Tariffs and Trade Fluctuations: Does Protectionism Matter as Much as We Think?

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Introduction

Much of the theoretical and empirical analysis in international political economy over the last twenty-five years has concerned the relationships among power concentration and its behavioral implications (hegemony–leadership), political intervention in economic processes (such as tariffs), and fluctuations in economic growth, trade, and systemic openness.[1] Invariably, analysts assume that political intervention makes some measurable difference in economic activity. But is this a reasonable assumption? In particular, can we be confident that increases and decreases in tariff protectionism influence the expansion and contraction of international trade?

The question may seem nonsensical. The safest assumption one might think reasonable is that tariffs are imposed to constrain the volume of imports by increasing their cost to domestic consumers. Therefore, all other things equal, the higher the tariff barriers, the greater the intended effect in decreasing the amount of trade. And, partially as a consequence, we have arguments about whether and how the presence of hegemons–system leaders is conducive to lowering tariffs and stimulating freer trade. Alternatively, we ask, how does one go about maintaining open trading regimes in the absence of a powerful system leader?[2]

To a considerable extent, these debates presume that protectionism powerfully threatens the stable functioning and prosperity of the world economy. Observers often assumed, for instance, that the remarkable prosperity of the post–World War II era is in part attributable to an expansion in trade linked, in turn, to the GATT-led significant lowering of tariffs. The threat of increased protectionism therefore invokes the specter of tariff wars and retaliatory spirals that would lead directly to dramatically reduced levels of trade and economic growth rates.

1. Examples include Kindleberger 1973; Krasner 1976; Conybeare 1983; Keohane 1984; Gilpin 1987; Lake 1988; Milner 1988; Webb and Krasner 1989; Cohen 1990; Odell 1990; McKeown 1991; Mansfield 1994; and Gowa 1994.
2. For an overview of the development of this debate, see Lake 1993.

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But what if the instinctual assumptions are wrong in some respects? Our argument here is not that changing tariffs are unlikely to have some short-term effects on trade volume. Assuming otherwise would be illogical. Yet the underlying assumption regarding this short-term behavior is that political decision makers use tariffs to intervene in ongoing economic processes to protect national production from external competition when they feel that legislative barriers are necessary or appropriate. That such political intervention occurs randomly or in a vacuum seems equally unlikely.

However, from a longer-run perspective, one could argue that protectionism tends to be as much, if not more, a political response to long-term, declining economic growth possibilities than a short-term way of gaining an advantage over the competitive field. For instance, increasing protectionism in the early 1930s may have made the Depression worse, but it is not usually cited, at least by economic historians, as a primary cause of the deteriorating economic conditions.[3]

The contrast drawn here between short- and long-term perspectives can be made more succinct. In the short term, we should expect changes in the levels of protectionism to influence the volume of trade, or tariffs → trade (that is, tariffs influence trade), just as we might expect short-term declines in economic growth due to business cycles to encourage protectionist lobbying.[4] In the long term, however, declining growth and trade prospects could stimulate protectionism, or trade → tariffs. Our question is which way the causal arrow points: Does trade drive protectionism, or is it the other way around? Of course, different circumstances might warrant different answers to this question. That is, the systemic or aggregate answer may not be mirrored exactly in the experiences of all national subsystems—some of which will be responding to different sets of incentives. There is also ample room for reciprocal behavior—that is, trade → tariffs and tariffs → trade.

We elaborate two interpretations—one for the short term that seems compatible with a number of approaches to protectionism questions and one for the long term. For us, short-term dynamics are fairly quick and manifest themselves within five to ten years. The long term, in contrast, is measured in decades and is characterized by relatively slow dynamics. Economics and political science, by disciplinary inclination, are more oriented toward capturing the former, relatively more static, types of dynamics than the latter. Analyses of trade policy provide particularly good examples, since long-term analyses, or even examinations of long time series of pertinent data, are rare in economics and political science. The question that remains open is whether we are missing something by confining our attention exclusively to short-run windows on the phenomena of interest.

The short- and long-term perspectives lead to testable predictions about the trade–protectionism relationship. We test these expectations using serial trade and protectionism data (1854–1990) from the five leading economic powers of the past two

3. For a discussion of the contrast between popular myths about beggar-thy-neighbor policies in the 1930s and the contrary findings of economic historians, see Strange 1985, 239–40.

4. A number of examples of studies in economics that find a short-term decline in economic growth related to protectionism are listed in Mansfield and Busch 1995, 725n3.

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centuries: Britain, France, the United States, Germany, Japan, and the interdependent system they create in the aggregate. The results support the argument that trade → tariffs or protectionism. It is by no means clear that in the long run protectionism matters as much as most scholars assume. At the very least, expanding the window for observation reveals trade–tariff dynamics that might go undetected otherwise.

Short- and Long-Term Perspectives

Neoclassical trade theory espouses free trade as the preferred approach to international economic competition. If each state acknowledges its endowment-based comparative advantage and focuses on producing and exporting those commodities in which it enjoys an edge in efficiency, the resulting division of factors of production and international exchange of goods will produce a collectively optimal welfare outcome in which each state makes absolute gains relative to no trade. That does not mean that the gains from trade for every state will necessarily be the same, or that the relative gains from trade may not differ among traders. By "cheating" on their endowment base, nations may increase their trade gains, assuming others continue to follow the policy of free trade.

This argument is predicated on the assumption that it makes sense for all actors to accept their natural endowment fate and to not attempt to improve on it. Of course, if this were the case, the world economy might still be predominately agrarian in nature. Things change and people often disagree on what is optimal. Uneven development leads to some economies outperforming others. Situations are created in which domestic producers can no longer compete with more technologically advanced rivals. Uneven endowments, a late start, and the fear of falling behind in international economic competition can lead to political resistance in the form of political coercion and national barriers to free international economic competition. Political agents work to set trade barriers as their interests dictate. Depending on the argument, system leaders, small states, and export-oriented firms support free trade; nonsystem leaders tend to free ride; large states are apt to rely on economic muscle to get what they want; late developers need protection for their infant industries; and domestically oriented firms and labor in sunset industries seek legislative protection from external competition.

