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The Proliferation of Preferential Trading Arrangements

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This article examines some international factors contributing to the recent spread of preferential trading arrangements (PTAs). PTAs help states to ensure against future disruptions of commerce with key trade partners. When stress is placed on the international trading system, the threat of such disruptions rises. Both hegemonic decline and global recessions raise the specter of commercial closure, and therefore each factor may stimulate the proliferation of PTAs. Furthermore, strategic interaction among both PTAs and countries is likely to guide the growth of preferential arrangements. As PTAs become increasingly pervasive, states that are not covered by one have strong incentives to enter such an arrangement. Doing so reduces the prospect that their access to important markets will be curtailed and that their competitiveness abroad will be undermined. The findings of this article conform with these arguments. In general, eroding hegemony, global recessions, and strategic interdependence have accelerated the pace of commercial regionalism since World War II.

Preferential trading arrangements (PTAs) have long been important features of the international political economy, but recently they have become increasingly pervasive. Over 50 have been formed since the conclusion of World War II, and almost every member of the World Trade Organization (WTO) is currently party to at least one. These developments have prompted heated debates about whether the proliferation of PTAs will generate conflicts between trade blocs and fragment the multilateral economic system or facilitate cooperation, thereby bolstering the multilateral system.¹ Equally heated are debates about why PTAs have proliferated. But, although numerous empirical studies have analyzed the effects of preferential commercial arrangements on international relations, very little empirical research has focused on the international factors affecting the growth of these arrangements.² The latter issue is centrally important, and the purpose of this article is to provide some preliminary quantitative evidence bearing on it.

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1. For various perspectives on this debate, see Bhagwati (1991, 1993), Bhagwati and Panagariya (1996), Krugman (1991, 1993), Lawrence (1996), Oye (1992), Pomfret (1988), and Westhoff, Yarbrough, and Yarbrough (1994).

2. Among the many empirical studies of PTAs' effects on international economic relations are Aitken (1973), Frankel (1993), Frankel, Stein, and Wei (1995), Mansfield and Bronson (1997), and Winters and Wang (1994).

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PTAs accord preferential commercial access to members' products and include free trade areas, common markets, and customs unions (Anderson and Blackhurst 1993; Bhagwati and Panagariya 1996; de Melo and Panagariya 1993; Pomfret 1988). Because these commercial arrangements are often composed of members located in the same geographic region, their growth has led many observers to conclude that the international economy is experiencing a wave of regionalism.³ The results of this study will help to identify some factors contributing to any such wave.

I argue that a key reason why states enter PTAs is to ensure that commerce with trade partners will not be disrupted in the future. When stress is placed on the international trading system, the threat of such disruptions rises. Both hegemonic decline and global recessions raise the specter of commercial closure, and therefore each factor may stimulate the proliferation of PTAs. Strategic interaction among trade blocs and among countries is likely to guide the growth of preferential arrangements as well. On the heels of an increase in regionalism, states that are not covered by a PTA have strong incentives to create new and join existing preferential arrangements. Doing so reduces the prospect that their access to important markets will be curtailed and that their competitiveness abroad will be undermined. The findings of this article conform with these arguments. In general, eroding hegemony, global recessions, and strategic interdependence have accelerated the pace of commercial regionalism since World War II.⁴

INTERNATIONAL POLITICAL AND ECONOMIC INFLUENCES ON PTA FORMATION

Here, I address two aspects of regionalism's growth—the rate at which PTAs form and the rate at which states join PTAs. Because much contemporary research on this topic emphasizes the rising number of both preferential commercial arrangements and parties to them (e.g., de Melo and Panagariya 1993; Fernández 1997), analyzing each rate is appropriate.

3. Indeed, the terms regionalism and PTAs are often used interchangeably, and I will do so as well, although it is important to recognize that not all PTAs are made up of states located in the same geographic region (e.g., the United States-Israel Free Trade Area). Following various other studies, I refer to regionalism as a political process whereby states grant commercial preferences to particular trade partners. I distinguish it from regionalization, an economic process whereby trade or investment flows increase more quickly between a given group of countries than they do between this group of countries and the rest of the world. On this distinction, see Fishlow and Haggard (1992), Frankel (1993), Haggard (1997, 48 n. 1), and Yarbrough and Yarbrough (1997, 160 n. 1). Note that although regionalism and regionalization are likely to be related, the causal links between them are not clear (Fishlow and Haggard 1992). For analyses of political factors influencing regionalization, see Chadwick and Deutsch (1973) and McKeown (1991).

4. Because my focus is on explaining global patterns of PTA formation, the following analysis is cast at the systemic (or international) level. This systemic focus obviously directs attention away from domestic and regional factors that also may contribute to the establishment of PTAs. But the advantages of assessing the extent to which systemic features explain patterns of international relations before focusing on domestic or regional variables are widely recognized (Keohane 1986; Waltz 1979). For analyses of the domestic and regional factors affecting the formation of PTAs, see Busch and Milner (1994), de Melo, Panagariya, and Rodrik (1993), Grieco (1997), Grossman and Helpman (1995), Haggard (1997), Milner (1997), and Pomfret (1988).

States often form and join PTAs to improve their access to foreign markets. By reducing trade barriers among participants and restricting members' ability to subsequently raise these barriers, PTAs provide insurance against future disruptions of commerce with selected economic partners (Perroni and Whalley 1994; Whalley 1998; Yarbrough and Yarbrough 1992). PTAs are especially useful instruments in this regard because states tend to have a greater capacity to make binding commitments to open their markets in regional than in multilateral settings (Bagwell and Staiger 1997; Bond and Syropoulos 1996).

