008, the first two references given were the thirtieth and third most cited recent papers in economics, respectively.

World War II period. However, the magnitude and impact of a host of other important impediments to trade that are hard to measure like informational, institutional, and non-tariff barriers remain unexplored. There has also been very little work on consistently measuring barriers to trade over the last two waves of globalization and the one intervening spell of deglobalization.[3] This paper is the first step in filling the gap on both counts of comprehensiveness and consistency.

Specifically, we present a micro-founded measure of aggregate trade costs. Following the state-of-the-art gravity literature (e.g., Anderson and van Wincoop, 2003), we derive this measure from a multiple-country general equilibrium model of trade in differentiated goods based on the approach by Dennis Novy (2007). The innovation of the micro-founded measure is to control for multilateral resistance in a tractable, yet previously un-noticed way which makes it possible to compute trade costs on the basis of bilateral trade, total trade, and output data. These trade costs gauge the difference between observed bilateral trade and frictionless trade in terms of an implied markup on retail prices of foreign goods. Thus, we are able to estimate the combined magnitude of tariffs, transportation costs, and all other macroeconomic frictions that impede international trade but which are inherently difficult to observe.

We use this measure to examine the growth of global trade between 1870 and 1913, its retreat from 1921 to 1939, and its subsequent rise from 1950 to 2000. Thus, the paper is the first to offer a complete quantitative assessment of developments in global trade from 1870 to 2000.[4] Our findings demonstrate that the average level of trade costs (expressed in tariff equivalent

[3] A notable exception here is the work of Clemens and Williamson (2001) and Shah Mohammed and Williamson (2004) which document worldwide tariffs from 1875 to 1997 and shipping costs from 1869 to 1950, respectively.
[4] We do, however, follow in the footsteps of Estevadeordal, Frantz, and Taylor (2003) who examine the period from 1870 to 1939, Scott L. Baier and Jeffrey H. Bergstrand (2001) who examine the period from 1958 to 1988, and John Whalley and Xian Xin (2007) who examine the period from 1975 to 2004.

terms) for eighteen countries[5] fell by thirty-seven percent in the forty years before World War I. For the same countries, we find that the average level of trade costs increased by nine percent in the eighteen years from 1921 to the beginning of World War II. Finally, average trade costs are shown to have fallen by seventeen percent in the years from 1950.

After examining the trends in trade costs, we turn to their determinants. This exercise is meant to underscore that our measure is economically sensible. In particular, our evidence suggests that standard factors like geographic proximity, trade policy, adherence to fixed exchange rate regimes, shared borders, and membership in a European empire matter for explaining trade costs. However, the three sub-periods exhibit significant variation, allowing us to document important changes in the global economy over time: the growing importance of distance and tariffs in determining the level of trade costs and the ambiguous effect of fixed exchange rate regimes on trade costs over time.

Returning to the question of what drives globalization episodes, we use the micro-founded gravity equation to attribute changes in global trade to two fundamental driving forces—changes in global output and changes in trade costs. For the pre-World War I period, we find that trade cost declines explain roughly sixty-two percent of the growth in global trade. And consistent with previous studies for the post-World War II period (see Baier and Bergstrand, 2001; Whalley and Xin, 2007), we find that only thirty-five percent of the present-day global trade boom can be explained by the decline in trade costs. Thus, we document substantial differences between the two waves of globalization. Finally, the precipitous rise in trade costs following the Great Depression explains the entire interwar trade bust.

[5] The countries in our sample include Australia, Belgium, Brazil, Canada, Denmark, France, Germany, India, Indonesia, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, the United Kingdom, and the United States.

II. Gravity Redux

Consider a world of N countries and a continuum of differentiated goods. Assume that countries specialize in a range of goods and that consumers have constant elasticity of substitution preferences. In this context, Anderson and van Wincoop (2003) derive the following "gravity" equation of international trade:

$$(1)\quad x_{ij} = \frac{y_i y_j}{y^W}\left(\frac{t_{ij}}{\Pi_i P_j}\right)^{1-\sigma}$$

where x_{ij} denotes exports from country i to j, y_i and y_j are the income levels of country i and j, y^W is total world income and $\sigma > 1$ is the elasticity of substitution. The trade cost factor, $t_{ij} \geq 1$, is defined as the gross bilateral cost of importing a good (one plus the tariff equivalent) so that if p_i is the supply price of a good produced in country i, then $p_{ij} = t_{ij}p_i$ is the price faced by consumers in country j. Trade costs are not constrained to be symmetric but we will restrict our attention to the geometric average of trade costs going in either direction. Π_i and P_j are country i's outward and country j's inward "multilateral resistance" variables, respectively. The multilateral resistance variables capture countries' average international trade barriers. The important insight of the model is that bilateral trade flows x_{ij} depend on the bilateral trade barrier t_{ij} relative to average international trade barriers.