We are not interested in penetrating too deeply into the theoretical labyrinth of competing interpretations of trade behavior in international political economy. The bottom line of these arguments is that political agents seek to raise or lower tariffs to protect their interests. Whether tariffs get raised or lowered depends on whose interests and political clout prevail. If tariffs are raised, presumably the threatened interests are protected to some extent, and trade volumes will decline. The more numerous, widespread, politically powerful, and organized the threatened interests, the greater the consequent decline in trade volume.

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A dependence on political agency is not the problem, since political actors do attempt to raise and lower tariffs. The question is, how important is the context in which these attempts are made? Some analysts peg tariff changes to short-term, national business cycles. Short-term economic deterioration leads to increased attempts to protect threatened economic interests. In contrast, economic prosperity leads to fewer threatened interests and, therefore, fewer attempts at protection. Other analysts argue that the presence (absence) of a hegemon–system leader should directly, perhaps subject to some lag, translate into lowered (increased) protectionism and greater (lesser) trade openness because free trade serves the hegemon's interests. These analysts tend to identify relatively straightforward contexts in which behaviors operate. Economic prosperity comes and goes. When it goes, particular interests are roused into action. So, too, with hegemons. When they are present, the system is expected to respond to their preferences. When they are absent, national actors may act on their own preferences, which, often as not, means more restrictions on trade.

Although short-term contexts may complicate the causal diagram, the expectation is that contextual changes alter the immediate incentives for raising or lowering tariffs, which leads to trade expansion or contraction. While none of these models are implausible, a longer-term perspective on the impact of economic growth suggests a different model—one in which trade fluctuations precede tariff fluctuations or in which tariffs do not have much impact on trade.

Focusing on these two causal chains, generating long-term expectations that contradict the short-term hypotheses is possible. The long-term expectation (economic growth fluctuations → trade fluctuations → tariff fluctuations) assumes that changes in long-term economic growth and trade prospects are the contextual source of stimulation for tariff lobbying and adjustments. If economic growth is relatively random—a few good years interspersed with a few bad years in no set pattern—the short-term perspective seems plausible. If, on the other hand, economies experience longer-term phases in which prosperity or depression tend to predominate, as illustrated by the vivid contrast between the two decades following and the decade immediately preceding World War II, we might anticipate economic growth and trade to (Granger) cause tariffs as agents react to the changing prospects for long-term growth.[5]

Other things being equal, in phases of prosperity trade should expand, and in phases of depression trade should contract. Such a relationship suggests that protectionist policies that did not address long-term economic growth prospects should not intervene in the linkage between long-term economic growth and trade. That is, countervailing tariffs (such as tariff cuts in years of depression) alone should not have all that much impact on growth–trade or even be politically conceivable. The more likely expectation is that tariffs would follow the long-term trend in growth–trade. In terms of causality, we would expect the trade → tariffs relationship to be stronger than the tariffs → trade relationship.

5. Different theoretical perspectives and empirical evidence on long-term patterns in economic growth and protectionism can be found in Goldstein 1988; Hall and Preston 1988; Freeman and Perez 1988; Thompson 1990; Maddison 1991; Berry 1991; Thompson and Vescera 1992; Tylecote 1993; Modelski and Thompson 1996; and Reuveny and Thompson 1997.

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Other things are not always equal, and some exceptions come immediately to mind. One exception is the Listian protectionism sought by late developers if it was thought that development required substantial political insulation.[6] Another exception is the case of small economies that are highly dependent on trade. Conceivably, high trade dependency weakens the political temptation to tamper with tariff levels. In cases where tariffs varied little across time, there is no reason to anticipate a significant trade → tariffs or tariffs → trade relationship.

A third major exception is the case of system leaders who have espoused and "internalized" free-trade ideas after developing a technological and industrial lead. Some lag should be expected between the initial emergence of technological predominance, expanding trade, and the political triumph of free-trade advocates. Similarly, when that technological lead is no longer in evidence, the free-trade ideology may have become so firmly entrenched that a lag should exist between relative decline and the abandonment of free-trade policies. If these phases are examined as a unit, the different subphase relationships (trade expanding, high tariffs; trade expanding, decreasing tariffs; trade contracting, low tariffs) may cancel one another's effect. Thus we might expect a lesser likelihood of a systematic relationship between trade and tariffs to emerge in the case of system leaders than might otherwise be the case. Given the crucial effect of the lead economy on the system, we anticipate that systemic trade will behave along the same lines that characterize the system leader cases.

Finally, those economies that have the most potential for emulating the system leader's innovations, the followers, will react both to the success of the pioneering leader and to long-term economic growth fluctuations. They may attempt to emulate the system leader's free-trade approach, but they also learn that lowered tariffs weaken their defenses from the leader's spectacular economic success and increasing competition from other follower economies. Thus the incentives for follower protectionism should oscillate and lead to fluctuations in tariff levels that are sometimes consonant with trade expansion–contraction and sometimes opposed to it. While this suggests that tariffs may cause trade in these cases as tariffs are set to induce growth, it may also suggest another case in which the trade–tariff relationship is weakened by mixed behavior over time when those phases are analyzed as one unit.[7]

In summary, protectionism in the long term is less likely to drive trade in the leader cases and more likely to do so in the follower cases. Conceivably, however, no trade–protectionism relationship will emerge in the leader cases. The seesawing long-term processes in follower economies may also tend to weaken the long-term relationship between trade and protectionism. Long-term systemic trade is expected to behave, vis-à-vis the trade–protectionism relationship, along the lines of the system leader cases.

6. Bairoch (1993) emphasizes that the historical relationship between protectionism and national economic growth is by no means obvious and quite possibly positive in nature.

7. Challengers, those follower states that may possibly unseat the incumbent leader, especially need protection to realize their potential. Successful liberal challengers will eventually display patterns found in leader cases. Unsuccessful challengers are more likely to display cyclical protectionist tendencies.

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Testing Considerations

Research Design

Since part of our question amounts to determining whether or to what extent protectionism antecedes trade or trade antecedes protectionism, we employ Granger causality tests. Causality is a controversial topic in the social sciences, but a minimal assumption underlying the statement that *X* "causes" *Y* is that *X* precedes *Y*. If they are coterminous in time, and both change values at the same time, or if changes in *Y* actually precede changes in *X*, we would be unlikely to insist that *X* affected *Y*. In this respect, Granger causality tests can be useful in delineating and ruling out (in)conceivable patterns of antecedence—that is, establishing which variable, if any, came first. At the same time, Granger causality tests are unlikely to generate the last word on the protectionism–trade question. The statistical outcomes that are produced should always be viewed as preliminary to the development of more fully specified models. However, our immediate goal is not to create a fully specified model of the variables related to protectionism and trade. Therefore, the preliminary statistical outcomes associated with Granger causality tests should suffice for our more modest questions pertaining to antecedence patterns linking trade and protectionism.

