
TRADE GLOBALIZATION SINCE 1795: WAVES OF INTEGRATION IN THE WORLD-SYSTEM*

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The term “globalization” as used by social scientists and in popular discourse has many meanings. We contend that it is important to distinguish between globalization as a contemporary political ideology and what we call structural globalization—the increasing worldwide density of large-scale interaction networks relative to the density of smaller networks. We study one type of economic globalization over the past two centuries: the trajectory of international trade as a proportion of global production. Is trade globalization a recent phenomenon, a long-term upward trend, or a cyclical process? Using an improved measure of trade globalization, we find that there have been three waves since 1795. We discuss the possible causes of these pulsations of global integration and their implications for the early decades of the twenty-first century.

Social scientific approaches to globalization disagree about how the structure of the world economy has changed over time. Some social scientists, and much of the public, believe that in the recent past national economies were largely independent entities. It is believed that since the 1960s a new transnational economy has emerged in which national societies have become integrated into a global network of trade and an interdependent division of labor. A second perspective imagines a centuries-long trend toward increasing global integration as transportation and communications costs have declined. And yet a third approach envisions a cyclical process of phases of increased international integration followed by phases in which national economies return toward autarchy.

The term “globalization” often refers to changes in technologies of communication and transportation, increasingly internationalized financial flows and commodity trade,

and the transition from national to world markets as the main arena for economic competition. The information age and the stage of global capitalism are asserted to constitute a new and qualitatively different historical epoch (Castells 1993, 1996; Sklair 1995). The term is also used to refer to what has been called the “Washington Consensus,” or the “globalization project” (McMichael 1996), a now-hegemonic neoliberal political ideology that celebrates the victory of capitalism over socialism and proclaims marketization and privatization as solutions to the world’s problems.

STRUCTURAL GLOBALIZATION

Although we focus on economic networks, our theoretical approach does not stem from economics or even economic sociology. Rather we seek to understand continuities and changes in institutional structures of the modern world-system over the past 200 years. Institutional structures are fundamentally cultural inventions. Market exchange, firms, states, global governance organizations, and the civilizational ideologies that naturalize them are all grist for the analysis of institutional structures that forms our framework for the study of globalization.

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The comparative world-systems perspective asserts, and research confirms, that interaction networks have been importantly inter-societal since the first people settled in relatively permanent villages that traded and made war with their still-nomadic neighbors (Chase-Dunn and Hall 1997; Chase-Dunn and Mann 1998).

With the evolution of social complexity and hierarchy, the institutional nature of interaction networks has undergone major transformations. One important variable characteristic of interaction networks has been their spatial scale and the relative intensity of smaller and larger networks within a system. Comparative research reveals that both small and large world-systems exhibit the phenomenon of "pulsation" in which interaction networks alternately expand and contract (Chase-Dunn and Hall 1997, chap. 10).

We focus on what we call structural globalization—*changes in the density of international and global interactions relative to local or national networks*. Tilly (1995) proposes a similar definition of globalization: "... an increase in the geographic range of locally consequential social interactions, especially when that increase stretches a significant proportion of all interactions across international or intercontinental limits" (pp. 1–2). If national networks and global networks increase in density at the same rate, there would be no increase in the globalization of interaction.

We conceptualize structural economic and political globalization as the differential density and power of large versus small interaction networks and organizations. Although we disagree with the idea that politics and economics are separate realms that should be independent objects of scientific inquiry, it is nonetheless useful to distinguish between political and economic forms of globalization.

Economic globalization means greater integration in the organization of production, distribution, and consumption of commodities in the world economy. It seems that our breakfasts increasingly come from distant lands. But sugar has been an intercontinental commodity since the eighteenth century in the sense that global market forces and the policies of competing states have massively

affected its conditions of production and consumption. Fresh grapes, on the other hand, have become a global commodity only since jets started transporting them seasonally between the southern and northern hemispheres. But if we count all the commodities and adjust for the overall growth of production, is the average breakfast more "globalized" now than it was in nineteenth century? This is the question we ask.

Political globalization is conceptualized as the institutional form of global and interregional political/military organizations (including "economic" ones such as the World Bank and the International Monetary Fund), and their strengths relative to the strengths of national states and other smaller political actors in the world-system. This is analogous to our conceptualization of economic globalization as the relative density and importance of large versus small interaction networks.

We present here the product of a research project in which we study trajectories of different dimensions of political and economic globalization. We report results for one kind of economic globalization—the *globalization of trade over the past two centuries*. Trade globalization means the extent to which the long-distance and global exchange of commodities has increased (or decreased) relative to the exchange of commodities within national societies. Understanding economic globalization must necessarily also take into account the globalization of investment, but that part of our project is, as yet, incomplete.

UNIT OF ANALYSIS: THE WHOLE SYSTEM

Our research is about continuities and changes in the organization of the world-system as a whole. Thus, we operationalize trade globalization as a variable characteristic of the whole world-system. We conceptualize the world-system as a complex network of nested and overlapping subnetworks. This includes individuals, households, neighborhoods, communities, villages, towns, cities, local polities, national states, firms, political parties, classes, zones (core, periphery, and semiperiphery),¹ trans-

¹ The core-periphery hierarchy is understood as a socially constructed stratification of countries.

national and worldwide organizations and networks of all kinds—all the local, regional, interregional, and global networks.

Our focus is not on “international relations,” but rather on all the interactions of the people of the Earth, local as well as global. During the nineteenth century, the European-centered world-system became truly global in the sense of incorporating nearly all the remaining regions. We agree with Frank (1998) that Europe had been systemically interacting with other core regions in West, South, and East Asia for centuries. By the first half of the nineteenth century, the system had shifted from a multicore structure in which at least three separate core regions interacted with one another at a distance, to a unicore structure in which all core states had direct contacts with one another (Chase-Dunn and Hall 1997).

How has the organization of this structure changed over the last 200 years? Was there a recent leap from national-level economic networks that were largely independent of one another to a global interdependent network? Or was there a long-standing upward trend from local to regional to national to international regional to global-level interactions? Or was there a cycle of changing intensity of global-level interactions relative to the intensity of local or national-level interactions?

While it would be desirable to have data on all levels of interaction, this is not possible for the whole 200 years we study. To answer our questions we must compare recent decades with earlier periods and with the nineteenth century, which requires using

data on national societies because it was these entities—their states—that developed “statistics.” This does *not* mean that our analysis is “state-centric.” We have already declared that we want to focus on interaction networks at all levels, including global and transnational ones. But data for long-term comparisons are available only for national states. These data can be used if we are chary about what sorts of distortion or false inferences might be introduced by having information only on national states (Chase-Dunn 1998, chap. 15).

Many researchers who have addressed the idea of globalization see no need to examine structures that existed before a few decades past. Sklair (1995), who focuses on transnational practices, transnational corporations, and the spread of consumerist culture, says explicitly that he sees no reason to consider what happened before the 1960s. Both he and Castells (1993, 1996) address globalization as if it were a phenomenon unique to recent decades.

Several different hypotheses have surfaced about the causes of trade globalization. The simplest economic explanation for the expansion of long-distance trade is the decline of transportation and communications costs. This decline is a long-term and increasingly rapid downward trend (United Nations 1999:30) tied to changes in technology, which are thus assumed to be the main driving force behind the expansion of trade globalization.