Some recent studies have concluded that, when the stability of the global trading system is threatened, the incentives increase for states to ensure against future commercial disruptions by establishing preferential arrangements (Perroni and Whalley 1994; Whalley 1998). If the trading system were to become closed, then commercial relations with important trade partners would be jeopardized. The prospect of closure heightens the risks faced by states that depend on international trade and raises the value of striking agreements that guarantee preferential access to foreign markets. Thus, the factors that threaten to undermine the global trading system are likely to stimulate the formation of PTAs. Because the erosion of hegemony and global recessions are two such factors, part of my analysis centers on their influence on the frequency of PTA formation and the frequency with which states join these arrangements.

HEGEMONY AND THE GLOBAL BUSINESS CYCLE

For more than two decades, economists and political scientists have debated whether commercial openness is affected by hegemony, a condition marked by the existence of a single country that is powerful enough and willing to manage the international system (e.g., Gilpin 1975, 1987; Gowa 1994; Keohane 1984; Kindleberger 1973; Krasner 1976; Lake 1988; Mansfield 1994). Many scholars have argued that establishing and maintaining an open trading system is a collective good that will be underprovided absent a stable hegemon.⁵ By virtue of its size, a hegemon, like a privileged group, has incentives to provide collective goods regardless of the contributions made to them by other states.⁶ Although analysts who advance this argument disagree about the nature of these incentives, they agree that hegemonic decline reduces this state's contribution to the stability of the global trading system.

To the extent that eroding hegemony increases the likelihood of systemic closure, it may prompt states to seek insurance against this contingency by establishing and joining PTAs. This position corresponds with the conclusions reached in various analyses (Gilpin 1975, 1987; Kindleberger 1973; Krasner 1976) but diverges from the views of others who argue that hegemony has little effect on regionalism (McKeown 1991; Oye 1992; Yarbrough and Yarbrough 1992).

Despite the widespread and heated debates about the effects of hegemony on the stability of the international economic system, few empirical studies have addressed

5. See Gilpin (1975, 1987) and Kindleberger (1973). See also Krasner (1976), who argues that hegemonic decline stimulates regionalism but does not emphasize the provision of collective goods in the international system.

6. On privileged groups, see Olson (1965).

its influence on regionalism.⁷ I am aware of none that has analyzed hegemony's effect on the incidence of PTA formation. Numerous observers identify declining U.S. leadership in the General Agreement on Tariffs and Trade (GATT)/WTO and its waning commitment to multilateralism as central sources of the contemporary growth of PTAs (Baldwin 1993; Bhagwati 1993; Bhagwati and Panagariya 1996; Gilpin 1987; Krugman 1991, 1993). However, an earlier wave of regionalism began during the 1960s, a period widely regarded as the apex of U.S. hegemony (Gilpin 1975, 1987; Krasner 1976). In light of the dearth of systematic evidence on this issue and the interest expressed in it, an analysis of the relationship between hegemony and the proliferation of PTAs seems long overdue.

Besides hegemony, global recessions can threaten the stability of the international trading system by depressing the demand for goods and services, thereby squeezing firms' profits, reducing employment, and creating incentives for import-competing firms and other segments of society to press for protection.⁸ But, like hegemony, little empirical work has been conducted on whether fluctuations in the global business cycle influence the formation of PTAs.

Recessions may lead states to form or join a PTA comprising countries whose principal industries do not rival each other. Doing so is one way a government can address domestic pressures for protection by restricting imports from third parties. Responding to these demands by forming or joining a PTA rather than imposing unilateral trade barriers affords particular advantages to members of the GATT/WTO. As Pomfret (1988, 158) points out, "if a country intends to raise MFN [most favored nation] tariffs or introduce import quotas, it is both contravening GATT and risking retaliation. A bilaterally negotiated discriminatory trade barrier is a way to sidestep GATT obligations without an open breach."⁹

At the same time, states may enter PTAs during an economic downturn to create commercial opportunities abroad in the face of depressed global demand. Countries may also establish and join preferential arrangements during a recession to ensure that export opportunities will not be jeopardized should the recession stimulate protectionist pressures in key trade partners. The benefits of acceding to a PTA under these conditions are likely to rise if participating in such an arrangement allows firms to realize economies of scale by expanding their access to members' markets, to integrate regional production, or to reduce the risks of making relation-specific investments to service foreign markets (Haggard 1997; Milner 1997; Yarbrough and Yarbrough 1992).

7. Among the studies that have been conducted on this topic are McKeown (1991), Oye (1992), and Yarbrough and Yarbrough (1992).

8. On the relationship between recessions and societal demands for protection, see Corden (1993, 55), Mansfield and Busch (1995), and McKeown (1991).

9. Alternatively, global recessions may depress the rate of PTA formation. Import-competing firms that expect intrabloc liberalization to heighten domestic import penetration are likely to resist a PTA's formation, especially during global recessions when downward pressure is already being placed on profits. Furthermore, global expansions tend to spur global trade, and some studies have concluded that rising commerce among a group of countries can foster the establishment of a PTA to help insulate the flow of trade from future disruptions (see Yarbrough and Yarbrough 1992).

STRATEGIC INTERACTION

As countries form and join PTAs at a rising pace, states that are not parties to these arrangements can face incentives to respond in kind. Various theoretical analyses suggest that, due to these incentives, the creation of a PTA tends to beget the development of additional PTAs and that countries joining these arrangements encourage other states to do likewise (e.g., de Melo and Panagariya 1993, 5-6; Fernández 1997; Oye 1992; Pomfret 1988; Yarbrough and Yarbrough 1992). A PTA's creation, for example, may prompt fears by countries located outside the commercial union that it will degrade their competitiveness, thereby leading them to form a rival bloc. So, too, a state joining a PTA may generate concern by its economic rivals (outside the bloc) that this state's preferential access to an expanded market will furnish it with a competitive advantage, thus inducing its rivals to join this or other PTAs to obtain similar benefits.¹⁰

In the same vein, positive contagion in the rates of PTA formation or states' involvement in these arrangements may be due to a demonstration effect: the appearance that a PTA is benefiting members can foster the creation of additional commercial unions by countries eager to realize similar gains (Pomfret 1988; Yarbrough and Yarbrough 1992). Furthermore, PTAs heighten members' market power vis-à-vis third parties and hence their bargaining power (Fernández 1997; Oye 1992). Preferential arrangements are likely to form in reaction to one another, and states are likely to join PTAs in response to one another, because the proliferation of these arrangements erodes the bargaining power of states that remain uncovered by them.