Four technical issues, about which econometricians continue to debate, are important because they could have some influence on the Granger causality results. These issues include the choice of a distributed lag length,[8] the stationarity of the time series,[9] the adequacy of the test's specification,[10] and the role of ARIMA processes.[11] In our view, the significance of these various issues, for the most part, continues to be contested, but acknowledging them alerts us to the several possible limitations of Granger testing and our need to be sensitive to their possible impact on analyses such as ours. The limitations notwithstanding, we feel that Granger causality testing retains considerable utility in empirically assessing theories and generalizations about patterns of antecedence.

Our specific research design is conservative. Since it is established that unit root tests have low power and results are sensitive to lag structure and test type, we employ three tests: Dickey and Fuller, Phillips and Perron, and the conventional Durbin-Watson from regression of a series on a constant.[12] We determine whether time series include unit roots according to the results of a majority of the tests. To deal with possible nonstationarity, we first employ differences of trade and protectionism series and report causality results only when the error terms are white noise.

Since the literature on the appropriate lag lengths to be used in a Granger test is subject to continuing discussion and multiple preferences, we systematically try many

8. See Geweke 1984; and Kang 1985.
9. See the discussions found in Pierce and Haugh 1977; Feige and Pierce 1979; Nelson and Kang 1984; Kang 1985; McCallum 1993; and Hamilton 1994.
10. See Pierce 1977; Feige and Pearce 1979; and Granger 1980.
11. On this point, see Freeman 1983.
12. For details about the first two tests, see Dickey and Fuller 1981; and Phillips and Perron 1988.

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lag lengths.[13] To deal with the possibility of missing variables, we adopt Leamer's specification methodology.[14] Starting with a bilateral model, we check robustness by adding related variables, and equations (1) and (2) represent the outcome. However, we cannot include all of the variables of possible interest and hence may run the risk of misspecification. We follow Frank Hoole and Chi Huang's advice that it is reasonable to assume that excluded variables do not change when residuals are white noise.[15] Thus white noise in the error terms is a requirement for reporting Granger causality results.

Finally, our Granger specification includes a time-trend term. According to Heejoon Kang, a failure to detrend when needed enhances causal relationships, whereas detrending when not needed weakens them.[16] Pursuing our conservative approach, in this instance we prefer to err by generating weakened causal results rather than to misidentify causal patterns that do not exist.

Data and Indicators

We assume that the actions of some countries exert a greater politicoeconomic effect on the world economy than do others. We have constructed a longitudinal trade data set that encompasses five of the most significant traders (Britain, France, Germany, the United States, and Japan) and allows us to create an aggregation that approximates the world trading system.[17] In many years these five states represent more than 60 percent of world trade. But we need to be careful in assuming that a few of the most powerful states' trade behavior can stand in for the rest of the world.

Accordingly, we have collected data on imports and exports among the five instead of simply relying on their total trade volumes. Otherwise, we would be including some behavior that needs to be kept separate because it is part of the overall protectionist-trade historical story. For example, in the second half of the nineteenth century Britain shifted some of its trade away from increasingly protected European markets to its own imperial markets. Such a shift would not necessarily be detectable in total trade volume but should be observable in a series restricted to trade among the major economic powers. Although some bilateral trade data are available before 1854, only after that date are we able to obtain sufficient serial information identifying the specific trade partners that we seek on an annual basis. Thus our six trade series (one for each country and an aggregated one) extend from 1854 to 1990.[18]

13. For examples, see Mehra 1977; Hsiao 1979; Gasiorowski and Polachek 1982; Huang and Kracaw 1984; Hoole and Huang 1989; Kang 1989; and Reuveny and Kang 1996.
14. Leamer 1978.
15. Hoole and Huang 1989, 147.
16. See Kang 1985.
17. The primary trade and GDP sources are Mitchell 1992 (Britain, France, and Germany); Mitchell 1993 (the United States), and Mitchell 1995 (Japan). The data on Japanese trade flows to and from the other four have been supplemented by information from Liesner 1988. Data after 1988 are taken from Organization for Economic Cooperation and Development 1992; and International Monetary Fund 1991. The 1854 starting date for these series is based on our inability to find systematic British import data broken down by country source prior to the mid-1850s.
18. Too much data are missing to analyze Germany in the 1914–45 or 1854–1990 period.

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Trade data are known to be noisy, reflecting the effects of inflation, economic recessions and growth, commodity price changes, and fluctuations of exchange rates. To simplify our conversion problems, we normalize each annual trade datum by gross domestic product (GDP). Assuming that recessions, economic booms, and inflation affect GDP and total trade in similar ways, missing variables are less likely to influence our results. Assuming competitive markets, price fluctuations will similarly affect GDP and trade, and, therefore, their impact on the trade ration should be small.[19]

To construct an aggregate index, we first computed each of the five countries' share of world trade and then recalculated the proportional shares based on a new denominator derived from the five-country total. Since a variety of dyadic imbalances occur in exports and imports at any given point in time, we rely exclusively on total trade (the sum of imports and exports) among the five. Next, the ratio of trade to GDP of each country is weighted by the recalculated "world" trade share and then summed over the five countries for each year in the series, thereby generating a weighted, five-power trade series that we believe captures a respectable proportion of world trade behavior.