A problem in the theoretical work so far has been to find an appropriate expression for the multilateral resistance variables. Novy (2007) demonstrates that an analytical solution for the price indices can readily be found. In particular, this solution is a function of intranational trade flows. Intuitively, the more a country trades with itself, the higher must be its average international trade barrier. This approach leads to a bilateral gravity equation of international trade of the following form:

$$(2)\quad x_{ij}x_{ji} = x_{ii}x_{jj}\left(\frac{t_{ij}t_{ji}}{t_{ii}t_{jj}}\right)^{1-\sigma}$$

The size variable in this gravity equation is not total income. Instead, the size variable is intranational trade, x_{ii} and x_{jj}, which also controls for multilateral resistance. The trade cost terms can be interpreted as the extent to which international trade is more costly than domestic trade. We emphasize that we do not assume that domestic trade costs are zero and that to be consistent with theory, bilateral trade costs must be measured against a benchmark (Anderson and van Wincoop, 2004). Using equation (2) we solve for the geometric average of the tariff equivalent, τ_{ij}, of these costs as

$$(3)\quad \tau_{ij} = \left(\frac{x_{ii}x_{jj}}{x_{ij}x_{ji}}\right)^{\frac{1}{2(\sigma-1)}} - 1$$

Lacking consistent data on intranational trade, we use GDP less aggregate exports as a proxy. For the post-World War II period, it becomes possible to track how well this proxy performs by comparing it to total production less total exports (Shang-Jin Wei, 1996). Although the level of bilateral trade costs is affected by the way intranational trade is measured, their change over time is very similar (Novy, 2007). We use expression (3) along with the trade and output data detailed in Appendix I to plot average bilateral trade costs in Figures 1a through 1c for trade globally and in six sub-regions: within the Americas, within Asia, within Europe, between the Americas and Asia, between the Americas and Europe, and between Asia and Europe. The value of sigma is set to eight which roughly corresponds to the midpoint of the range (5,10) considered in Anderson and van Wincoop (2003).

III. Trade Costs over Time

Figures 1a through 1c are normalized to 100 for the initial observation in each period, i.e. 1870, 1921, and 1950, so that they are not comparable in terms of levels over time. Our goal instead is to highlight the changes within a given period.[6] These averages are weighted by the sum of countries' GDP to reduce the influence of country pairs which trade infrequently or inconsistently.[7] Thus, for the first wave of globalization from 1870 to 1913, we document an average decline in international trade costs of thirty-seven percent.[8] This was led by a fifty-three percent decline for trade between Asia and Europe, probably generated from a combination of the opening of Japan, the consolidation of European overseas empires, and radical improvements in communication and transportation linking Eurasia. Bringing up the rear was intra-European trade itself with a still respectable average decline of twenty-four percent. This performance reflects the maturity as well as the close proximity of these markets. We should note a substantial portion of the decline is concentrated in the 1870s. This was, of course, a time of simultaneously declining freight rates and tariffs as well as increasing adherence to the gold standard. In subsequent periods, the decline in freight rates was substantially moderated while tariffs climbed in most countries, dating from the beginning of German protectionist policy in 1879.

Turning to the interwar period from 1921 to 1939, we can see that the various attempts to restore the pre-war international order were somewhat successful. A fitful return to the gold standard was achieved by 1925 when the United Kingdom rejoined the club (Natalia

[6] We are also trying to avoid pressing the heroic, if not foolhardy, assumption that the elasticity of substitution has remained constant over the entire 130 years under consideration.

[7] The obvious candidate for weights, the level of bilateral trade, is inappropriate in this instance. A quick look at equation (3) verifies that bilateral trade and trade costs are not independent. That is, a low trade cost measure is generated for a country pair with high bilateral trade, suggesting that the use of bilateral trade would impart systematic downward bias in the weighted average.

[8] The distribution of spikes in 1874 and 1881 in the "Asia" and "Americas-Asia" series, respectively, may seem odd. However, these are explained by the small number of underlying observations (N=5 and 6, respectively) and can be attributed to sporadic trade volumes for Japan as it integrated into the world economy.

Chernyshoff, David S. Jacks, and Alan M. Taylor, 2005). At the same time, the international community witnessed a number of attempts to normalize trading relations, primarily through the dismantling of the quantitative restrictions erected in the wake of World War I (Ronald Findlay and Kevin H. O'Rourke, 2007). As a result, trade costs fell on average by eight percent up to 1929. Although much less dramatic than the fall for the entire period from 1870 to 1913, this average decline was actually twice as pronounced as for the equivalent period from 1905 to 1913, pointing to a surprising resilience in the global economy of the time.