The major alternative hypothesis focuses on the structure of power in the international system of states. The general term for this approach is “hegemonic stability,” although there are important differences in the various ways that hegemony is conceptualized and different hypotheses about the nature of the causal connections between hegemony and trade globalization. The general idea, however, is that the international system is more than an “anarchy” of states competing and fighting with one another. World order is seen as a product of international competition and cooperation. There is greater order and more peaceful interaction when a single hegemonic state has sufficient power to influence or coerce other states and international actors. Hegemony is sequential, in that there is a systemic cycle of the rise and fall

Core countries have greater economic and political/military power (the United States, Europe, and Japan), while peripheral countries are poor and have weak states (most countries in Asia, Africa, and Latin America). In between is a group of countries (the semiperiphery) that has intermediate levels of power either because of their large size or because of intermediate levels of development (e.g., Brazil, Mexico, India, Taiwan, Korea). The core-periphery hierarchy is a relatively stable structure with most countries maintaining their relative positions over the centuries, but there are a few cases of upward and downward mobility within the structure. The United States is perhaps the most dramatic example of upward mobility.

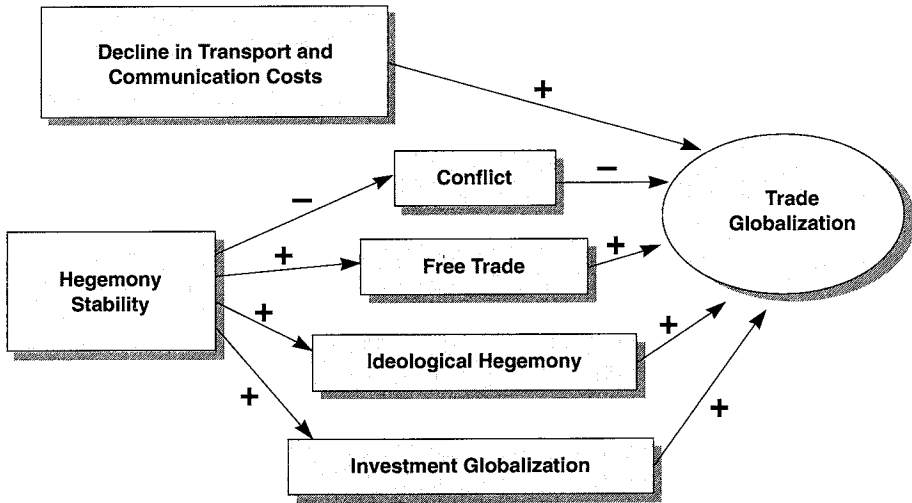


Figure 1. Hypothesized Causes of Trade Globalization

of hegemonic core powers. When a hegemon declines, the system enters a period of rivalry among the great powers, and the level of trade globalization goes down. Most discussions of hegemony agree that the Dutch performed the role of hegemon in the European interstate system of the seventeenth century, the British in the nineteenth century, and the United States in the twentieth century.

Some scholars understand hegemony as ideological, organizational, political, or economic *leadership*, and these scholars tend to favor a functionalist approach to the problem of world order (Modelski and Thompson 1994). Others emphasize the power aspects of hegemony—the ability of the hegemon to exercise military and/or economic power over other states. These scholars tend to be more sympathetic with a conflict theory approach to the world-system (Wallerstein 1983).

Figure 1 shows four main arguments about the way in which hegemonic stability is seen to be linked with trade globalization. The first argument, conflict, sees hegemony in predominantly military terms. The power of the hegemon is mainly a matter of its global reach—it's ability to project intercontinental force. The early work of Modelski and Thompson (1988) focused on the distribution of naval power among the great powers as a measure of the rise and fall of hegemons. World trade is facilitated because the hegemon sets up the rules of international trade

and acts as a “power-balancer” in the system of states. This role produces a relatively peaceful international system of states, and so merchants trade with one another more freely and more often across international boundaries than they can when the system is split into warring factions. This conflict argument predicts a sequence of upward and downward movements of trade globalization that corresponds with the rise and fall of hegemons and with changes in the severity of warfare among core powers.

The second major argument causally linking hegemony with trade globalization is the political implementation of free-trade treaties and policies. Most states have historically acquired an important component of their revenues by means of taxing imports (import tariffs). But modern hegemonic core states have championed the ideology of free trade and have encouraged other states to adopt free trade as official policy and to lower international barriers to free-market competition. In the middle of the nineteenth century the British made a major (and partially successful) effort to get other core states to adopt liberal trade policies. The Dutch produced a similar ideology in the seventeenth century (e.g., see the essays on the benefits of free trade by Johan DeWitt, and Hugo Grotius's formulation of the law of the seas). And since World War II, the United States has been the major protagonist favoring reduced tariffs and other nonmarket

barriers to international trade. Thus it is argued that trade liberalization policies are the major cause of trade globalization (Sachs and Warner 1995).

A third major argument emphasizes the importance of cultural and ideological leadership for hegemony. The idea here is that to an important extent the international order is a normative system, and that consensus about rules and goals is central to the operation of the system. Hegemony is thus not only a matter of economic and/or military power, but a hegemon must also formulate and propagate a universalistic ideology in which world order is legitimated by appeals to general values and goals. The sociologists who argue for the normative approach to world culture are Meyer and his colleagues (Boli and Thomas 1997, 1999; Meyer et al. 1997; also see Bornschier 1996 and Robertson 1992).

In political science a similar approach has been advanced by those who study "international regimes" (Keohane 1984; Krasner 1983) and the "epistemic communities" of scientists and policy leaders who formulate key universalistic ideologies (Hass 1990; Whiteneck 1998). The international liberalism of the British hegemony, the "free world" ideology of the United States after World War II, and the neo-liberal "Washington Consensus" (that legitimates free trade and the International Monetary Fund's "structural adjustment programs") are all examples of the ideological aspects of hegemony that are alleged to be major causes of greater trade globalization.

The fourth argument linking hegemony and trade globalization focuses on the economic aspects of hegemony, especially the role played by international capitalists from the hegemon and allied core powers in promoting international investment. Investment globalization (increases in the amount of international capital invested relative to the amount invested within countries) is seen as the major cause of trade globalization.

Hegemony, in this approach, is seen as the predominance of a particular kind of "accumulation regime" that is first brought to perfection by a rising hegemon and then is adopted by competitors in other states (Kotz, McDonough, and Reich 1994; Lipietz 1987). An accumulation regime is an

unusually profitable combination of new technologies, economic organization, and class relations that expands world markets by producing key goods relatively cheaply. For example, the British in the nineteenth century led the adoption of large-scale mass production firms using coal-fired steam generators to produce textiles, machinery, steamships, and railroad equipment. U.S. hegemony was based on so-called "Fordism"—large corporately held firms that developed assembly-line mass production using oil-based energy and "business unionism" labor relations, in which unions agreed to contend with capital only about wages and working conditions.

The most recent accumulation regime—"flexible specialization"—is based on information technology that allows for the profitable production of small batches of customized goods by small firms who employ non-unionized skilled workers who must continually learn new techniques. Although technology is an important component of the accumulation regime approach, class relations and economic organization are also important, and thus the rise of new accumulation regimes is an uneven and cyclical process rather than a smooth upward trend.