The protectionism measure we use in this examination is based on an 1800–1990 average nominal tariff series previously generated for the five major trading states.[20] The basic argument is that although no perfect measure of protectionist barriers exists, more direct measures are superior to more indirect measures, such as regionalization proclivities or imports as a proportion of national income. In principle, the validity of average nominal tariffs is threatened by the possibilities that effective tariffs may be much different from nominal tariffs, and that goods subject to very high tariffs receive little weight in this index.[21] The analyses of Richard Caves, Gerald Helleiner, J. Michael Finger, Dean A. De Rosa, and Real Lavergne indicate that similar results emerge when effective and nominal tariff rates are used interchangeably in regression equations. Similarly, the analysis of Enzo Lerdau points out that average nominal tariffs and those computed using weights from the wholesale price index are highly correlated. Moreover, calculating effective tariffs or using weights as in Lerdau would require a tremendous amount of data on the inputs of production used to produce different commodities or on wholesale price indexes. Such data are not readily available for the long time periods in which we are interested.[22]

The tariff data are reported as observations every five years. Since our trade data are annual, we assume that the tariff series are smooth within each five-year interval and linearly interpolate the data to arrive at annual tariff levels. Given the nature of the availability of protectionism data and Granger analysis' requirement of large degrees of freedom, we assume that this interpolation will not unduly influence our

19. Earlier applications and discussions of some type of a trade ratio indicator include Hirschman 1945; Gasiorowski and Polachek 1982; McKeown 1991; and Reuveny and Kang 1996.

20. The data are reported in Reuveny and Thompson 1997.

21. Another limitation of average tariffs is their potential volatility due to changing import prices. Irwin 1996 uses both import prices and tariff regimes to explain average tariffs. While this boosts R^2 only from 0.94 to 0.96, the effect may be larger in some short periods. We, however, are not modeling tariffs in short periods. Nor are we attempting to develop a fully specified model of tariffs.

22. See Lerdau 1957; Caves 1976; Helleiner 1977; Finger and De Rosa 1979; and Lavergne 1983.

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results. As emphasized by Timothy McKeown, inquiries of the type examined here seek clues to the nature of the relationship between trade and protectionism; highly precise delineations of this relationship must await further analysis and, no doubt, an improved data base.[23]

Nontariff trade barriers (NTBs) are difficult to handle since they include various measures that are not easy to assess, such as discriminatory procurement, quotas, restrictive licensing, voluntary export restraints, antidumping, escape clauses, surveillance safeguards, subsidies, domestic standards, and countervailing duties.[24] Although we assume that NTBs have increased since the late 1960s, we and others have yet to successfully combine NTBs and tariff levels in a single series. In this examination, we focus exclusively on tariff levels as a consequence. However, to test the robustness of our results concerning this issue, we attempt to crudely model the effect of NTBs by adding a dummy variable (0 for 1854–1967 and 1 for 1968–90) to our test.[25]

We have noted that bivariate Granger investigations run the risk of ignoring relevant variables. On the other hand, including all conceivably relevant variables is impossible, assuming we knew which ones these were. We suspect the most important variables to include, for the purposes of our long-term Granger analysis for the nineteenth and twentieth centuries, are wars and recessions.[26] To mark periods of systemic recession, we set a dummy variable to 1 when the overall weighted GDP of the five countries declines. In national tests, we include a dummy variable indicating times of national recessions according to Angus Maddison.[27] For wars, we include only those conflicts fought among the five included states (the Franco-Prussian War, 1870–71; World War I, 1914–18; and World War II, 1939–45).

A final design consideration concerns the temporal structure of the tests. We have two reasons for examining periods of time shorter than the full 1854–1990 period. First, we suspect that system leader behavior is different from follower behavior. No single state led consistently in the 1854–1990 period. Britain led prior to World War I, and the United States led after World War II. To assess whether their protectionism–trade relationships changed in accordance with their changing roles, more discrete time periods are necessary. A second reason for examining shorter periods of time is the question of robustness. Robust findings should be fairly consistent across time. We need to check whether this is in fact the case. Just because two states could be said to have played similar roles in two different centuries does not mean that their tariff–trade behavior will be identical in all respects. Their approach to other matters, such as investment, corporate structures, and alliance behavior, was not.

The two different considerations suggest that we should concentrate the focus of our tests within three time periods: 1854–1913, 1914–45, and 1945–90. In the first

23. See McKeown 1991, 154.
24. See Deardorf and Stern 1985; Bhagwati 1988; Grilli 1990; and Laird and Yeats 1990.
25. We do not assume that NTBs were nonexistent prior to 1968 but only that their short-term impact, especially given relatively low tariffs, was greater after 1968 than before.
26. See, for example, Mansfield 1994; and Gowa 1994.
27. We adopt the same approach to designating recessions as Maddison 1991.

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period Britain was the system leader, whereas in the third period the United States has that role.

Granger Causality Specification

The final Granger test is based on F-tests derived from equations (1) and (2):

$$T_t = T_0 = \sum_{i=1}^{L_T} \alpha_i T_{t-i} + \sum_{i=1}^{L_P} \beta_i P_{t-i} + \gamma t + \delta W_t + \theta R_t + \psi N_t + u_t \quad (1)$$

$$P_t = P_0 + \sum_{i=1}^{L'_T} \alpha'_i T_{t-i} + \sum_{i=1}^{L'_P} \beta'_i P_{t-i} + \gamma t + \delta' W'_t + \theta' R'_t + \psi' N'_t + u'_t \quad (2)$$

In equations (1) and (2), T_t is the first difference of our trade indicator at time t, whereas T_{t-i} is the same indicator i years ago. Much the same description applies to P_t, the first difference of our protectionism indicator. T_0 and P_0 are intercept terms, and t is the linear trend component. W, R, and N are dummy variables for wars, recessions, and nontariff trade barriers, respectively. L_p , L_T, L'_P , and L'_T are the number of annual lags of protectionism and trade. u_t and u'_t are error terms, which are assumed to be white noise. All Greek symbols are regression coefficients.

If the coefficients β_i in equation (1) are significantly different from zero, the inclusion of past values of first differences in protectionism will yield better forecasts of future trade than the use of past trade alone. Hence, one would conclude that changes in protectionism Granger cause changes in trade. The roles of changes in protectionism and trade are then reversed in equation (2) to test if changes in trade Granger cause changes in protectionism by determining whether the coefficients α'_i are significantly different from zero. If both β_i and α'_i are significantly different from zero, the causality between protectionism and trade is reciprocal (both variables Granger cause each other).