However, the Great Depression marks an obvious turning point. The period registers the most dramatic increase in average trade costs in our sample as they jump by twenty-one percentage points in the space of the three years between 1929 and 1932. This, of course, exactly corresponds with the well-documented implosion of international trade in the face of both declining global output and highly protectionist trade policy (League of Nations, 1933). Trade costs declined from these heights as output slowly recovered from 1933 (Angus Maddison, 2003) and nations made halting attempts to liberalize trade, even if on a bilateral or regional basis. Yet these were not enough to recover the lost ground: average trade costs stood nine percent higher at the outbreak of World War II than in 1931.

Finally, the second era of globalization from 1950 to 2000 registered declines in average trade costs on the order of seventeen percent. The most dramatic decline was that for intra-European trade costs at thirty-seven percent, a decline that was surely an effect of the efforts to form first the European Economic Community and then the European Union. The most recalcitrant performance was that for the Americas which registered effectively no decline. This curious result is solely generated by the inclusion of Brazil: Brazilian trade costs with Canada and the United States rose by zero and eighteen percentage points, respectively, while trade costs between Canada and the United States fell by thirty-three percent. This most likely reflects

Brazil's adherence to import substitution industrialization up to the debt crisis of the 1980s and the reorientation of Brazilian trade away from its very heavy reliance on the United States.

Most surprisingly, the decline in trade costs in the second wave of globalization is entirely concentrated in the period before the mid- to late-1970s. Indeed, in the global and all sub-regional averages—save the Americas—trade costs were lower in 1980 than in 2000. In explaining the dramatic declines prior to 1973 or so, one could point to the various rounds of the GATT up to the ambitious Kennedy Round which concluded in 1967 and slashed tariff rates by 50% and which more than doubled than the number of participating nations (Kyle Bagwell and Robert W. Staiger, 2003). Or perhaps, it could be located in the substantial drops in both air and maritime transport charges up to the first oil shock—but subsequent flatlining—documented in Hummels (2007). In any case, this curious phenomenon demands further attention, but remains outside the scope of this paper.

IV. The Determinants of Trade Costs

Trade costs in our model are derived from a gravity equation rather than estimated as is typically the case in the literature. Commonly log-linear versions of equation (1) are estimated by substituting an arbitrary trade cost function for t_{ij} and using fixed effects for the multilateral resistance variables. Such specifications, to the extent that the trade cost function and the econometric model are well specified, could be used to provide estimated values of trade costs. We do not impose a trade cost function and instead proceed in the opposite direction and derive the implied trade costs directly from the model, exploiting the fact that the trade costs in (3) account for multilateral resistance (Novy, 2007).

We show below that our trade cost measure is related in sensible ways to standard proxies for international trade costs. The determinants we consider in our log-log model of trade

costs include the logarithm of distance between two countries, the log product of each country pair's ratio of customs revenues to total imports, bilateral nominal exchange rate volatility, an indicator variable for whether the two countries had a fixed exchange rate with one another, an indicator variable for whether the two countries share a common border, and an indicator for whether the two countries were both in an European empire. In all regressions, we include country fixed effects and year indicators as well as weighting the observations by the sum of the two countries' GDP. The reported regressions pool and separate the data for the 103 dyads between 1870 and 1913, 1921 and 1939, and 1950 and 2000. The results are reported in Table 1.

Considering the pooled results first, we find that a one standard deviation rise in distance raises trade costs by 0.44 standard deviations while an equivalent increase in our tariff measure and exchange rate volatility would be associated with a trade cost rise of 0.17 and 0.04 standard deviations, respectively. Sharing a border or common membership in a European empire decreases trade costs. Finally, there seems to be only a marginal—and in this case, surprisingly positive—effect for fixed exchange rate regimes, a result discussed below. This pooled approach demonstrates that standard factors that are known to be frictions in international trade are sensibly related to the trade cost measure. By extension the results from the regression equation show that the trade cost measure determines trade patterns in ways largely consistent with the gravity literature (cf. J. Ernesto López-Córdova and Christopher M. Meissner, 2003, for the pre-World War I period; Eichengreen and Irwin, 1995, for the interwar period; and Andrew K. Rose, 2000, for the post-World War II period).