Consistent with the view that strategic interaction has influenced the growth of PTAs, it is often argued that deepening European integration contributed to the formation of the North American Free Trade Agreement (NAFTA) (Bhagwati 1991, 72; Fernández 1997, 16-19), and that NAFTA spurred the development of, and agreements to establish future, bilateral economic arrangements within both the Western Hemisphere and the Asia-Pacific region (Serra et al. 1997, 8-9). Also in accord with this view, many observers have pointed out that the recent spate of PTAs has led various developing countries to join preferential agreements to ensure that their access to important foreign markets will not be curtailed (e.g., Bhagwati 1991, 72; de Melo and Panagariya 1993, 5-6; Fernández 1997, 16-19; Perroni and Whalley 1996).

These illustrations are suggestive, but very little systematic evidence has been accumulated on whether PTAs' growth has been marked by positive contagion. This study's focus on the international system obviously limits my ability to assess directly the extent to which strategic interdependence guides the formation and expansion of PTAs. However, the following results will be among the first on this topic and therefore should be of interest.

Before turning to an analysis of the hypotheses just advanced, two qualifications should be noted. First, these hypotheses rest on the heightened incentives for states to safeguard market access as the threat of systemic closure rises. My argument is that hegemonic decline and global recessions can affect the magnitude of this threat.

10. Of course, the fact that countries have incentives to join PTAs need not imply that parties to existing PTAs always prefer to grant them membership (Bhagwati and Panagariya 1996).

But whether these factors actually lead to closure is neither well established nor critical for present purposes.

Second, this analysis does not address the welfare effects of PTAs. One reason is that substantial differences seem to exist between preferential arrangements in this regard. Central to a PTA's welfare implications is whether it creates more trade among participants than it diverts from efficient producers located elsewhere (Viner 1950). There is ample evidence that many commercial arrangements have been trade diverting, especially those formed among less developed countries and among communist states (Bhagwati 1993; Bhagwati and Panagariya 1996; de Melo and Panagariya 1993; Pomfret 1988). Particularly in recent years, however, other PTAs seem to have been trade creating (Eichengreen and Frankel 1995; Frankel and Wei 1998). Thus, as Frankel and Wei (1998, 216) conclude, "The pattern is mixed. . . . Apparently regionalism can, depending on the circumstances, be associated with either more or less general liberalization." Equally important is that the welfare implications of PTAs do not directly bear on the hypotheses advanced earlier. Although declining hegemony, dips in the global business cycle, and strategic interdependence are each likely to accelerate the pace of regionalism, there is little reason to expect that these factors systematically promote either trade-creating or trade-diverting PTAs.

MODELS AND ESTIMATION PROCEDURES

To test the hypotheses previously discussed, the following models are estimated:

$$\text{FORM PTA}_t = \beta_0 + \beta_1 \text{HEGEMONY}_{t-1} + \beta_2 \text{PTA}_{t-1} + \beta_3 \Delta \text{GNP}_{t-1} + \beta_4 \text{YEAR}_t + \beta_5 \text{FORM PTA}_{t-1} + e_t \quad (1)$$

$$\text{JOIN PTA}_t = \alpha_0 + \alpha_1 \text{HEGEMONY}_{t-1} + \alpha_2 \text{COUNTRY PTA}_{t-1} + \alpha_3 \Delta \text{GNP}_{t-1} + \alpha_4 \text{YEAR}_t + \alpha_5 \text{JOIN PTA}_{t-1} + z_t \quad (2)$$

FORM PTA_{*t*} is the number of PTAs that form in year *t*, and JOIN PTA_{*t*} is the number of countries joining a PTA in year *t*.¹¹ HEGEMONY_{*t-1*} is the percentage of total global

11. The primary source of data for these variables is the list of PTAs notified to the GATT under Article XXIV and the Enabling Clause, which is reported in World Trade Organization (1995, 77-91). Because the WTO lists only PTAs formed by its members and those of the GATT, I supplement these data by including the PTAs listed in Hartland-Thunberg (1980). I also include the Council on Mutual Economic Assistance (CMEA), the Southern African Customs Union, the Economic Community of West African States, the Southern African Development Coordination Conference, and the Eastern and Southern African Preferential Trade Area, since various studies have identified each of these groupings as PTAs. For example, see de Melo and Panagariya (1993), Foroutan (1993, 246-51), Hanlon (1986), Kisanga (1991), Orimalade and Ubugu (1984), and Pomfret (1988).

All PTAs listed by the WTO—and when it is possible to obtain this information, those listed in the other sources mentioned above—are coded as beginning in the year they enter into force. The original members of each PTA are coded as joining it in this year as well. If the year a PTA entered into force is unavailable, its onset is dated as the year the negotiations leading to its formation were concluded. The GATT/WTO lists only PTAs whose members are parties to the GATT and does so only when these agreements are

trade (the sum of imports and exports) conducted by the state engaging in the most commerce in year $t - 1$ and is a widely used measure of hegemony in studies of the international political economy (Krasner 1976; Lake 1988; Mansfield and Busch 1995; McKeown 1991).¹²

PTA_{t-1} is the number of existing PTAs in year $t - 1$, and $COUNTRY\ PTA_{t-1}$ is the percentage of countries involved in at least one PTA in year $t - 1$.¹³ The latter variables are included because the rates at which PTAs form and states join them may depend on how many preferential arrangements already exist and the portion of countries that are already parties to a commercial bloc. Either rate, for example, may be characterized by a ceiling or saturation effect. When the number of PTAs or the percentage of countries involved in a PTA is sufficiently large, few countries will be left uncovered by such an arrangement. This, in turn, may reduce the number of states seeking PTA membership, thus depressing the rates at which PTAs form and states join them. If so, a quadratic relationship might exist between the number of existing PTAs and the frequency of PTA formation, as well as between the percentage of countries involved in a PTA and the frequency with which states join PTAs. To address this possibility, PTA_{t-1}^2 and $COUNTRY\ PTA_{t-1}^2$ are introduced in models (1) and (2), respectively, after initially estimating each model. In addition, ΔGNP_{t-1} is the change in global income from year $t - 2$ to year $t - 1$ and measures the global business cycle;¹⁴ and $YEAR_t$ is t , which I include to directly assess whether there has been a secular increase in regionalism.