Data Analysis

The results from our Granger investigations are presented in Tables 1 and 2.[28] In Table 1, we present the best statistical significance level from F-tests per country–system by the appropriate time period. For our present purposes, the best F-test outcome is defined as the lowest significance level for rejecting the null hypothesis of no Granger causality in a certain direction within the lag structures examined. Since

28. Thirty-three unit root tests are conducted for each country and for the aggregate series, for each of four periods. All of the national and systemic trade ratios are stationary without unit root. However, the tariff series may include unit roots, depending on sample size, lag length, and the type of test used. Two versions of Dickey and Fuller's test and two versions of Philip and Peron's test, with one version using the t-test statistics and the other focusing on sample size multiplied by (1–the autocorrelation coefficient), in addition to the standard Durbin-Watson test of the series on a constant, were used. But as long as the error terms in the Granger regressions are white noise, the results are considered reliable (see McCallum 1993 and Hamilton 1994).

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TABLE 1. *Antecedence in the protectionism–trade relationship: Best F-test significance levels*

Unit	*1854–1990*	*1854–1913*	*1914–45*	*1945–90*
Trade → Protectionism				
System	.554 (1)[a]	.011 (3)	.005 (4)	.000 (6)
Britain	.445 (3)	.576 (4)	.082 (1)	.004 (1)
United States	.006 (5)	.121 (3)	.036 (4)	.007 (6)
France	.448 (1)	.485 (1)	.080 (8)	.005 (7)
Germany	NA	.139 (6)	NA	.273 (1)
Japan	.435 (1)	.303 (1)	.518 (4)	.497 (2)
Protectionism → Trade				
System	.539 (3)	.015 (4)	.378 (8)	.176 (7)
Britain	.176 (8)	.594 (7)	.536 (8)	.010 (1)
United States	.445 (5)	.027 (7)	.041 (8)	.408 (1)
France	.000 (7)	.424 (8)	.000 (7)	.380 (6)
Germany	NA	.532 (8)	NA	.508 (8)
Japan	.402 (6)	.577 (1)	.472 (1)	.157 (2)

Note: Entries denote best (lowest) significance levels for rejecting the appropriate null hypothesis (trade does not Granger cause protectionism for $T \rightarrow P$, and protectionism does not Granger cause trade for $P \rightarrow T$).

[a]Numbers in parentheses are the lag length associated with the best F-test outcomes. The German (1880) and Japanese (1890) tests begin later than 1854 due to missing trade information. Missing information for Germany in the 1914–45 period also precludes an examination of that interval and the 1880–1990 period.

TABLE 2. *A summary of significant Granger causality patterns*[a]

Unit	*1854–1990*	*1854–1913*	*1914–45*	*1945–90*
System	—[b]	$T \leftrightarrow P$	$T \rightarrow P$	$T \rightarrow P$
Britain	—	—	$T \rightarrow P$	$T \leftrightarrow P$
United States	$T \rightarrow P$	$P \rightarrow T$	$T \leftrightarrow P$	$T \rightarrow P$
France	$P \rightarrow T$	—	$T \leftrightarrow P$	$T \rightarrow P$
Germany	NA[c]	—	NA[c]	—
Japan	—	—	—	—

[a]The threshold for statistical significance is the .10 level. However, all but two cases ($T \rightarrow P$ for Britain and France, 1914–45) are significant at the .05 level as well.

[b]Dashes indicate that no statistically significant relationship exists.

[c]Missing information precluded an analysis of German data in the 1914–45 and 1854–1990 periods.

the precise dynamics of trade and protectionism are unknown and may be relatively slow for changes in one variable to register in the other variable, up to eight annual lags are inspected for each actor. In all, thirty-two Granger tests are performed for each of our six units of analysis. The results are reported only if the error terms in equations (1) or (2) are white noise.

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Yet even though we can reduce the summary outcome to forty-eight numbers, interpreting the outcome without the assistance of a guide remains difficult. Table 2 provides a further simplified guide by indicating which time periods were significantly associated with a specific Granger causal pattern. Readers are invited to rely on either one or both tables in assessing independently the nature of the statistical outcome.

As suggested by the need for two tables, the Granger causality results vary by actor and time period. For the whole time period (1854–1990), no pattern emerges for the system, Britain, or Japan. In the United States the pattern shows trade anteceding protectionism. In France the pattern shows the opposite, with protectionism anteceding trade. We find no evidence of reciprocity (trade ↔ protectionism) and no evidence that protectionism influenced trade outside France.

But, as indicated earlier, it is not clear that the 1854–1990 results are likely to represent the most meaningful tests of our arguments. When we turn to the more discrete time intervals, more evidence for reciprocity emerges at the system level (1854–1913), for the United States and France (1914–45), and Britain (1945–90). Stronger evidence for the predominance of the trade → protectionism pattern also emerges. In addition to the four periods characterized by reciprocity, the system (1914–45 and 1945–90), the United States (1945–90), Britain (1914–45), and France (1945–90) are associated with trade anteceding protectionism. Only one additional case (besides the reciprocal ones) of protectionism anteceding trade is found (the United States, 1854–1913).

How do our more specific predictions fare? At the system level, and relying primarily on the evidence from the three consecutive time periods, the pattern primarily shows trade anteceding protectionism. Unfortunately we have been unable to extend the data back earlier than 1854. The reciprocal pattern associated with the system-level data prior to 1913 might have been even stronger, as suggested by Figure 1. Alternatively, the post–Napoleonic War trade expansion from the 1820s to the 1840s might have been shown to have clearly preceded the tariff reductions, begun by the British only in the 1840s, thereby yielding an even stronger trade → protectionism relationship.[29]

For the two system leaders in the sample, Britain and the United States, the evidence is not as clear-cut but still largely supports the long-term emphasis. As predicted, we found no causal pattern in the nineteenth-century British case. This finding may be due to the truncated nature of the data noted earlier, since being forced to begin in 1854 eliminates much of the initial British tariff reductions that commenced immediately prior to the 1850s and the presumed expansion in trade of the first half of the nineteenth century. Yet, the inclusion of the earlier period might only reinforce the absence of a causal pattern. As suggested in Figure 2, the pre-1854 data missing from the figure would most likely resemble the post–World War II period in which trade expansion preceded declining tariffs. In contrast, Figure 3 captures the post–Civil War rise in U.S. tariffs and the contraction in trade growth. After World War I and into the 1930s, tariffs began a dramatic rise that was not accompanied by equally dramatic decreases in the trade–GDP ratio. Nor can it be said, based on the visual

29. Bairoch 1993, 20–21, for instance, notes some British tariff reductions in 1833 and 1842, but he associates, fairly conventionally, the emergence of a free-trade stance with the 1846 abolition of the Corn Laws and some duties on manufactured goods.