A related approach is that of Arrighi (1994), whose formulation of the rise and fall of "systemic cycles of accumulation" notes the important shift toward emphasis on finance capital that occurs in the waning stages of a hegemony. Although this took somewhat different organizational forms in the evolution from Genoese to Dutch to British to U.S. hegemonies, each hegemon saw the hyperdevelopment of profit-making from financial transactions in the period in which their comparative advantages in production and trade were declining. In these approaches, trade globalization is seen as primarily a consequence of investment globalization. Waves of investment globalization are tied to changes in the economics of transportation and communications, but also to changes in class relations and capital's relationship with states.

We do not operationalize and test these causal propositions. Rather we examine only the temporal trajectory of trade globalization. But the trajectory has implications for the different explanations presented.

TRADE GLOBALIZATION

By trade we mean the buying and selling of commodities. Our research is about the spatial nature of trade networks. Some commodities have been traded on an intercontinental basis for centuries. But the amount of goods and services that are bought and sold within communities and within national societies has also increased during these same centuries.² We follow economic historians and political economists in conceptualizing the globalization of trade in terms of changes in the relative density of international versus within-nation trade (Bairoch 1996; Held et al. 1999).³

Trade globalization is generally operationalized as the sum of all international exports as a percentage of the global product, which is the sum of all the national gross domestic products (GDPs). The gross domestic product of a country is the sum of all the economic transactions within that country minus the value of imports.⁴ The sum of all the na-

tional GDPs is a good indicator of the total amount of economic production and commodified exchange in the world economy because GDP includes exports. The sum of all the national imports (or exports) is a good indicator of the total sum of all international trade. And the ratio of total imports to total GDP is a good measure of the level of trade globalization in the world-system.⁵

Previous long-term studies of trade globalization found interesting results. Using data from Maddison (1995), Bornschier and Chase-Dunn (1999:296) combined estimated world totals of exports and GDPs to get a rough idea of the trajectory of trade globalization (see Figure 2).

Although estimates of world totals of international trade and GDPs might seem to be the most direct route, this approach has serious problems. Studies of trade globalization that take this approach usually include only widely spaced estimates of the degree of trade globalization for the nineteenth and early twentieth centuries (e.g., Bairoch 1996; Krasner 1976). Maddison's (1995:227) data for total world GDP jumps from 1820 to 1870, then jumps to 1900, 1913, 1929, and then to 1950 (see Figure 2). It is difficult to see the finer temporal aspects of changes in the level of trade globalization. A yearly measure is needed to see whether there have been important short-term changes and whether the time points in other studies are representative of, or are deviations from, the years surrounding them.

A second problem involves the need to transform local country currencies into a comparable standard in order to sum values

² While it is well known that nonmonetized exchanges and use values comprise a greater proportion of the economy in less developed countries (where relatively more people engage in subsistence agriculture), monetization of interaction has been an important historical process over the period we study. This could be a source of error in our effort to quantify globalization. We look only at monetized action during a period in which it expanded to become an ever-greater proportion of all action. If this expansion had been even with regard to national-level and international exchange this would not be a problem, but it is plausible that international exchange has always been more monetized than local exchange, and so the rates of change might not be the same. If that were true, we might underestimate the true long-term trend of trade globalization because national economies in the nineteenth century were larger than is indicated by counting only monetized income. (We thank John Boli for raising this important point.)

³ Ideally we would like to be able to use network analysis to study long-term change in the world-system, but data constraints make it impossible to compare the nineteenth and twentieth centuries. Su's (1995) fine network study of world trade examines the year 1938 and compares it with more recent decades.

⁴ Our data are mainly from Mitchell (1992, 1993, 1995) and include a mix of GDP, GNP, and net national product (NNP, also called national

income). NNP includes disposable income of individuals, institutions, and governments after providing for the maintenance and depreciation of capital stocks. GNP and GDP include depreciation and maintenance outlays. For most countries before 1940, the figures in Mitchell are NNP (Mitchell 1992:887). After 1965, when World Bank data are available, we use GDP.

⁵ Either imports or exports could be used to estimate total international trade—using both would be double counting. Imports are preferred: Statistics on imports have been much more accurate because governments have long taxed imports and so they have paid close attention to them. Of course, tariffs and other trade restrictions have also caused smuggling, a practice that introduces error into trade statistics.

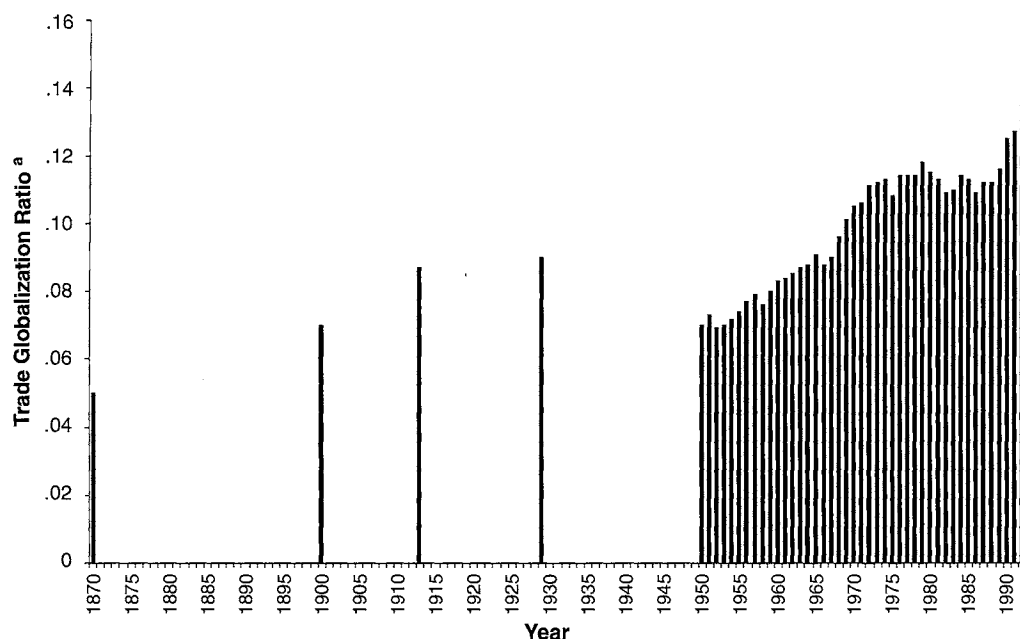


Figure 2. Trade Globalization Based on World Totals

Note: The trade globalization ratio for the year 1820 is .01.

Source: Maddison (1995:227, 239).

^a The trade globalization ratio is the sum of world exports divided by the sum of all countries' GDPs.

for country imports (or exports) and GDPs to compute the global totals. Typically currencies have been transformed into U.S. dollars using the exchange rates between U.S. dollars and the individual country currencies for each year that the transformation is needed. This transformation assumes, however, that the market exchange rates of the currencies accurately reflect the relative values of goods and services in different countries.⁶ After this transformation is made, the

⁶ This assumption is unrealistic because exchange rates among currencies reflect many things besides the relative value of goods and services in different countries. Kravis, Heston, and Summers (1982) sought to correct this problem and to produce comparable estimates of real gross product by weighting GDP figures using a correction for the prices of a basket of typical consumer goods in each country, so-called purchasing power parity (PPP). Korzeniewicz et al. (1998) point out that PPP weights are unrealistic for studies covering long periods of time unless the weights are recalculated for the earlier time periods. Many studies use weights calculated for 1980 to estimate parity levels for earlier decades, but this is certainly inappropriate if we want to compare centuries.