Finally, $FORM\ PTA_{t-1}$ and $JOIN\ PTA_{t-1}$ are lagged endogenous variables that are included because the rates of PTA creation and states' accession to PTAs may be characterized by temporal dependence. As discussed below, their coefficients also bear on the extent to which PTA formation and expansion are marked by strategic

officially notified to it. Thus, for some PTAs, the date of initiation given by the WTO differs from that given by the other sources listed above. In these cases, I use the earliest date.

I do not consider agreements strengthening or superseding an existing PTA to be new PTAs. Nor do I consider the formation of hub-and-spoke agreements between an existing PTA (e.g., the European Economic Community [EEC]) and a state or group of states (e.g., the African, Caribbean, and Pacific [ACP] states) to be a new PTA. I do, however, code states that join hub-and-spoke agreements with existing PTAs as having joined a PTA in the year the agreement went into effect. Thus, for example, none of the many association agreements between the EEC/European Community (EC) and European, Middle Eastern, and African countries is coded as a new PTA. But all countries that form such an agreement are coded as having joined a PTA.

To distinguish countries from extrasovereign entities entering a PTA, I generally require that actors be members of the United Nations in the year they joined a PTA to be coded as having acceded to it. The only exceptions to this coding rule are South Korea and Switzerland, which did not join the United Nations, and the members of the CMEA, which did not join the United Nations until after this PTA formed.

12. See Lake (1988) for a discussion of this measure's merits in studies of the international trading system. For each year analyzed here, the United States conducts more trade than any other state. Consequently, for each year, $t - 1$, this measure is derived by summing U.S. imports and exports and dividing this total by the sum of global imports and exports. Data on these variables are expressed in U.S. dollars and are taken from the International Monetary Fund, *International Financial Statistics* (Washington, DC: International Monetary Fund, various years).

13. For a description of the data and the coding procedures used to measure these variables, see note 11. Countries that are not members of the United Nations when they join a PTA but subsequently become members are coded as parties to the PTA starting in the year they join the United Nations.

14. Data on global income are derived by merging two indices (each of which is expressed in real terms) obtained from the GATT. The first covers the period from 1950 to 1985; the second covers the period from 1986 to 1994. See General Agreement on Tariffs and Trade (1986, 139; 1996, 135).

TABLE 1
Descriptive Statistics for the Variables in Models (1) and (2), 1952-1994

<i>Variable</i>	<i>Mean</i>	<i>Standard Deviation</i>
PTAs formed	1.256	1.733
Countries joining PTAs	7.442	9.305
Hegemony	0.143	0.011
Number of existing PTAs	21.744	12.760
Percentage of countries in PTAs	0.624	0.270
Change in GNP	3.605	2.301
Year	1973	12.557
Instrument for lagged number of PTAs formed	1.230	1.312
Instrument for lagged number of countries joining PTAs	7.108	5.150

interdependence over time. These variables, however, are likely to be correlated with e_t and z_t , respectively, which are stochastic error terms, thereby generating biased parameter estimates. Therefore, an instrument for each lagged endogenous variable is used instead.¹⁵

These tests cover the period from 1952 to 1994 because much of the literature on regionalism focuses on this era, and data for some variables in models (1) and (2) are unavailable in earlier years.¹⁶ Descriptive statistics for the variables in both models based on this time frame are presented in Table 1.

The following results are generated using two related discrete regression models.¹⁷ I assume that the processes giving rise to the formation of PTAs and states' involvement in them are unobservable, but that a count of each outcome is observed at the end of each year, t_1, \dots, t_n , where n is the number of years in the sample. Various studies of international relations have used event count models in which the underlying process generating the events is assumed to have a Poisson distribution (e.g., Martin 1992; Polins 1996). Based on a Poisson model,

$$Y_t \sim f(y_t | \lambda_t) = \frac{(\lambda_t)^{y_t} e^{-\lambda_t}}{y_t!} \tag{3}$$

In the present case, Y_t refers to FORM PTA_{*t*} in model (1) and JOIN PTA_{*t*} in model (2); λ_t is the annual rate of PTA formation for model (1) and the annual rate at which

15. These instruments are the predicted counts of FORM PTA and JOIN PTA in year $t - 1$. They are created by estimating a Poisson regression of FORM PTA in $t - 1$ on HEGEMONY, PTA, (the level of) GNP, FORM PTA, and YEAR in $t - 2$, and by estimating a negative binomial regression of JOIN PTA in $t - 1$ on HEGEMONY, COUNTRY PTA, (the level of) GNP, JOIN PTA, and YEAR in $t - 2$. Except for YEAR and the lagged endogenous variables, each of these independent variables is measured by regressing its value on time and using the residual of this regression as a measure of the variable. These variables and measurement procedures clearly differ somewhat from the variables and measurement procedures in models (1) and (2). But the resulting instruments are closely related to the actual dependent variables, and relatively little collinearity exists between these instruments and the independent variables in both models.

16. As noted in note 14, the first year that complete data are available for global income is 1950. But because the instruments for the lagged endogenous variables in models (1) and (2) are generated using data in year $t - 2$, 1952 is the first year included in the following analysis.