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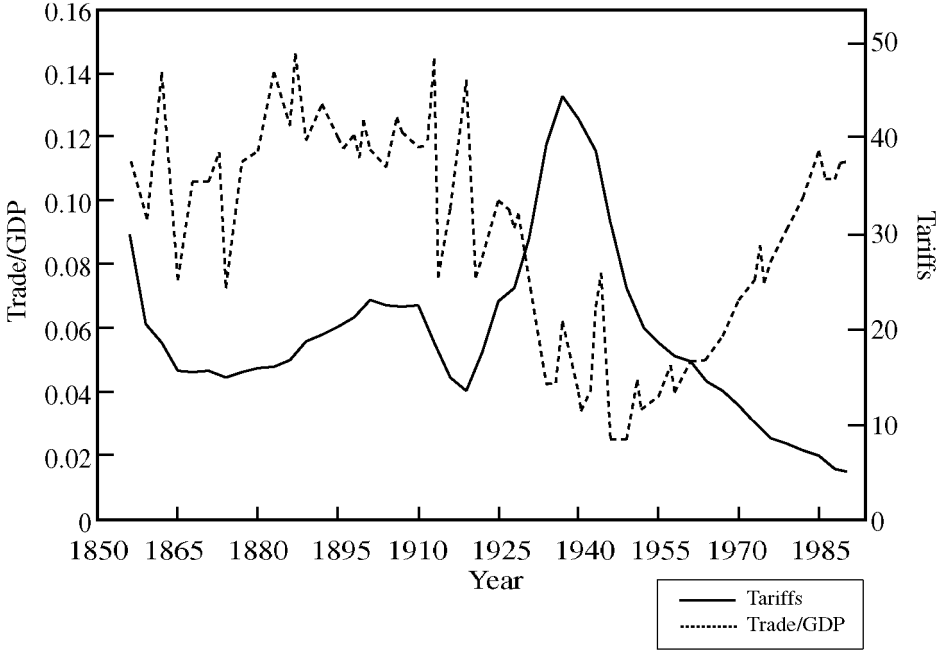


FIGURE 1. *Systemic trade and tariffs*

evidence and the Granger outcome, that the marked decline in U.S. tariffs after World War II produced a corresponding trade expansion.

A comparison of the movement in British and U.S. causality patterns diachronically reveals an explicable evolution, with each state moving in opposite directions. In the nineteenth century, protectionism influenced U.S. trade but not, apparently, Britain's. In the interwar period, the interaction became more reciprocal in the United States, whereas Britain's protectionism responded to trade contraction. In the post–World War II era, it is U.S. protectionism that is responding to trade—in marked contrast to the nineteenth century—whereas the British protectionism–trade interaction has become reciprocal. This movement suggests that protectionism became gradually less influential in the U.S. case as it moved into the system leader role and more influential in the British case as it moved away from the system leader role. By and large, the system as a whole moved along lines more similar to the pattern displayed by the United States—with protectionism becoming less influential over time.

How to interpret the other countries' outcomes is less obvious. No pattern ever emerges in the Japanese case. The data plotted in Figure 4 are supportive of the no-relationship outcome. Japanese tariffs climb to a peak in the 1930s and then gradually decline to a low in the 1980s. The climb of the tariffs long precedes the Depression–war trade contraction in the 1930s and 1940s. Similarly, the long descent of Japanese tariffs in the second half of the twentieth century appears to have little to do with Japan's trade–GDP ratio. Of course, this case may be one of the more egregious instances of NTBs interfering with an interpretation of the data analysis. But

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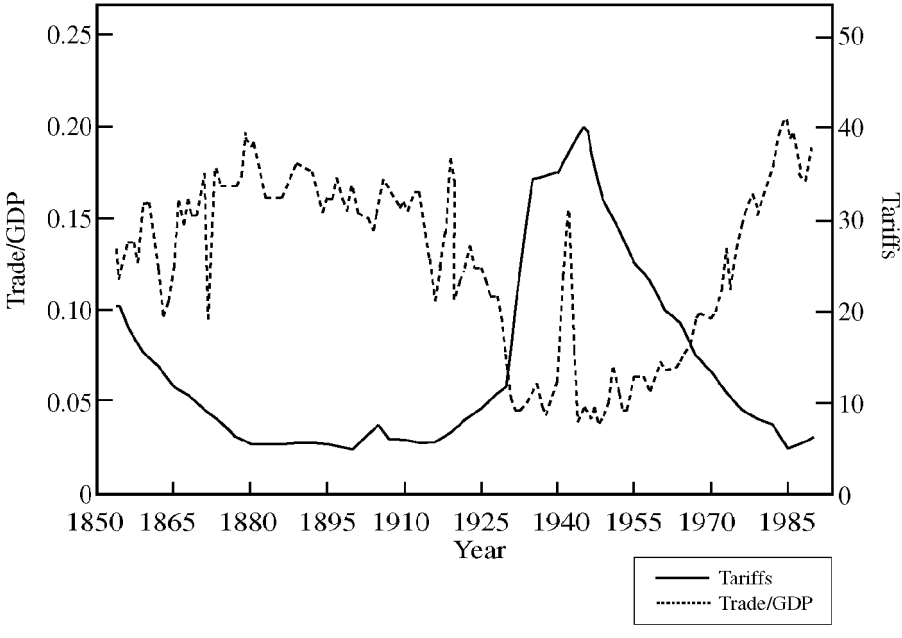


FIGURE 2. *British trade and tariffs*

even if that is the case, it is not the measurable tariff levels that matter in the Japanese case.

The German case is very similar to the Japanese case. Figure 5 shows an initial rise (through the 1890s) in tariffs that does not appear to affect the German trade–GDP ratio. The immediate pre–World War I period was characterized by a moderate decline in tariffs without much change in trade. The German interwar period, characterized by Nazi attempts at autarky, suggests a case in which tariffs can make some noticeable difference. Yet for the most part the clarity of the relationship appears to be restricted to the 1930s interval. The steep decline in tariffs after World War II did not lead to a corresponding strong increase in trade–GDP. The trade expansion accelerated only in the late 1950s and the 1960s, by which time tariffs were already relatively low.