At the same time, the pooled approach masks significant heterogeneity across the periods. Here, we would like to highlight three of these differences. First, distance became more important in the post-1950 world economy, with the coefficient roughly doubling as compared to 1870-1913 or 1921-1939 (Anne-Célia Disdier and Keith Head, 2008). Whether this reflects

upward pressures in transportation costs or the regionalization of trade (Novy, 2006), it does accord with the empirical evidence on the decreasing distance-of-trade from the 1950s (Matias Berthelon and Caroline Freund, 2004; Celine Carrère and Maurice Schiff, 2004). Second, tariffs became more important in the post-1950 world economy, with their coefficient roughly quadrupling as compared to 1870-1913. We suggest that this finding can easily be reconciled with the growing evidence on the simultaneous "integration of trade and disintegration of production" (Robert C. Feenstra, 1998). That is, with the growing length of international supply chains, any change in tariff levels could bring about a more than proportionate change in trade volumes, and, thus, trade costs (Kei-Mu Yi, 2003). Finally, fixed exchange rate regimes have been inconsistent in their effects since 1870, with their coefficient being decidedly negative in 1870-1913, decidedly insignificant in 1921-1939, and decidedly positive ever since. The first two results correspond with earlier empirical work on the subject: the classical gold standard was an important stimulus to international linkages in general and international trade in particular (Meissner, 2005), while the resurrected gold standard of the interwar years was a pale imitation of its former self (Chernyshoff, Jacks, and Taylor, 2005).

But what explains the positive coefficient on fixed exchange rates regimes after 1950? We would argue that two forces at work. First, due to the collapse of the Bretton Woods system in 1971, there will be a rough correspondence in the data between time period and adherence to a fixed exchange rate regime. This may drive the correlation as trade costs fell through time. Second, in the post-Bretton Woods era, it has been widely documented that developing countries are more likely to opt for fixed exchange rate regimes, and our data point to broadly higher trade costs for developing countries. More speculatively, we could argue that the potential endogeneity between fixed exchange rate regimes and trade costs is now of greater concern as

monetary regime choices reflect explicit attempts to lower trade costs, rather than being tied to notions of national prestige and financial orthodoxy (Eichengreen and Peter Temin, 2000).

V. Economic Expansion versus Trade Costs

We now turn to a decomposition of the growth of trade flows in the three periods. Gravity equation (2) can be used to attribute changes in trade flows to changes in bilateral trade costs, changes in bilateral output, and changes in "multilateral factors," taken to denote changes in two countries' shares of world income and changes in multilateral resistance. To see this, rewrite equation (2) as

$$(4)\quad x_{ij}x_{ji} = y_i y_j \left(\frac{t_{ij}t_{ji}}{t_{ii}t_{jj}} \right)^{1-\sigma} \frac{x_{ii}x_{jj}}{y_i y_j}$$

where the last term in equation (4) represents the multilateral factors. We first log-linearize (4), then at the bilateral level we take the difference between levels in initial (1870, 1921 and 1950) and end years (1913, 1939 and 2000), and finally we compute GDP-weighted averages across dyads. We report the results from this exercise in Table 2 below.

Although the percentage growth in trade volumes is roughly comparable in the two waves of globalization at 492 and 518 percent, respectively, the principal driving forces are reversed. In the period from 1870 to 1913, trade cost declines account for a distinct majority (307 percentage points) of the growth in international trade, while in the period from 1950 to 2000 trade cost declines account for a distinct minority (181 percentage points) of trade growth. This is congruent with traditional narratives of the late nineteenth century as a period of radical declines in domestic and international transportation costs and payments frictions as well as studies on the growth of world trade in the contemporary world which suggest that such changes may have been more muted (cf. Baier and Bergstrand, 2001).

Finally, in explaining the interwar period, the role of trade costs is dominant. Based on output growth alone, we would have expected world trade volumes to increase by nearly 93 percent. The fact that they increased by only 10 percent clearly underlines the critical role of commercial policy—and potentially the collapse of the gold standard—in determining trade costs at the time.

Figure 2 which concentrates solely on the full sample results and further disaggregates the sub-periods down to the decadal level more clearly illustrates the forces at work in the interwar period: whereas the 1920s witnessed significant output-driven expansion in trade volumes, the 1930s gave rise to a demonstrable trade bust in light of meager, albeit positive output growth. In this sense, the 1990s shares with the 1930s the distinction of being the only periods in which output growth "over-predicts" trade growth. At the same time, the 1870s and the 1970s are the periods in which the relative contribution of trade cost declines to world trade growth was at its greatest.

VI. Conclusion

In this paper, we have attempted to answer the question of what has driven trade booms and trade busts in the past 130 years. Our main contribution has been—both in terms of theory and data—to consistently and comprehensively track changes in trade costs and the fortunes of the global economy by using new data on bilateral trade. We have been able to relate our trade cost measures to proxies suggested by the literature such as geographical distance and tariffs, confirming their sensibility. And we have been able to assign an overarching role for trade costs in the nineteenth century trade boom and the interwar trade bust. In contrast, when explaining the post-World War II trade boom, we identify a more muted role for trade costs. Unlocking the sources of this reversal remains for future work.