17. On these models, see King (1989) and Maddala (1983).

countries join PTAs for model (2); and y_t is the observed event count at year t . The expected value of Y at t is $E(Y_t) = \lambda_t = \exp(X_t\beta)$, where X_t is a vector of independent variables and β is a vector of parameters.

Central to the Poisson distribution is the assumption that the probability of an event occurring in a given period of time is independent of prior events in that period and that the rate at which events occur during this period, λ_t , is constant (or does not depend on prior events).¹⁸ This assumption, however, may be violated in the present case if, as discussed above, decisions to form or join PTAs are characterized by strategic interdependence. Poisson regression will not be appropriate for estimating models (1) and (2) if the formation of a PTA or a country's decision to join a PTA in a given year influences the probability that another PTA will form or another state will join a PTA in the same year.

One feature of the Poisson distribution is that the variance of Y_t , $\text{Var}(Y_t) = E(Y_t) = \lambda_t = \exp(X_t\beta)$. The extent to which the independence of events occurring at a given time is violated can be assessed by expressing the variance of Y_t as $\text{Var}(Y_t) = \lambda_t \exp(\delta)$ and testing the hypothesis that $\delta = 0$ (King 1989, 126-27; Martin 1992, 78-79). If this hypothesis is not rejected, the Poisson distribution is the appropriate basis for the event count model. If it is rejected, the events are characterized by contagion (or λ_t is characterized by heterogeneity), and a negative binomial model should be used (King 1989, 52, 126).

ESTIMATES OF THE PARAMETERS

Initially, I focus on estimating the parameters in model (1). The results of a likelihood ratio test indicate that the null hypothesis that $\delta = 0$ cannot be rejected ($p > .99$), so Poisson regression is used to estimate these parameters. The results are reported in the first two columns of Table 2. I will focus on those in the first column, which are derived without PTA_{t-1}^2 , because there is no evidence of a quadratic relationship between the number of existing preferential arrangements and the rate of PTA formation. Instead, the frequency with which PTAs are created decreases as the number of existing PTAs rises, since the estimate of PTA_{t-1} is negative and statistically significant. Underlying this finding could be that as the number of PTAs increases, so does the proportion of countries that belong to at least one such arrangement; and any tendency for states to react to a trade bloc's creation by establishing a rival bloc might be attenuated if they are already parties to a commercial arrangement. But more is at work here. I also included the percentage of countries that are members of at least one PTA in year $t-1$ (COUNTRY PTA_{t-1}) in model (1) and found no evidence that it has a significant bearing on FORM PTA_t .

18. See King (1989, 50-51). More precisely, the Poisson distribution occurs if (1) the probability of an event occurring in a short period of time is proportional to the period's length, (2) the probability is zero that multiple events occur in a given period, (3) the events occurring in a given period are independent of each other, and (4) the probability that an event occurs in a very short period of time is invariant to when the period starts.

TABLE 2
 Regressions of the Annual Number of PTAs That Form and
 Countries That Join PTAs, Based on Models (1) and (2), 1952-1994

Variable	Model (1)		Model (2)	
Intercept	-238.601**	-239.954**	58.706	-86.443
	(-2.18)	(-2.11)	(1.06)	(-1.30)
Hegemony	-48.764**	-19.683	-69.447***	-74.483***
	(-2.17)	(-0.62)	(-2.95)	(-3.67)
Existing PTAs	-0.150**	-0.041		
	(-2.56)	(-0.39)		
Existing PTAs ²		-0.002		
		(-1.23)		
% Countries in PTAs			-0.089	12.034***
			(-0.09)	(3.44)
% Countries in PTAs ²				-14.172***
				(-3.78)
Change in GNP	-0.124*	-0.169**	-0.058	-0.037
	(-1.95)	(-2.29)	(-0.73)	(-0.57)
Year	0.126**	0.124**	-0.024	0.050
	(2.24)	(2.13)	(-0.84)	(1.45)
Lagged PTAs formed	0.473***	0.588***		
	(5.12)	(4.45)		
Lagged countries joining PTAs			0.062*	-0.012
			(1.69)	(-0.38)
Log likelihood	-51.04	-50.26	-119.64	-113.54
χ^2	46.53***	48.10***	23.61***	35.80***

NOTE: The parameters in model (1) are estimated using Poisson regression; those in model (2) are estimated using negative binomial regression. Figures in parentheses are *t* statistics. For each regression, $N=43$. * $p < .10$; ** $p < .05$; *** $p < .01$ (two-tailed).

Consistent with the hypotheses advanced earlier, the negative and statistically significant estimates of $HEGEMONY_{t-1}$ and ΔGNP_{t-1} indicate that hegemony's erosion and global recessions have each spawned a rise in the development of PTAs. There has also been a secular increase in the incidence of PTA formation during the post-World War II era, since the estimate of $YEAR_t$ is positive and significant. Finally, although the creation of PTAs is not guided by positive contagion in a given year, it does seem to be guided by positive feedback from one year to the next. The estimate of $FORM_{t-1}$ is positive and statistically significant.

Having analyzed the factors contributing to the rate of PTA formation, I now turn to those influencing the rate at which states join PTAs. These factors differ in a number of respects. Because, in contrast to the results based on model (1), the estimate of δ is positive and statistically significant ($p < .001$), negative binomial regression is used to estimate the parameters in model (2). One obvious reason why positive contagion marks the rate at which states join PTAs is that any PTA's formation involves a joint decision by a group of countries to simultaneously become members. However, as discussed below, these findings probably reflect strategic interaction among countries competing in international markets as well.

The results of this analysis, which are presented in the third and fourth columns of Table 2, indicate that an inverted U-shaped relationship exists between the percentage of countries covered by a PTA and the incidence of states joining these arrangements. As shown in the final column, the estimate of COUNTRY PTA_{*t-1*} is positive, that of COUNTRY PTA²_{*t-1*} is negative, and both are statistically significant. This suggests that the rate at which states join PTAs has been marked by a ceiling effect, tailing off once the percentage of countries that are parties to a PTA becomes relatively large.¹⁹ In light of this strong quadratic relationship, the estimates derived after including COUNTRY PTA²_{*t-1*} in model (2) are emphasized below.