U.S. dollars are adjusted for the U.S. rate of inflation to transform the values from current dollars into constant dollars for a comparison year. This is important for the purposes of cross-temporal comparisons.

All these transformations involve assumptions that may introduce large errors into the estimates. And these could be influencing the results seen in Figure 2, which implies both a cycle and a trend in trade globalization. Based on Maddison's figures it appears that, from a low degree of trade integration in 1820, the world economy increased to a peak in 1929 and then dropped during the Depression and World War II to a low in 1950. From 1950 it began an upward movement that slowed slightly between 1980 and 1985, and then increased again until 1990, when it reached a level of integration greater than ever before.

These results from Maddison's data are intriguing because they imply a number of conclusions. First, the idea that globalization is a recent and unique phenomenon is dispelled: A huge wave of trade globalization during the nineteenth century appears to extend well into the twentieth century. Estimates of

changes in the level of foreign investment relative to the size of the world economy confirm this general result (Bairoch 1996; also see Figure A-13 in the online appendix).⁷ Several recent discussions of economic globalization have compared the nineteenth-century wave with the post-World War II period (Bairoch and Kozul-Wright 1998; Gordon 1994; Sachs and Warner 1995). Second, Figure 2 implies a trend—the recent wave of globalization has been larger than the nineteenth-century wave. If this trend is real, the world may be experiencing an upward spiral of global trade integration that is interrupted by occasional periods of backsliding.

Although the single-step argument of a recent jump from national economic autarchy to globalization can be ruled out, many questions remain. Is there a trend as well as a cycle of trade globalization? Is the cyclical pattern more fine-grained than the spotty data prior to 1950 suggest? To answer these questions we devised a new approach to measuring trade globalization.⁸

Average Openness Indicator of Trade Globalization

Estimating trade globalization using average national levels of “openness” can eliminate the problematic assumptions about currency equivalence, exchange rates, and corrections for inflation. Openness is traditionally operationalized at the country level by determining the ratio of external trade (either imports

or exports) to GDP. The (weighted) average of all the national degrees of openness will equal the world level of trade globalization (see below), with the primary advantage being the availability of both GDP and imports *in local country currencies* (e.g. pesos, rubles, yen, etc.) (Mitchell 1992, 1993, 1995).

By computing the ratio using local country currency units in both the numerator and the denominator, the currency units drop out. This ratio, then, makes levels of openness comparable across countries and eliminates the need to convert data into constant U.S. dollars. Thus, from the local country currency data we compute a ratio for each country. We do not sum the imports of all the countries and then sum the GDPs because these values from Mitchell are in different currency units. But we use country ratios to estimate the world level of trade globalization, thus eliminating the problematic assumptions discussed above.

Recall that the measure of trade globalization in Figure 2 is the sum of world exports divided by the sum of all the country GDPs. If all countries were the same size, the sum of the country openness levels divided by the number of countries (the mean openness) would equal the world totals measure of trade globalization (where i denotes country):

$$\frac{\sum_{i=1}^N \text{Imports}_i}{\sum_{i=1}^N \text{GDP}_i} = \frac{\sum_{i=1}^N \left(\frac{\text{Imports}}{\text{GDP}} \right)_i}{N}, \quad (1)$$

(World Totals) (Average Openness)

Of course, countries are not all the same size, and so an unweighted average may not be a close estimate of the world level of trade globalization. But we can weight the openness scores by the population sizes of the countries. It is also possible to weight the countries by their economic sizes, which we do below, but this requires the use of GDP data that have been converted into U.S. dollars, introducing again the problematic assumptions about exchange and inflation rates.

Another advantage of the openness score is that there are *yearly* data on openness. This makes it possible to examine finer temporal changes in the level of trade globalization. Recall that Maddison's (1995) GDP data

⁷ The online appendix is available from (<http://www.soc.jhu.edu/cd/Appendic/asr99/app.htm>).

⁸ Another way to consider the growth of world trade is to examine the value of total world exports per capita (of world population). This involves the problematic assumptions about exchange and inflation rates discussed above. Global exports per capita in constant 1990 U.S. dollars reveal a geometric upward trend with a few suggestive bumps (see Figure A-2 in the online appendix). The population data in the denominator are mainly interpolations, which tends to smooth things out, but the size of this trend is impressive, reminiscent of the huge increases in the economic value of goods that are traded internationally. However, this is a poor indicator of economic globalization because the amount and value of interactions within national economies also increase significantly over this same period, and exports per capita misses this fact entirely.

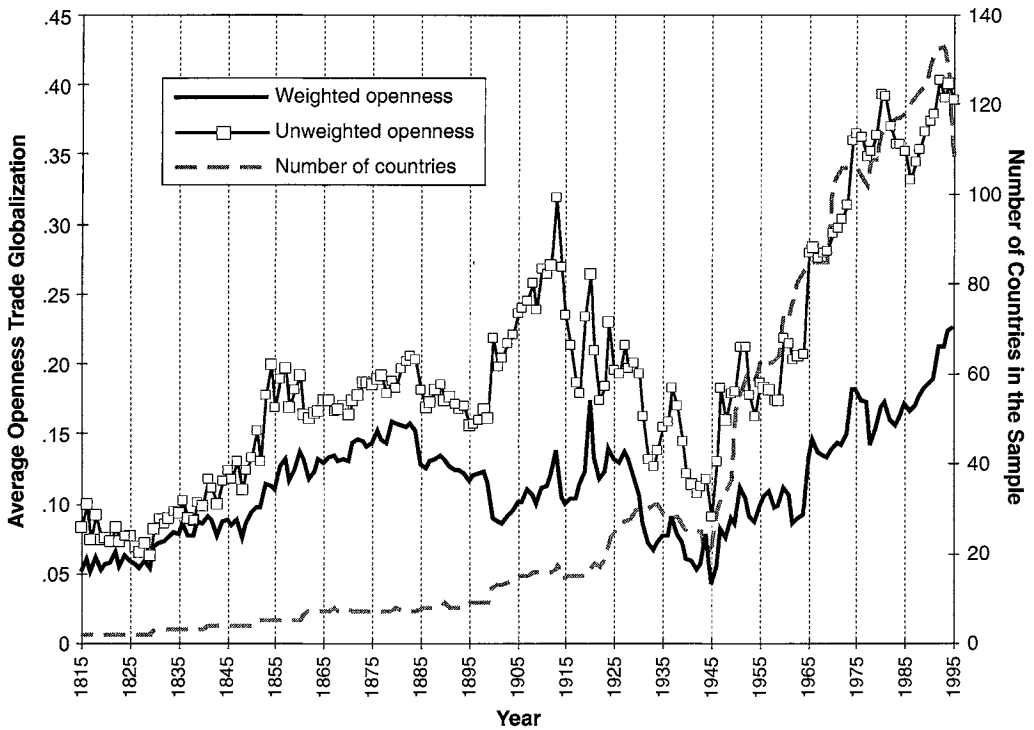


Figure 3. Weighted and Unweighted Trade Globalization, 1815 to 1990

from the nineteenth century jumped from 1820 to 1870 and then to 1900. While the openness measure allows finer time resolution, it suffers from spatial incompleteness as we go back in time.⁹ This means that we are using a “sample” to estimate trade globalization, but one that is not randomly chosen. Generally, the core countries have more complete data early on, whereas for peripheral countries we have only recent data. Because we are interested in both the temporal ups and downs and in the comparative levels in different periods, the biased pattern of missing data is a concern.