Appendix I: Data Sources

Bilateral trade: Trade was converted into real 1990 US dollars using the US CPI deflator in Officer, Lawrence H. 2008, "The Annual Consumer Price Index for the United States, 1774-2007" and the following sources:

Annuaire Statistique de la Belgique. Brussels: Ministère de l'intérieur.
Annuaire Statistique de la Belgique et du Congo belge. Brussels: Ministère de l'intérieur.
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Historisk Statistik för Sverige. 1969. Stockholm: Allmänna förl.
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Statistical Abstract for the United Kingdom. London: Her Majesty's Stationery Office.
Statistical Abstract of the United States. Washington: Government Printing Office.
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Statistisk Sentralbyrå. 1978. *Historisk statistikk*. Oslo.
Tableau général du commerce de la France. Paris : Imprimeur royale.
Tableau général du commerce et de la navigation. Paris: Imprimeur nationale.
Tableau général du commerce extérieur. Paris: Imprimeur nationale.
Year Book and Almanac of British North America. Montreal: John Lowe.
Year Book and Almanac of Canada. Montreal: John Lowe.

Fixed exchange rate regimes: Based on data underlying Meissner, Christopher M. 2005, "A New World Order." *Journal of International Economics* 66(3): 385-406; and Meissner and Nienke Oomes (forthcoming), "Why Do Countries Peg the Way They Peg?" *Journal of International Money and Finance*.

GDP: Maddison, Angus. 2003. *The World Economy: Historical Statistics*. Paris: Organization for Economic Cooperation and Development.

Tariffs: Measured as total customs revenue divided by imports taken from Brian R. Mitchell (2003a, 2003b, 2003c). Many observations come from data kindly provided by Jeffrey Williamson and are based on Clemens, Michael and Jeffrey G. Williamson. 2001. "A Tariff-Growth Paradox? Protection's Impact the World Around 1875-1997." National Bureau of Economic Research Working Paper 8459.

Exchange rate volatility: Defined as the standard deviation of the monthly difference of logged nominal exchange rates in a given year. Taken from *Global Financial Database*.

Distance: Measured as kilometers between capital cities. Taken from indo.com

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Yi, Kei-Mu. 2003. “Can Vertical Specialization Explain the Growth of World Trade?” *Journal of Political Economy* 111(1), 52-102.

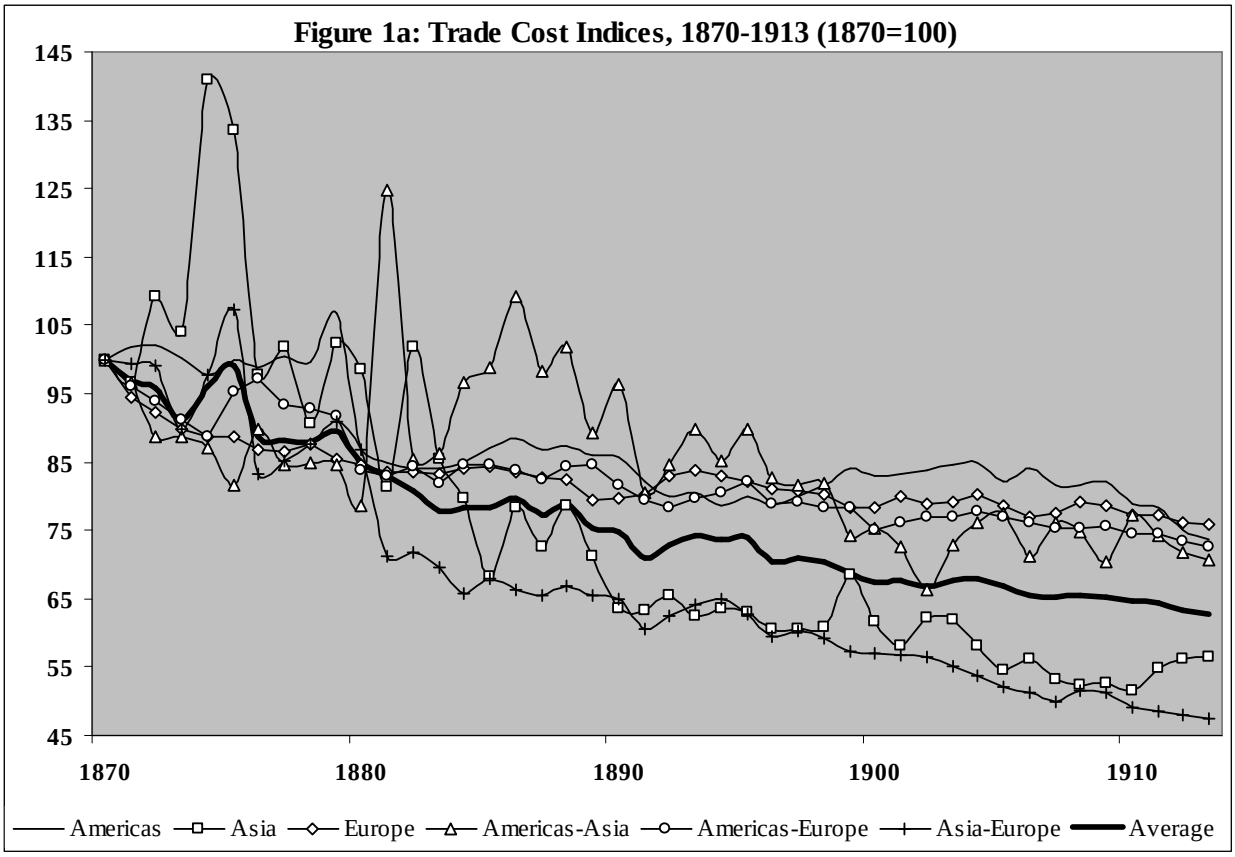
Figure 1a: Trade Cost Indices, 1870-1913 (1870=100)
145
135
125
115
105
95
85
75
65
55
45
1870
1880
1890
1900
1910
Americas
Asia
Europe
Americas-Asia
Americas-Europe
Asia-Europe
Average