The French outcome is more complicated. The overall result suggests that protectionism is more predominant than trade. But the more discrete time periods suggest movement along a path more similar to the U.S. pattern. Although no clear causality pattern emerges in the nineteenth century, either statistically or visually as indicated in Figure 6, the interwar years are associated with tariff–trade reciprocity, and the postwar years with trade predominating over protectionism. Appropriately, Figure 6 shows a marked drop in tariffs and a very strong increase in its trade–GDP ratio in the period immediately prior to the 1920s and then reversals of movements in both series into the 1920s and 1930s.[30] The interwar tariff–protectionism reciprocity seems genu-

30. The midseries trade spike is something of an artifact of a trade index restricted to major economic powers. During World War I, France relied enormously on allied imports to sustain its economy. Thus the

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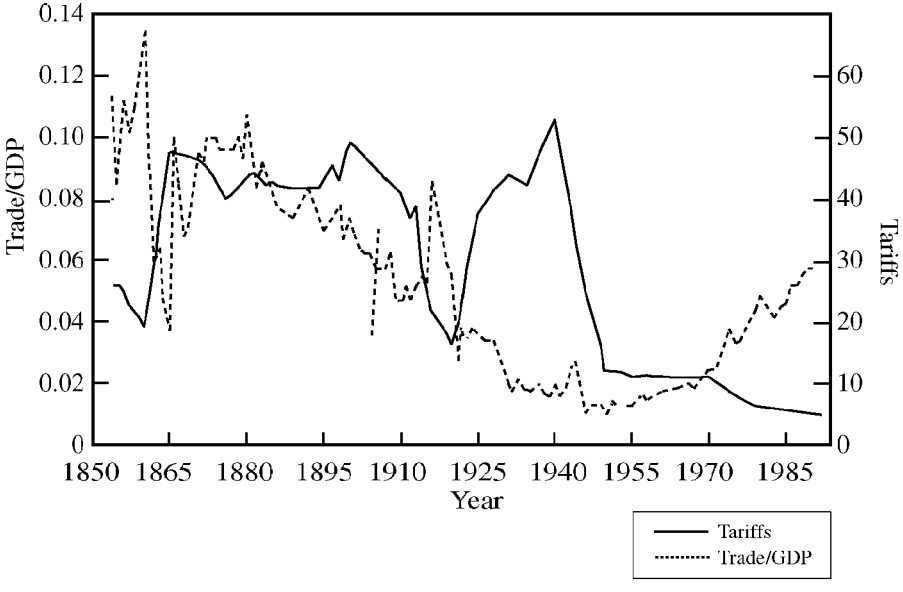


FIGURE 3. *U.S. trade and tariffs*

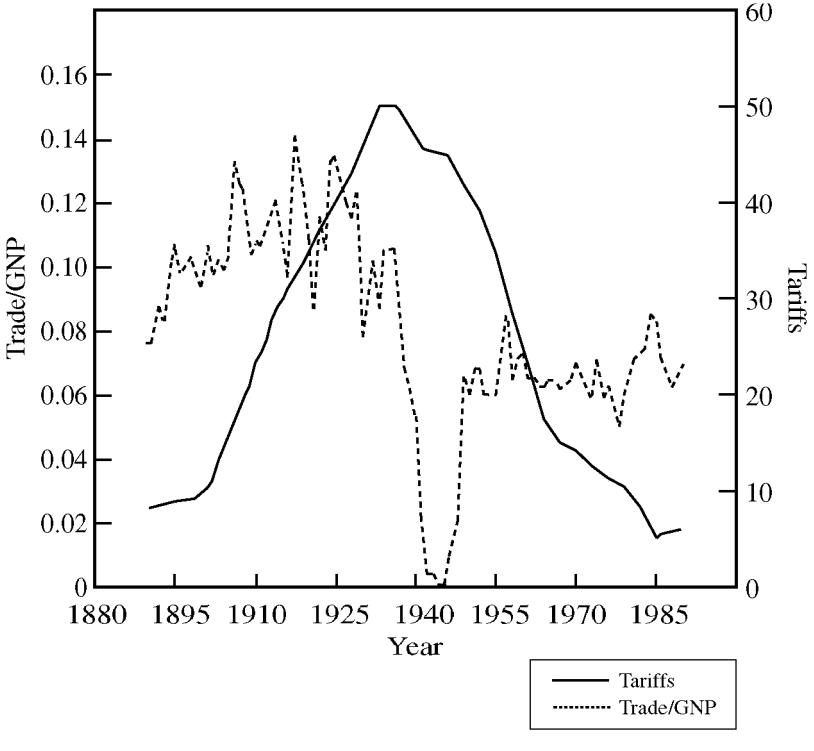


FIGURE 4. *Japanese trade and tariffs*

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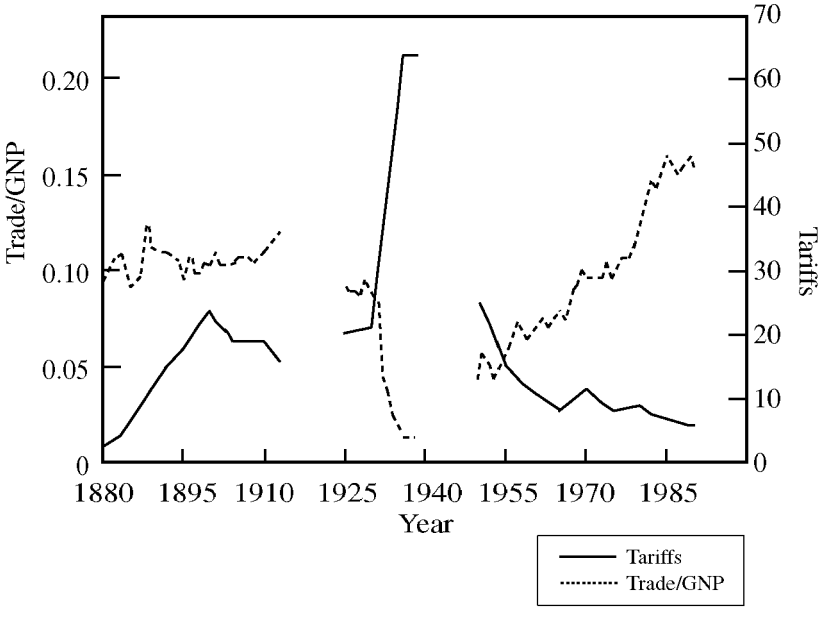


FIGURE 5. *German trade and tariffs*

inely portrayed by the respective serial fluctuations recorded in Figure 6. And, after World War II, the expansion of French trade clearly preceded the movement toward tariff reductions.