Countries differ in terms of their degrees of openness. Generally, small countries, especially peripheral ones, tend to have high levels of openness (or “trade dependence” as it has also been called). Figure A-1 in the online appendix (see note 7) and Figure 3 above show the rising number of countries

over time for which we have data on trade openness.¹⁰

Weighting the Country Openness Scores to Estimate Trade Globalization

We must weight the country openness ratios so that the averages reflect the differential sizes of countries. The unweighted mean would erroneously assume that, for example, El Salvador and Mexico have the same importance in determining the world level of trade globalization. We weight each country

⁹ Of course, Maddison’s (1995) basis for estimating total world exports and GDP also suffers from spatially incomplete evidence in the nineteenth century.

¹⁰ We excluded country/years in which the country had less than 1 million people; did not have data on imports, GDP, or population; reported data on imports and GDP in different currency units; or had obvious data errors that we could not reconcile. The data are mainly found in Mitchell (1992, 1993, 1995), but from 1965 on we use numbers from the World Bank (1980, 1998). Our weighted and unweighted measures of average openness trade globalization, as well as the values for constant groups of countries, are available in an Excel file connected to the online appendix (see note 7).

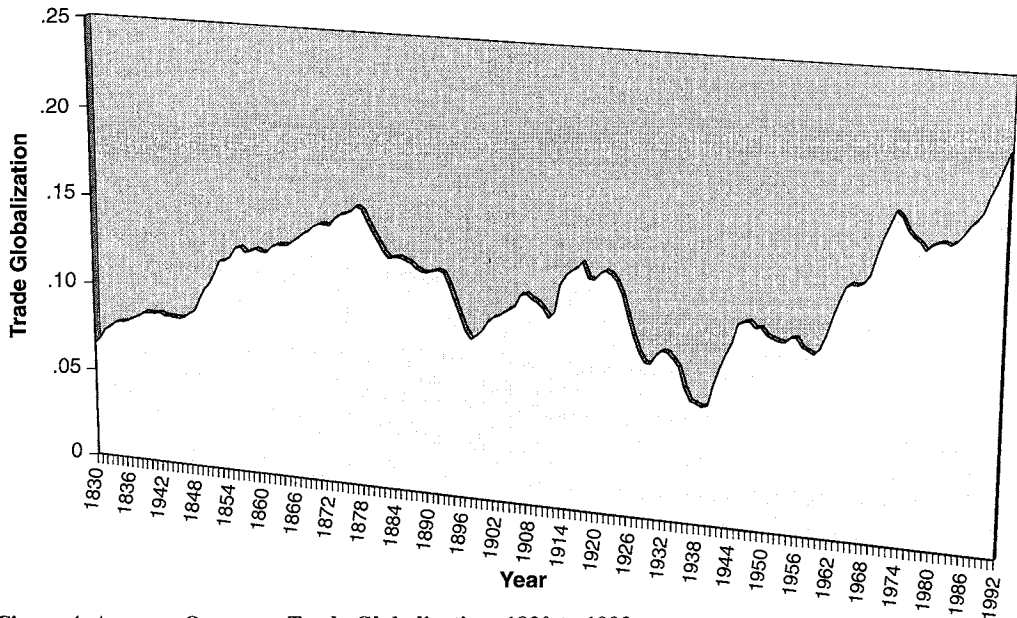


Figure 4. Average Openness Trade Globalization, 1830 to 1992

Note: Data are weighted; five-year moving average.

openness score by multiplying it by the ratio of the country's population size to the average population size of all the countries for which we have openness scores at each time point (equation 2).¹¹

$$\text{Weighted Average Openness} = \frac{\sum_{i=1}^N \left[\left(\frac{\text{Imports}}{\text{GDP}} \right)_i \left(\frac{\text{Pop}_i}{\text{Pop}} \right) \right]}{N}. \quad (2)$$

Figure 3 shows the weighted and unweighted estimates of trade globalization for all the countries for which we have data. The Pearson's correlation between the weighted and the unweighted series is $r = .84$. The weighting is an important correction, especially in the decades since 1950 when many small countries enter the calculations. Most of these are peripheral countries with relatively high scores on openness. The un-

weighted series overestimates the world level of trade globalization because these small countries are weighted the same as large countries.¹²

Because our most important contribution here is our new measure of trade globalization, we perform three tests: (1) We compare the average openness measure of trade globalization with the world total approach since 1950; (2) we examine constant groups of countries over time to see whether the patterns we find could be the result of changes in the composition of the "sample"; (3) we separate countries into core, peripheral, and semiperipheral groups to see whether they differ in average openness.

The results of these tests, presented in Section 2 of the online appendix (note 7), are reassuring in regard to the validity of the average openness measure. These tests show that peripheral countries have consistently

¹¹ Weighting each country's score by the ratio of that country's population to the mean population of the countries in the sample for a particular year produces a measure in a similar metric to that of the unweighted scores and allows for comparison of samples of different sizes over time. This is arithmetically equivalent to weighting by the ratio of the country population to the sum of the populations of the countries for which we have data at each time point.

¹² A reviewer suggested that economic size (GDP) might be a better weight than population size for the purpose of estimating a characteristic size of the world economy. We calculated the weighted average openness measure using economic size, and the results are reported in Section 1 of the online appendix (see note 7). The correlation between the series weighted by population and the series weighted by economic size is .91.

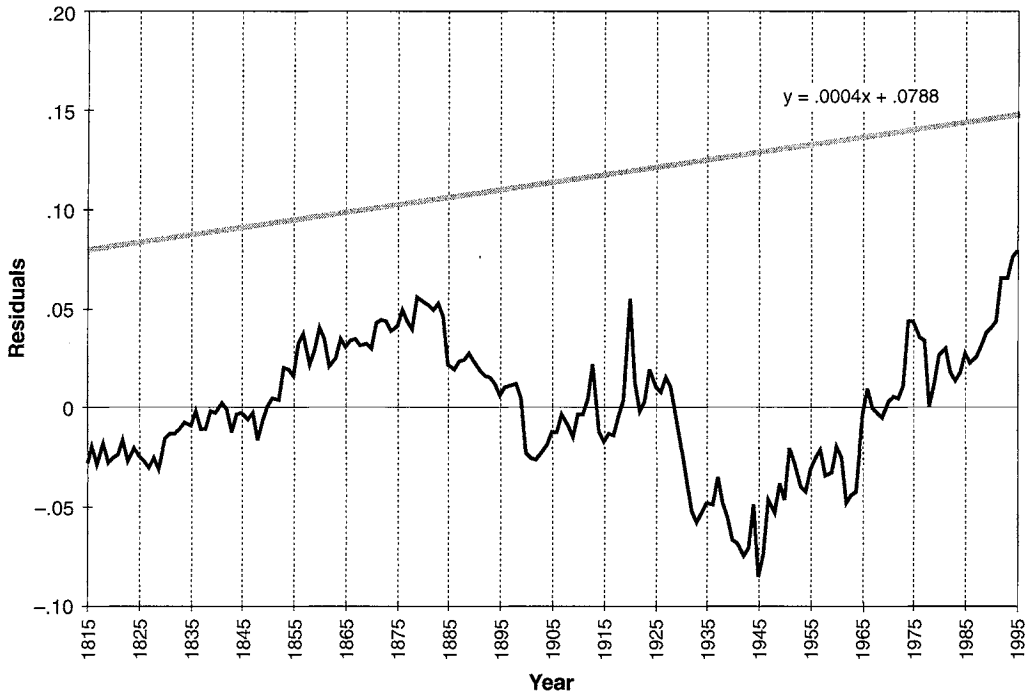


Figure 5. Linear Trend Line and Residuals of Average Openness Trade Globalization, 1815 to 1995

higher levels of openness than do core countries, but the timing of rises and falls in these two groups is similar.