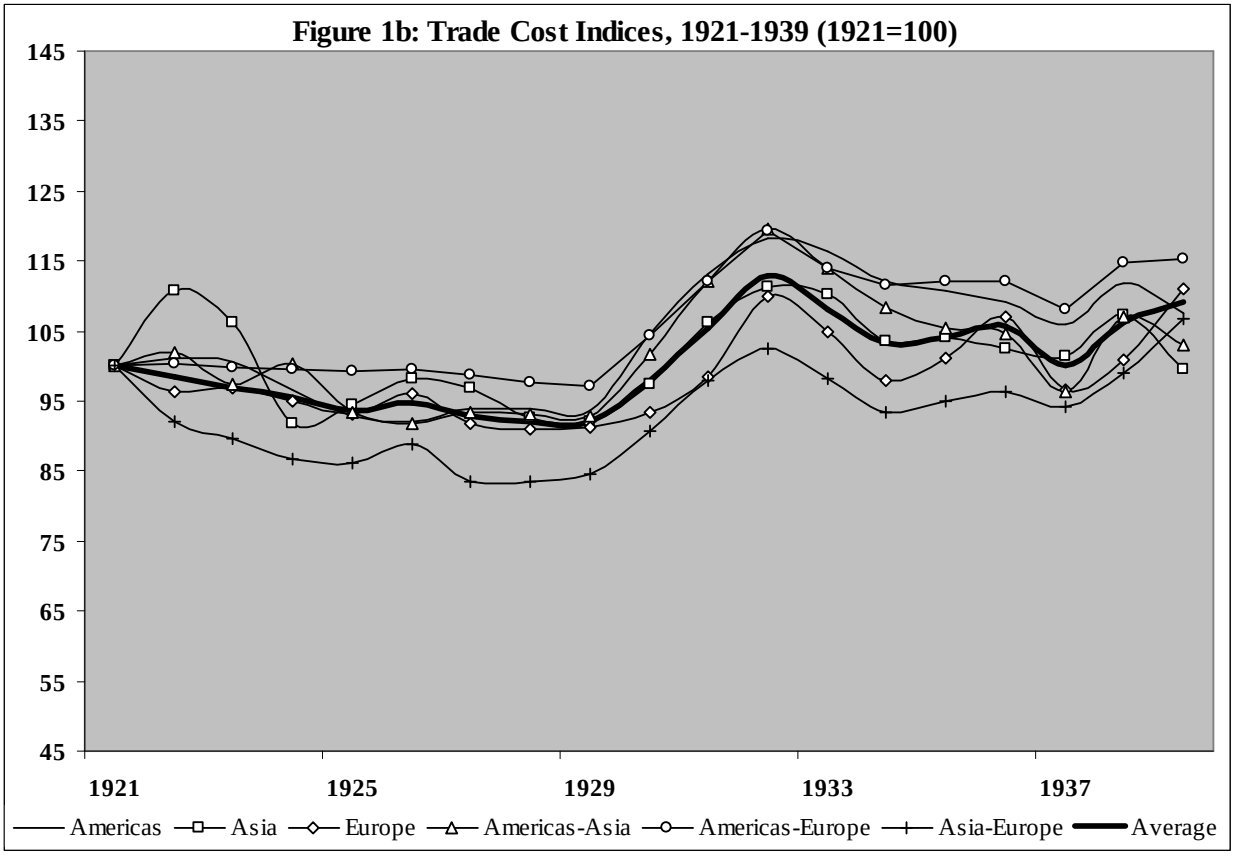
Figure 1b: Trade Cost Indices, 1921-1939 (1921=100)
145
135
125
115
105
95
85
75
65
55
45
1921
1925
1929
1933
1937
Americas
Asia
Europe
Americas-Asia
Americas-Europe
Asia-Europe
Average