Like the results pertaining to the rate of PTA formation, waning U.S. hegemony has sparked a rise in the number of countries joining a PTA, since the estimate of HEGEMONY_{*t-1*} is negative and significant. There is also some evidence of an upward trend in the rate at which states join PTAs and that this rate rises during global recessions. But, unlike the results based on model (1) neither the estimate of YEAR_{*t*}, nor that of Δ GNP_{*t-1*} is statistically significant. In addition, while a state's decision to join a PTA increases the probability that others will do likewise in the same year, the rate at which states join PTAs is largely unrelated from one year to the next. The estimate of the lagged endogenous variable in the fourth column of Table 2 is very small and not significant (although, as shown in the third column, it is significant when COUNTRY PTA²_{*t-1*} is omitted).

With these exceptions, however, the estimates in Table 2 are statistically significant, and their quantitative effects tend to be large. For example, decreasing the value of HEGEMONY_{*t-1*} by one standard deviation yields about a 70% increase in the predicted number of PTAs that are formed and roughly a 125% increase in the predicted number of states that join a PTA, holding constant the remaining variables in models (1) and (2) at their mean values. The corresponding increase in the predicted number of PTAs established due to a rise of one standard deviation in (the instrument for) the number of PTAs formed 1 year earlier (FORM PTA_{*t-1*}) is almost 90%. But changes in global output have a less pronounced influence on commercial regionalism. Holding constant the other variables at their means, a one standard deviation reduction in the value of Δ GNP_{*t-1*} generates roughly a 35% increase in the predicted value of FORM PTA, and only about a 10% rise in that of JOIN PTA.

PTA FORMATION WITHIN THE GATT

Thus far, my analysis has addressed the proliferation of all PTAs established since the conclusion of World War II. Considerable interest has been expressed in this topic, but some studies of regionalism place particular stress on the increasing number of preferential arrangements notified to the GATT/WTO under Article XXIV and the Enabling Clause during this era (e.g., Bhagwati 1993; Finger 1993; Serra et al. 1997;

19. Furthermore, there is no evidence that the number of existing PTAs influences the rate at which states join these arrangements. I included this variable (PTA_{*t-1*}) in model (2) and found no statistically significant evidence that it affects JOIN PTA.

World Trade Organization 1995). It is therefore important to determine the reasons for the rise in PTAs within the GATT; however, little empirical evidence has been accumulated on this score. In the following analysis, I examine whether the factors emphasized earlier also affect the rate at which PTAs notified to the GATT are formed and the rate at which parties to the GATT accede to these arrangements.²⁰ I then assess whether GATT negotiations have influenced the growth of such PTAs.

To begin, models (1) and (2) are estimated after measuring FORM PTA_{*t*}, JOIN PTA_{*t*}, the instruments for the lagged endogenous variables, PTA_{*t-1*}, and COUNTRY PTA_{*t-1*} based solely on PTAs notified to the GATT and, in the case of the latter variable, the percentage of GATT members that are party to such an arrangement.²¹ The results are reported in the first and third columns of Table 3. As in Table 2, there is no indication of a quadratic relationship between the number of existing PTAs and the rate at which PTAs form, and there is considerable evidence of a quadratic relationship between the percentage of GATT members that belong to a PTA and the frequency with which these states join preferential arrangements. Hence, neither the results derived when PTA_{*t-1*}² is included in model (1) nor the results when COUNTRY PTA_{*t-1*}² is omitted from model (2) are presented in Table 3.

Because there is little indication of positive contagion in the rate of PTA formation (i.e., the estimate of δ is not statistically significant), the parameters in model (1) are estimated using Poisson regression. The sign of each estimate in the first column of Table 3 is the same as its corresponding estimate in Table 2, and the estimates of PTA_{*t-1*}, Δ GNP_{*t-1*}, YEAR_{*t*}, and FORM PTA_{*t-1*} continue to be significant. In this regard, the factors affecting the formation of all PTAs are quite similar to those influencing the establishment of PTAs notified to the GATT. But certain differences do exist between the results in Tables 2 and 3. Except for HEGEMONY_{*t-1*}, the absolute value of each estimate in the first column of Table 3 is much larger than the corresponding estimate in Table 2. Furthermore, whereas the rate of PTA formation throughout the world has experienced a statistically significant increase during periods of hegemonic decline, the rate of PTAs notified to the GATT has not. The estimate of HEGEMONY_{*t-1*} is negative, but its absolute value is far smaller than the estimate in Table 2 and it is not significant.

In addition, many of the factors influencing the rate at which states join PTAs are similar, regardless of whether we focus only on PTAs notified to the GATT or the broader sample analyzed earlier. Because the estimate of δ is positive and statistically significant, the parameters in model (2) are again estimated using negative binomial regression. As noted above, an inverted U-shaped relationship exists between the

20. By the GATT, I am referring to both it and the WTO.

21. To conduct this analysis, I include only those PTAs notified to the GATT under Article XXIV or the Enabling Clause and date their origin in the year the GATT lists them as entering into force. Note that this procedure yields different values of the dependent variables and PTA_{*t-1*} than in the preceding analysis because certain PTAs included earlier were not notified to the GATT and others (e.g., the Association of Southeast Asian Nations and some African PTAs) were notified to the GATT only some time after they were established. Thus, the dates of their formation are different in the present analysis than before. Recall that COUNTRY PTA_{*t-1*} measures the percentage of GATT members that are parties to PTAs notified to it. Members of PTAs recognized by the GATT that are not parties to the GATT itself are considered PTA members if and when they join the GATT (see note 11).