Three Cycles and a Trend

What can we conclude about the trajectory of trade globalization over the past two centuries? Figure 4 presents a five-year moving average of trade globalization from 1830 to 1992: 1830 is the first year for which we have data for three countries—the United States, Britain, and France. Figure 4 shows that from the 1830s there was a rise to a high mound between 1850 and the late 1880s, then a decline until 1905, and then another rise before World War I, a small decline during the war, and then another rise for the roaring twenties.¹³ A big downturn corresponded with the

crash of 1929. With some wiggles, trade globalization declined to a very low level in 1945, and then began the most recent great wave of trade globalization.

While there are obvious waves of trade globalization, is there a long-term trend? And if there is one, how steep is it? We regressed our measure of average openness trade globalization (weighted by population) on time (year) from 1815 to 1995. This regression produced an unstandardized coefficient of .0004, meaning that for each year the pre-

¹³ Maddison’s (1995) world totals show a rise in trade globalization from 1870 to 1900 from .05 to .07 (see Figure 2). This contradicts our findings using the average openness measure of trade globalization. Our unweighted series shows a small upward movement, but both of our weighted series (population and GDP) show a substantial decline (see Figure A-3 in the online appen-

dix). Examination of the data for individual countries sheds no light on this mystery. As shown in Figure 6, average openness for the group containing the United States, Great Britain, and France declines. The group of seven countries also includes Australia, Denmark, Italy, and Sweden. Australia’s openness declines, Denmark’s rises, and the other countries rise a little. It is possible that exports from the periphery in this period grew more than is indicated by our average openness measure, but it is also possible that errors due to the use of exchange rates and inflation corrections have inflated Maddison’s world totals. Krasner (1976) also finds a modest decline in trade openness during this period.

Table 1. Unstandardized Coefficients from the Regression of Average Openness on Sub-Period: 1815 to 1995

Period	Regression Coefficient	Standard Error
1815–1879	.0017	.00005
1880–1902	-.0027	.00026
1903–1924	.0019	.00045
1925–1945	-.0041	.00049
1946–1995	.0028	.00014

dicted linear trend increases about four hundredths of a percentage point. This regression coefficient is statistically significant beyond the $p < .001$ level (S.E. = .00046). Figure 5 shows the trend line and the residuals of this linear regression.

We conclude that there is indeed a trend as well as a cycle; this conclusion is not solely due to the addition of peripheral countries to the data. Looking only at the core countries (see Figure A-6 in the online appendix), the level of openness reached by 1975 is already higher than that reached in the earlier waves of globalization. The apparent continuing upward trend after 1975 is due mainly to the peripheral countries.

This is an important finding in light of how our estimation of the highest levels of the earlier peaks might have been affected had we had data on noncore countries early on—a similar divergence between core and noncore might have occurred near the end of earlier waves. If that were so, the average level would have been higher than indicated by our estimated level, although we doubt that it would have been as high as the level reached by 1995. Note that the magnitude of the increase due to the trend is significant, but it is not a qualitative leap to a vastly different degree of global integration. There is simply no support for the idea that a completely new stage of global integration has emerged in recent years. Instead there is an unprecedented high level of integration, but not one that is of an entirely different magnitude than before.¹⁴

¹⁴ One problem with our estimation of the trend is that the international trade statistics do not distinguish between short-distance and long-distance trade. Trade between Switzerland and Germany

Our most surprising finding on trade globalization is the existence of three waves instead of two. Most studies of the world-system have recognized the late nineteenth-century wave and compared it with the contemporary period. The patchy world-total data from Maddison (1995) make it appear that there was a long earlier wave that extends from the nineteenth century until 1929 (see Figure 2). But Figures 4 and 5 show a *middle wave* from about 1905 to 1929.¹⁵ Let us look more closely at this middle wave.

We used the dates of the peaks and troughs of the residuals from the regression of average openness on time from 1815 to 1995 to examine the trends of subperiods. Table 1 presents coefficients for these alternating positive and negative subperiods, all of which are significant beyond the $p < .001$ level, supporting the idea that there are three waves.

Figure 6 shows the trajectories for constant country groups for which we have data over the relevant time period. Holding groups constant (rather than adding cases as data become available) allows us to see the effects of changing the case base. We can also see what is happening to the different groups during the middle wave.¹⁶

Somewhat different things happen with the different groups during the middle wave. The middle wave for the big three countries was not really a wave, but rather an oscillation around a relatively high level of openness.¹⁷

is treated the same as trade between Switzerland and India. International trade has probably increased its reach in the sense that more trade goes farther now than it did in the nineteenth century, so we may be underestimating the trend toward truly globalized trade. One way to examine the extent of this problem would be to use data that show the countries from which imports have come. Imports could be weighted by distance to see how much difference this makes for our conclusions about the trend.

¹⁵ Krasner (1976:330) also found a middle wave, but his rose from 1900 to 1913 and then fell from 1918 to 1939.

¹⁶ The composition of these country groups is described in Section 2 of the online appendix (see note 7), where these groups are also used to examine the validity of our overall measure of trade globalization.

¹⁷ Examining the data series and the separate graphs for the different groups provides a clearer

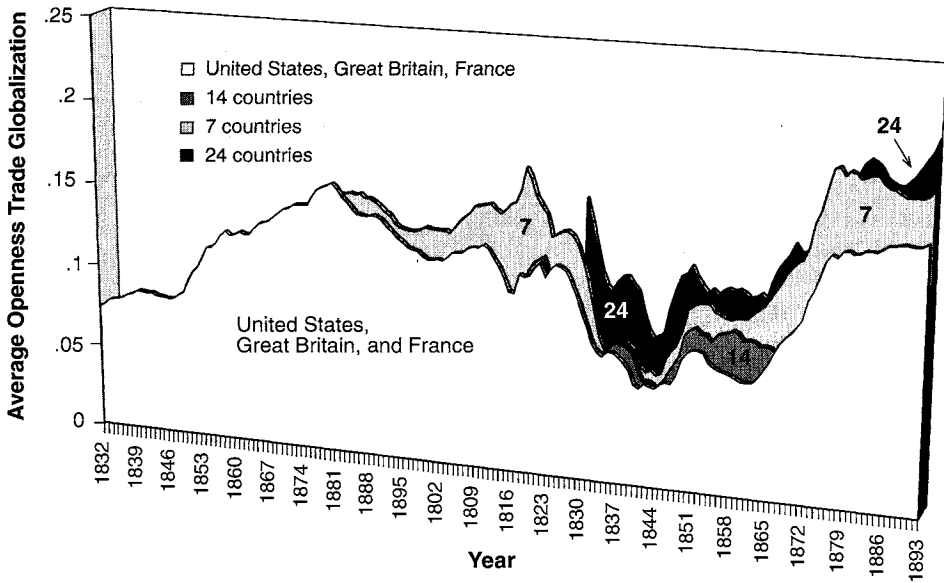


Figure 6. Weighted Average Openness Trade Globalization for Constant Groups of Countries

The groups of 7 and 14 countries had definite middle waves, but they started and ended at somewhat different times.¹⁸ Thus, the middle wave was mixed in its composition and its

temporality.¹⁹ Of course, so were the first and third waves, but to a lesser extent.