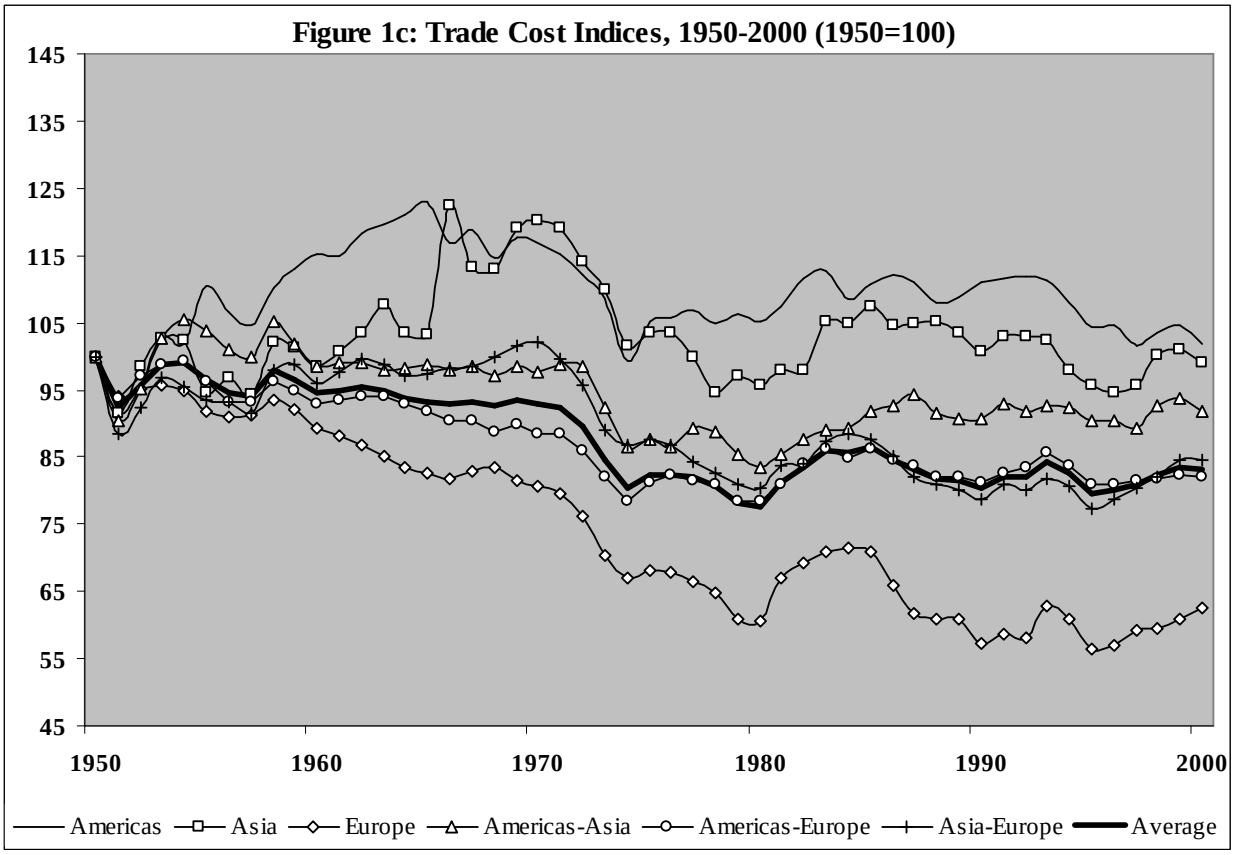
Figure 1c: Trade Cost Indices, 1950-2000 (1950=100)
145
135
125
115
105
95
85
75
65
55
45
1950
1960
1970
1980
1990
2000
Americas
Asia
Europe
Americas-Asia
Americas-Europe
Asia-Europe
Average