So far we have been silent about the outcomes associated with the various controls administered for war, recessions, and NTBs. It is worth emphasizing that our Granger modeling falls well short of what might be viewed as developing a sophisticated model of tariff–trade relationships. One implication is that we should not give too much weight to the specific coefficients of the dummy variables. Still, they are not without interest in their own right and deserve some summary attention.

The recession dummies were significantly different from zero in nine cases. When statistically significant, the recession variable was associated with a decrease in trade and an increase in protectionism, just as one might anticipate. These results are more pronounced in the cases of the system as a whole, the United States, and Britain, and less so for the other countries.

The war variable was significant in fifteen cases. With two exceptions, war is associated with decreases in trade and tariffs. The two exceptions are not surprising. The U.S. data (1854–1913 and 1914–45) yield a positive relationship between war and trade, reflecting the geoeconomic advantages enjoyed by the United States in provisioning European allies in the two world wars. As in the case of recessions, the war outcome is more apparent in the examinations conducted on the systemic, U.S., and British data, and less so for the other cases.

spike captures a genuine trade expansion of sorts, but it is one restricted to wartime exigencies and does not describe what happened to French exports.

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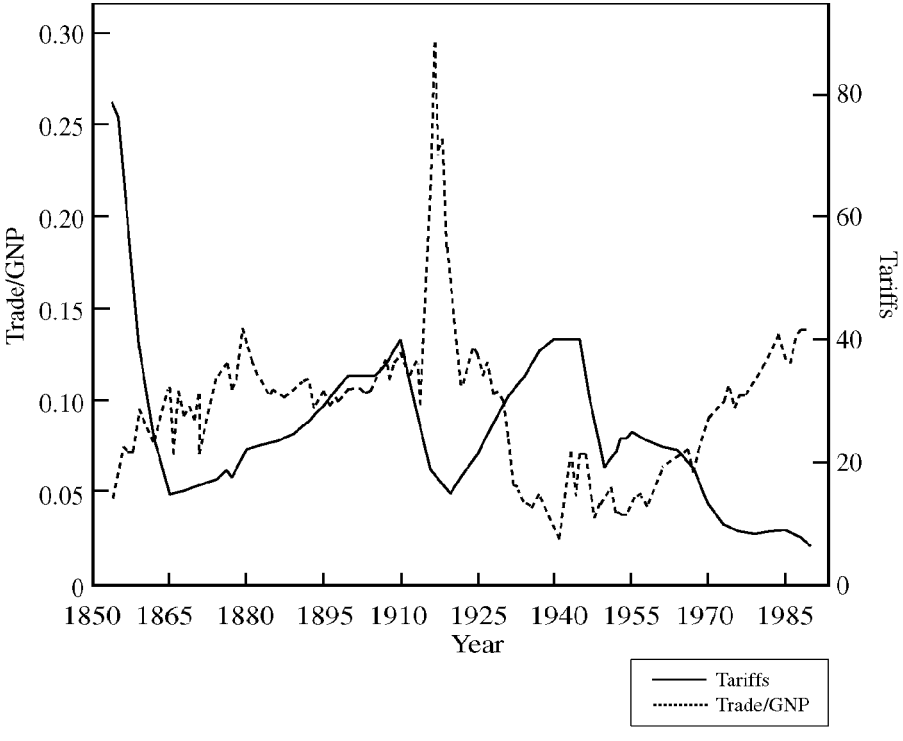


FIGURE 6. *French trade and tariffs*

Finally, the dichotomous controls for the NTBs apply only to the 1854–1990 and 1945–90 time periods, since the NTB dummy is coded 1 after 1967. Out of eleven trade ⟶ protectionism regressions, the NTB dummy was statistically significant (and negative) in two cases (Britain 1945–90, France 1945–90). Out of eleven protectionism ⟶ trade regressions, the NTB dummy emerged significant (and positively signed) in only one case (Britain 1854–1990). However, the scant results may say more about the crudity of the NTB dummy than about whether NTBs make some difference in the antecedence patterns.

Conclusion

The evidence appears to corroborate the argument derived from long-term reasoning that the antecedence of trade on protectionism predominates over the reverse causal pattern. Changing tariff levels can make a difference in the short run—either encouraging or discouraging trade—but in the long run more fundamental economic-growth processes influence the political seductiveness of tariff-level increases and decreases. Nonetheless, the evidence is not without ambiguities. Nor do we claim that there is only one way to assess the outcome. However, even though some evidence indicates that protectionism influences trade, more evidence indicates that its

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influence is not as strong as some might think. Causality patterns with protectionism predominant turn out to be quite rare in Tables 1 and 2. Moreover, we also find a fair amount of evidence showing that trade antecedes protectionism, and it does so especially at the systemic level and in the histories of the system leaders. Most interesting is the suggestive pattern of a gradually receding influence for protectionism in the most recent system leader case (the United States) and an increasing influence in the older case (Britain).

Still, the strong absence of uniformity in the statistical outcomes underscores the need for theoretical caution. It also reinforces the conclusion we reached in examining the correspondence between the predictions of a number of models of protectionist behavior and the observed record of fluctuations in tariff levels.[31] The long-term interpretation is helpful in elucidating trade and protectionism behavior, but there are conspicuous limits to its explanatory power. Just as an emphasis on the long term need not preclude a substantial role for short-term considerations, there is no imperative to eliminate the need for explanations more geared to national and domestic processes in the short term. Long-term economic growth is reacted to in different ways by different actors. Although a few states may ride the long-term tendencies most profitably, and a few others may react most violently to its implications for who wins and loses, most states will be caught somewhere in between. The interaction between their trade and protectionism strategies will fall somewhere "in between" as well.

A long-term perspective offers only a general frame of reference or context within which a variety of behaviors may take place. The question is whether we can dispense with the long-run context and rely exclusively on developing an understanding of short-term dynamics. In the case of tariff interactions with trade, we suggest the answer is no. Something important is otherwise left out of the equation.

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