EXPLANATIONS

The trend and the cycles need to be explained. Recall Figure 1 which represents our discussion of the social science literature on the causes of trade globalization. Although we have not yet operationalized the hypothesized causal variables, we can tentatively interpret our findings about the trajectory of trade globalization in terms of our best suppositions about how the other variables have changed over time.

In the case of the trend the falling costs of transportation and communications probably have played a role. But the trend is modest

¹⁸ For the group of 7 (the United States, Great Britain, and France plus Australia, Denmark, Italy, and Sweden), the first wave peaked in 1887, then declined somewhat and stayed down from 1897 to 1905 followed by a definite middle wave that rose from 1905, wiggled and soared to a single peak in 1921 that was higher than the earlier peak in 1887. Then the wave dropped, recovered a bit in 1927–1928, and then plunged with the rest.

a sharp decline that slowed a bit from 1937 to 1939 and then declined until 1948. The group of 14 had a definite middle wave, but it was temporally later and shorter than that for the group of 7. The group of 24 has data only from 1927 on. The first three years, though, are tantalizing—they show an increase in openness from 1927 to 1929, then they plunge. Is this the tail of the middle wave? We do not know.

The group of 14 adds Cuba, Spain, India, Japan, Mexico, the Netherlands, and Taiwan. The data on this group do not start until 1905 so we cannot see the great wave of the late nineteenth century. But from 1905 we see a flat wiggle with a very small drop during World War I, and a rise that began in 1918 and peaked in 1924, and then

¹⁹ The standard deviation of the distribution of country openness is very high for the period from 1900 to 1914, indicating unusual diversity during this time.

compared to the steep descent in communications and transportation costs since 1795. The declining costs of long-distance transport and communications appear to be facilitating background factors that push trade globalization, but these costs cannot explain the periodic collapses of trade globalization because costs did not radically increase when trade globalization declined.

What about the cycles? Do they correspond temporally with other known cycles? Causality should be revealed in the temporal relationships among variables. Recalling Figure 1, the contenders are the rise and fall of hegemonic core powers; the incidence of world wars; changes in the level of trade protection; waves of ideological integration promoted by a hegemonic core power; and waves of investment globalization. Other cycles that might be causally related to that of trade globalization are long business cycles (the Kuznets cycle and the Kondratieff Wave).

The hegemonic sequence has been quantitatively measured in terms of military power (or rather naval and air power) by Modelski and Thompson (1988) who examine the proportion of intercontinental power capability controlled by the most powerful country. In the period we are studying, they note the rise and decline of Britain in the nineteenth century and the rise of the United States in the twentieth century. The world-systems perspective (Arrighi 1994; Wallerstein 1983) emphasizes the importance of economic power in the hegemonic sequence. These two approaches have influenced each other: Modelski and Thompson (1994) now include economic power (success in new lead industries) as an important part of their conceptualization and measurement of "global leadership." Arrighi (1994) recognizes the importance of ideology and legitimacy in the successful performance of the hegemonic role.

Both the first and the third waves of trade globalization correspond to the rise and consolidation of hegemonies—the British in the nineteenth century and the United States after World War II. But the middle wave that rose from about 1900 through the 1920s occurred in a period in which hegemony was being radically contested. This middle wave cannot be a function of hegemonic rise and fall because there was no rise or fall in this

period. There is also a lack of fit between the decline in U.S. economic hegemony in recent decades and the continued rise in trade globalization.²⁰

World wars also do not fit well with the three waves of globalization. After the Napoleonic Wars there were no major wars among core powers in the nineteenth century. There were three "Great Power Wars" between 1815 and 1914, but none was very big (Levy 1983:72–73). World War I occurred during the initial rise of the middle wave. World War II began before the trough of the middle wave and ended before the beginning of the rise of the third wave of globalization. We suspect that the relationship between world wars and globalization is strongly mediated by another variable—the rise and fall of hegemonic core powers.

Sachs and Warner (1995) argue that trade liberalization policies like tariff reductions and free trade agreements were major factors producing the high rates of growth and the economic globalization waves during the late nineteenth century and the post-World War II period. But Bairoch (1993) contends that trade liberalization and trade protectionism cannot be main causes of either economic growth or globalization because the pattern of trade liberalization does not fit temporally or geographically. We focus here on the relationship between trade liberalization policies and the waves of trade globalization, although the changing rates of economic growth are also relevant.

Bairoch (1993) notes that between 1815 and 1860 the British opened their home mar-

²⁰ The decline of U.S. economic hegemony is demonstrated in Figure A-12 in the online appendix (see note 7), which shows the slowly decreasing U.S. share of world GDP compared with the shares of Germany, France, Britain, and Japan. The U.S. share increases slightly in 1993 and 1994 when the series ends. This was the beginning of the recent period in which U.S. growth has been greater than that in the rest of the world. The long decline of British hegemony after 1870 also exhibited temporary short-term reversals. One unusual feature of the current hegemonic transition is the radical imbalance between U.S. economic decline and its status as the only remaining superpower in military terms. This "status inconsistency" is probably unstable because military hegemony is expensive and provokes challenges.

ket to foreign goods and advocated that other countries do the same. This was the heyday of Cobden and Bright and their Anti-Corn Law League. It was not until 1860 that other countries on the European continent decreased their tariff barriers to imports. The United States adopted *greater* tariff protection following the northern victory in the U.S. Civil War.²¹

After 1879, the European states gradually slid back toward protectionism, while the British maintained low tariffs until 1914 despite huge political arguments over this policy (Taylor 1996). Bairoch (1993:51) shows that the reintroduction of protectionism had no long-term negative effect on the growth of exports for those countries that went protectionist. In the second decade following their reintroduction of protectionism, France, Germany, Italy, Denmark, and Switzerland all had higher rates of export growth than they had in the decade before they went protectionist, and this was also true for Europe as a whole. And the United Kingdom, where a liberal trade policy was maintained, had a declining rate of export growth over this same general period. Bairoch does not claim that protectionism causes globalization, but he does point to important evidence that trade liberalization did not cause globalization in the late nineteenth century.

Our average openness measure of world-level trade globalization also contradicts the hypothesis that trade liberalization causes globalization. The first wave of trade globalization began well before the European shift toward free trade. And the downturn in the early 1880s preceded by several years the re-adoption of protectionist policies by the European states.

Despite the common belief that the economic collapse of the 1930s was caused by protectionism, Bairoch (1993) shows that protectionism was not particularly high in the 1920s. The highly protectionist Smoot-Hawley tariff was adopted by the United States *after* the stock market crash of 1929 and *after* the decline in trade globalization had already begun. The rise of the middle

wave occurred during a period in which tariffs were high and rather stable, and the rising tariffs of the 1930s occurred *after* trade globalization had already begun to decline.