Table 1: Regression results

Pooled

	Coefficient	se	p-value
Distance	**0.1529**	**0.00**	**0.00**
Tariffs	**0.0485**	**0.00**	**0.00**
ER volatility	**0.5059**	**0.06**	**0.00**
Fixed ER regime	**0.0093**	**0.01**	**0.08**
Border	**-0.2770**	**0.01**	**0.00**
Empire	**-0.2380**	**0.01**	**0.00**
N:		9587	
R-squared:		0.8562	

1870-1913

	Coefficient	se	p-value
Distance	**0.0875**	**0.01**	**0.00**
Tariffs	**0.0171**	**0.01**	**0.06**
ER volatility	**0.6769**	**0.36**	**0.06**
Fixed ER regime	**-0.0929**	**0.01**	**0.00**
Border	**-0.2833**	**0.02**	**0.00**
Empire	**-0.3812**	**0.02**	**0.00**
N:		4068	
R-squared:		0.8533	

1921-1939

	Coefficient	se	p-value
Distance	**0.0733**	**0.01**	**0.00**
Tariffs	0.0108	0.01	0.18
ER volatility	**0.5783**	**0.15**	**0.00**
Fixed ER regime	-0.0136	0.01	0.29
Border	**-0.2196**	**0.02**	**0.00**
Empire	**-0.1994**	**0.02**	**0.00**
N:		1878	
R-squared:		0.8441	

1950-2000

	Coefficient	se	p-value
Distance	**0.1976**	**0.01**	**0.00**
Tariffs	**0.0715**	**0.00**	**0.00**
ER volatility	**0.3966**	**0.07**	**0.00**
Fixed ER regime	**0.0392**	**0.01**	**0.00**
Border	**-0.2309**	**0.01**	**0.00**
Empire	**-0.1817**	**0.01**	**0.00**
N:		3641	
R-squared:		0.9121	

NB: dependent variable in all regressions is the log of trade costs; time fixed effects not reported.

Table 2: Decomposition of Trade Booms and Busts, 1870-2000

a.k.a. The History of World Trade in 16 Numbers

			Average growth of international trade (GDP weighted)		**Contribution of changes in trade costs** (GDP weighted)		**Contribution of changes in output** (GDP weighted)		**Contribution of changes in multilateral factors** (GDP weighted)
1870-2000	**Full sample**	**(n = 103)**	**1043%**	**=**	**355%**	**+**	**719%**	**+**	**-30%**
	Americas	(n = 3)	1119	=	209	+	924	+	-14
	Asia	(n = 5)	1154	=	522	+	662	+	-30
	Europe	(n = 46)	937	=	368	+	611	+	-42
	Americas-Asia	(n = 6)	1268	=	511	+	785	+	-28
	Americas-Europe	(n = 25)	989	=	264	+	752	+	-27
	Asia-Europe	(n = 18)	1022	=	423	+	630	+	-31
1870-1913	**Full sample**	**(n = 103)**	**492%**	**=**	**307%**	**+**	**203%**	**+**	**-19%**
	Americas	(n = 3)	456	=	170	+	300	+	-15
	Asia	(n = 5)	665	=	548	+	128	+	-10
	Europe	(n = 46)	339	=	196	+	170	+	-26
	Americas-Asia	(n = 6)	564	=	339	+	233	+	-9
	Americas-Europe	(n = 25)	483	=	262	+	240	+	-19
	Asia-Europe	(n = 18)	691	=	542	+	165	+	-16
1921-1939	**Full sample**	**(n = 103)**	**10%**	**=**	**-74%**	**+**	**93%**	**+**	**-9%**
	Americas	(n = 3)	62	=	-45	+	103	+	4
	Asia	(n = 5)	34	=	-39	+	73	+	0
	Europe	(n = 46)	8	=	-76	+	102	+	-18
	Americas-Asia	(n = 6)	48	=	-37	+	84	+	2
	Americas-Europe	(n = 25)	-23	=	-108	+	93	+	-8
	Asia-Europe	(n = 18)	28	=	-52	+	87	+	-7
1950-2000	**Full sample**	**(n = 103)**	**518%**	**=**	**181%**	**+**	**365%**	**+**	**-27%**
	Americas	(n = 3)	407	=	30	+	389	+	-12
	Asia	(n = 5)	433	=	21	+	437	+	-25
	Europe	(n = 46)	648	=	348	+	338	+	-39
	Americas-Asia	(n = 6)	444	=	84	+	386	+	-25
	Americas-Europe	(n = 25)	495	=	171	+	349	+	-24
	Asia-Europe	(n = 18)	558	=	196	+	392	+	-30

Figure 2: Trade Growth versus Output Growth (in %)