TABLE 3
 Regressions of the Annual Number of PTAs That Form and Countries That Join PTAs, Based on Models (1) and (2), for PTAs Notified to the GATT, 1952-1994

Variable	Model (1)		Model (2)	
Intercept	-318.585*** (-2.60)	-243.251** (-1.99)	-727.741*** (-4.81)	-763.738*** (-4.98)
Hegemony	-16.746 (-0.74)	-9.191 (-0.40)	-126.797*** (-3.76)	-132.239*** (-3.98)
Existing PTAs	-0.221*** (-2.71)	-0.177** (-2.15)		
% GATT members in PTAs			6.506* (1.94)	6.833** (2.04)
% GATT members in PTAs ²			-23.387*** (-4.86)	-24.257*** (-4.99)
Change in GNP	-0.254*** (-3.93)	-0.260*** (-4.02)	0.092 (1.05)	0.091 (1.07)
Year	0.164*** (2.65)	0.125** (2.02)	0.382*** (4.86)	0.401*** (5.03)
Lagged PTAs formed	0.763*** (4.40)	0.632*** (3.41)		
Lagged GATT members joining PTAs			-0.027 (-0.30)	-0.025 (-0.28)
GATT		1.227** (2.52)		-0.371 (-1.06)
Log likelihood	-46.36	-42.69	-81.37	-80.81
χ^2	48.83***	56.16***	33.05***	34.16***

NOTE: The parameters in model (1) are estimated using Poisson regression; those in model (2) are estimated using negative binomial regression. Figures in parentheses are *t* statistics. For each regression, $N=43$. * $p < .10$; ** $p < .05$; *** $p < .01$ (two-tailed).

percentage of GATT members that belong to a PTA and the frequency with which they join preferential arrangements. Like the rate for the broader sample, the rate at which parties to the GATT enter preferential arrangements notified to it therefore seems to be marked by a ceiling effect. Also consistent with the results in Table 2 is that the number of GATT members joining PTAs is unrelated to the number doing so 1 year prior and that eroding U.S. hegemony has stimulated a rise in the rate at which GATT members accede to PTAs. But, in contrast to the previous findings, there is strong evidence of an upward trend in the rate at which states join commercial unions, since the estimate of $YEAR_t$ is positive, large, and statistically significant; and the estimate of ΔGNP_{t-1} is positive, rather than negative, although it continues to have a relatively small and statistically insignificant effect on $JOIN\ PTA_t$.

Besides evaluating whether the variables in models (1) and (2) influence the growth of PTAs notified to the GATT, it is also important to determine whether GATT negotiations have influenced the rates at which these commercial arrangements form and states join them. There are various reasons why this may be the case. Participants in a GATT negotiating round might complete PTAs to enhance their bargaining leverage in

these negotiations or as a means of ensuring that commerce will be liberalized with important trade partners should the round falter. Furthermore, a GATT round can raise issues that participants choose to address by establishing a PTA or that enhance GATT members' bargaining position in ongoing negotiations over a preferential trade initiative, thus spurring its conclusion (Whalley 1998). It is widely acknowledged, for example, that various countries manipulated issues arising during the Uruguay Round to obtain more favorable terms in negotiations over PTAs (Bhagwati and Panagariya 1996; Whalley 1998). GATT members may also establish and enter PTAs during a negotiating round to help offset anticipated multilateral reductions in trade barriers if these states face strong domestic pressures for protection, since preferential arrangements can limit the market access of third parties and are permitted under both Article XXIV of the GATT and the Enabling Clause.²²

But, although GATT members might create and accede to PTAs more frequently during negotiating rounds than otherwise, the opposite might also be the case. For example, states that believe regional trade initiatives are likely to hamper GATT negotiations and that want to expand the scope of multilateral trade liberalization will probably have little incentive to enter PTAs during a negotiating round. More generally, preferential and multilateral trade agreements may be substitutes; if so, the rates at which countries form and enter PTAs will decline throughout the course of GATT negotiations.

To test these hypotheses, I introduce a variable, $GATT_{t-1}$, in models (1) and (2) that equals 1 if a GATT negotiating round is ongoing in year $t-1$ and 0 otherwise.²³ The results, which are shown in the second and fourth columns of Table 3, indicate that including $GATT_{t-1}$ in these models has little bearing on the sign, size, or significance level of any remaining coefficient. Moreover, an ongoing negotiating round yields a marked rise in the frequency with which PTAs notified to the GATT are formed. The estimate of $GATT_{t-1}$ based on model (1) is positive and statistically significant; and, holding constant the remaining variables at their means, the predicted number of PTAs established during a GATT round is roughly three and one half times greater than in other years. By contrast, an ongoing negotiating round seems to reduce the incidence of GATT members joining PTAs, although the estimate of $GATT_{t-1}$ based on model (2) is not significant. Although the roughness of this analysis is obvious, these findings suggest that states have formed PTAs notified to the GATT much more frequently, but have entered new and existing preferential arrangements somewhat less frequently, during GATT negotiations than at other times.²⁴

22. This hypothesis is consistent with what Bhagwati (1988, 53) refers to as the "law of constant protection," which suggests that reductions in one type of protection stimulate increases in other types to compensate groups that are harmed by the initial reductions. For an analysis of this proposition, see Mansfield and Busch (1995).

23. Rounds of the GATT were conducted in 1949 (Annecy, France), 1951 (Torquay, United Kingdom), 1956 (Geneva), 1960-1961 (Geneva, the Dillon Round), 1964-1967 (Geneva, the Kennedy Round), 1973-1979 (the Tokyo Round), and 1986-1994 (the Uruguay Round) (see Jacobson 1984, 247). Note that because 1952 is the first year for which complete data exist for all variables in models (1) and (2), the Annecy Round is not included in this analysis.