The third wave began well before many countries had adopted the trade liberalization advocated by the now-hegemonic United States. The greater trade openness of the peripheral countries subject to International Monetary Fund restructuring has generally occurred in a period of very slow GDP growth. The countries that grew during the "Asian miracle" period on the basis of export promotion did contribute to the rise of trade globalization, and their successes were greatly facilitated by their access to the U.S. market. Thus, trade liberalization in recent decades probably has had a positive impact on the level of trade globalization. But the cycles of trade globalization over the long run do not correspond closely with changes in the degree of international trade liberalization. The sequences indicate that protectionism is often a response to trade contraction rather than a cause of it.

The literature on ideological hegemony and epistemic communities describes the growth of certain kinds of discourse and efforts to promote consensus. There is also a focus on international networks of scientists and policy experts. But these factors have not been measured quantitatively, nor have they been periodized in a way that allows us to say much about their temporal relationship with the waves of trade globalization. Nevertheless, influential discourses do not appear to be closely synchronized with the economic aspects of hegemony. Recent decades in which U.S. economic hegemony has declined have witnessed the amazing international success of the "Washington Consensus" about free trade, free international investment, downsizing state expenditures, and so on. This corresponds temporally with the rise of trade globalization to new heights, but temporal correlation is not foolproof evidence of causality.

Data on the trajectory of investment globalization are patchy, but waves are also indicated (Bairoch 1996; Suter 1992, chap. 4). Bornschieer and Chase-Dunn (1999:296) plot investment globalization (foreign investment divided by world GDP) with world totals data (see Figure A-9 in the online appendix).

²¹ A discussion of the tariff history and pattern of trade openness in the United States is in the online appendix just below Table A-1 (see note 7).

This plot shows that investment globalization did not begin its latest rise until the 1970s, whereas the most recent wave of trade globalization started up in 1950. This observation implies that trade globalization is not caused by investment globalization, but this relationship needs further study over a longer period using more complete data on investment globalization.

The Kuznets business cycle is a 20-year cycle in which economic growth increases for about 10 years and then stagnates for about 10 years. This period is too short to account for the waves of globalization observed. The Kondratieff Wave is a longer business cycle with a period that varies from 40 to 60 years (Goldstein 1988) and provides a closer match to the waves of globalization. While the 1929 crash fits with the decline of the second wave, there are some nonfits as well. The Great Depression of the 1870s occurred during the latter part of the rise of the first wave of trade globalization, which did not begin to decline until the 1880s. Most Kondratieff Wave studies find a decline (B-phase) beginning about 1970 that is not associated with a drop in globalization. Indeed, after 1975 our measure indicates a rise to the highest level of trade globalization known, although this is a result primarily of the increasing openness of noncore countries.

INTEGRATION AND WORLD ORDER

What causes the cycles of trade globalization? The systemic variable that has the best temporal correspondence with the cycles of trade globalization is the hegemonic sequence. Thus, hegemonic stability probably offers the best explanation of trade globalization, but other variables also have an influence that can account for the seeming anomalies of their relationship. The rise and fall of Great Britain in the nineteenth century corresponds nicely with the first wave. The second and third waves are somewhat more complicated. The rise of the third wave corresponds closely with "America's half century" (McCormick 1989), except that its apparent continuation after 1970 does not fit. Many observers see a decline in U.S. economic hegemony beginning in the late 1960s. However, the trade globalization of

most core countries leveled off in 1975, and the continuing overall upsurge is primarily the result of increases in U.S. exports and exports from noncore countries in an era of generally slow GDP growth. It may be that the relative openness of core countries other than the United States has not increased since then, partly because of the U.S. hegemonic decline.

Figure A-7 in the online appendix (note 7) shows that the United States, unlike most other core countries, has continued to increase its trade openness since 1975. Other indicators of economic globalization (e.g., global sourcing in the automobile industry) also show that it is only U.S. companies among the major manufacturers of cars that have greatly increased their reliance on the production of automobile parts at diverse international locations (Kremple and Pluemper 1999).²² The most recent period of the third wave of trade globalization resembles that of the late nineteenth century, when the declining hegemon continued to advocate globalization and to globalize its own economy while competitors in the core began to pursue a more national or continental approach. In this view, the process of European integration is seen mainly as the formation of a new, larger integrated competitor for hegemony rather than as increased openness at the global level (Junne 1999).

The middle wave does not seem to fit the interpretation that waves of globalization correspond with the rise and fall of hegemonic core states. The middle wave occurred during a period of hegemonic rivalry. The British no longer had the economic power or the leadership prestige to set the standards for a globalizing world economy. The German challenge in World War I was unsuccessful and did not immediately lead to the emergence of a new hegemon because the United States refused to take upon itself the burden of leadership. The United States was the most economically powerful country in the world after World War I. And, although President Wilson and his supporters had a vi-

²² The United States also differs from other core powers in the extent to which it has implemented the policies of neoliberalism—downsizing, relocating production abroad, shrinking the middle class, and increasing relative inequalities within the country (Navarro 1998).

sion of international liberalism that could have provided the legitimation for hegemony, the Senate rejected U.S. membership in Wilson's creation, the League of Nations. The United States went back to following George Washington's admonitions about not getting involved with the decadent and quarrelsome Europeans.

This produced a huge vacuum at the center, and the economic crisis and powerful political challenges to liberal capitalism in the guise of Bolshevism and fascism broke the world order into another violent global struggle for power. After World War II, the United States did take up the mantle of hegemony, which then provided the institutional basis for a new wave of economic globalization.

In this interpretation, the falling costs of transportation and communication led to the middle wave, but the lack of an institutional guarantor of world order in the form of a hegemonic core state did not allow that wave to be consolidated and sustained. The middle wave was uneven in time and space, starting and ending in different years for different countries. In that respect it resembles the recent continuation of the third wave, and there is a similar problem in both periods. In the middle wave there was no hegemon, and in the decades since 1975 there has been a declining one.

Economic globalization creates a great demand for political globalization because markets are unable to resolve the problems of distributive justice and uneven development that they create (Polanyi 1957; Soros 1998). Of course, political globalization does not have to take the form of the hegemony of a single core state. It is possible that new or renewed international political organizations could provide an effective global proto-state with the power to adjudicate disputes and to balance and sustain the processes of economic growth. Something like the latter is likely to emerge if the world-system survives the next window of vulnerability to war among core states (Chase-Dunn and Podobnik 1999). The question now is whether sufficient legitimate consensus will be constituted (either around a new or renewed hegemon or an emergent global state) to prevent the world-system from entering another period of violent hegemonic rivalry of the sort

that was seen twice in the twentieth century. Such a new period of conflict would undoubtedly lower the level of trade globalization, but this would be more the consequence rather than the cause of rising conflicts.

Our study of trade globalization should be supplemented with a study of the long-run trajectory of investment globalization and other variables that allegedly affect globalization. Hypotheses about the causes and consequences of trade globalization should be tested by operationalizing other variables and performing statistical tests inferring causality, a task that we intend to take up. We also propose to study political globalization over time. Although this is more difficult than trade globalization both conceptually and empirically, it is an important task for understanding the processes of the past and possibilities for the future. In the meantime, our descriptive examination of trade globalization as operationalized by the new measure of average openness provides a fresh view of the continuities and changes in the structure of the modern world-system over the past two centuries.

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