24. In addition to the tests reported above, I also examined whether the preceding results are sensitive to outliers. Especially unusual is the rate at which countries joined PTAs in 1976 due to the very large number

DISCUSSION OF THE RESULTS

The results of this study largely conform with the argument that threats to the stability of the international trading system create incentives for states to establish and join PTAs. Countries that do so safeguard access to members' markets, thereby reducing their vulnerability to any future closure of global commerce. Hegemonic decline and international recessions can place stress on the trading system, and both factors have contributed to the proliferation of PTAs. Furthermore, as states form and join PTAs at an accelerated pace, other countries tend to respond quickly in kind, perhaps to avoid being placed at a competitive disadvantage in global markets. At the same time, however, the support for this argument is also qualified. The business cycle is only weakly related to the rate at which states join PTAs; and preferential arrangements have formed frequently during GATT negotiations, which pose little threat to the stability of the international economic system unless they break down.

Echoing longstanding views about the effects of hegemony on international economic stability (Gilpin 1975; Kindleberger 1973; Krasner 1976), various contemporary observers attribute the growth in regionalism to the decline in U.S. leadership and power. Consistent with this position, analyses that are not restricted to the GATT yield strong evidence that PTAs form and states join PTAs at increasingly rapid rates as hegemony erodes. But much of the existing research pertaining to hegemonic stability theory focuses on economic relations among parties to the GATT. Whereas declining hegemony also fosters the accession of these countries to PTAs, it has a much weaker influence on the frequency with which preferential arrangements notified to the GATT are formed. These findings suggest that, within the GATT, declining hegemony is associated with the creation of PTAs that include more members than PTAs formed during periods of emerging or stable hegemony and/or that countries join existing PTAs in greater numbers as hegemony wanes. They also imply that hegemony has less influence on the rate at which preferential arrangements are established than on the rate at which states become parties to them.

In addition, global recessions stimulate the formation of PTAs but have little influence on the frequency of states joining PTAs. One explanation for the effects of economic downturns on the establishment of these arrangements is that international recessions prompt import-competing firms and other segments of society to press for protection. Governments have incentives to respond to these pressures by forging discriminatory commercial arrangements with countries whose leading industries are not chief rivals of influential domestic sectors. Doing so rather than imposing unilateral trade barriers is particularly advantageous for GATT members because such arrangements avoid breaching GATT regulations. That the quantitative effect of global

of countries that formed associations with the EEC in this year (primarily ACP countries via the Lomé Convention). In no case, however, is a dummy variable that equals 1 in 1976 and 0 otherwise statistically significant based on either model. And in all cases, the signs, sizes, and significance levels of the parameter estimates in models (1) and (2) are similar to those in Tables 2 and 3. Furthermore, it should be noted that auxiliary regressions indicate no evidence of excessive collinearity among the independent variables in models (1) and (2).

recessions on the incidence of PTA formation is larger based on analyses restricted to the GATT than on those including all preferential arrangements accords with this position.

Another explanation for these findings is that states conclude PTAs during global recessions to stimulate exports. Faced with depressed global demand and the prospect of systemic closure, both governments and export-oriented firms have reason to establish commercial arrangements that guarantee preferential access to foreign markets. The benefits of doing so are likely to be especially pronounced for firms that can realize economies of scale by increasing production to service these markets.

Of course, the tests conducted here have addressed only the influence of global recessions in a preliminary manner, which may help to account for the weakness of the relationship between this factor and the incidence of states entering PTAs. For example, although the business cycle's effect on the rates at which PTAs form and states join PTAs was lagged by 1 year, negotiations leading to a PTA's creation obviously can take much longer than 1 year to conclude. Therefore, the preceding results offer little insight into whether such negotiations tend to begin during global economic downswings, and the dearth of data on their duration precludes an analysis of this topic. It is interesting, however, that the average length of time between signing a new PTA notified to the GATT and its implementation is roughly 1 year.²⁵ The tendency for PTAs to be concluded during global recessions seems consistent with the hypothesis advanced earlier.

There is also evidence of clustering in the frequencies with which PTAs are formed and states enter these arrangements. Both for the world as a whole and the GATT, the rate of PTA creation is directly related from one year to the next, suggesting that preferential arrangements are often initiated as strategic reactions to each other. Exemplary in this regard was the development of the European Free Trade Association (EFTA) in response to the European Economic Community's (EEC) formation. Furthermore, various preferential trade initiatives have begun taking shape in Asia and Latin America in reaction to the recent proliferation of PTAs elsewhere; and these initiatives, in turn, have prompted European Union (EU) officials to explore the possibility of establishing additional preferential arrangements with states outside of Europe (Barfield 1996, 152). In the same vein, the economic revitalization experienced by EEC members soon after its inception stimulated the creation of numerous PTAs in Latin America and Africa by countries anxious to achieve similar results, just as improved economic performance by members of the EU and NAFTA may soon spark the emulation of these PTAs by other states (Fernández 1997; Pomfret 1988, 161, 178; Yarbrough and Yarbrough 1992, 105-106).

But, although PTAs often seem to form in response to each other, this response generally does not occur in the same year. This probably reflects the time needed to organize the relevant countries, negotiate the commercial arrangement's terms, and complete the domestic legislative and procedural tasks needed to bring a new PTA to fruition.

25. This figure is based on a comparison of the dates each agreement was signed and implemented. These dates are taken from the World Trade Organization (1995, 77-91).

By contrast, if a country enters a PTA, then it increases the probability of other countries doing likewise in the same year. As noted earlier, the fact that any PTA's creation requires a joint decision by multiple states to simultaneously become members certainly contributes to this tendency. But more is probably at work here, including strategic interaction among countries competing in international markets. A state's decision to join a PTA may prompt its economic rivals to quickly follow suit rather than to be left at a competitive disadvantage. Preferential agreements that were formed between the EC and various Mediterranean countries, for example, damaged other Mediterranean countries that exported similar goods to the EC, leading them to press for and obtain comparable agreements. Furthermore, the Yaoundé Convention induced developing countries that did not have preferential access to EC markets to demand commercial preferences to offset discrimination that their goods faced in Europe (Pomfret 1988, 178).

More recently, the spate of states entering PTAs has led others—especially those in East Asia and many developing countries—to consider doing the same rather than to be left without adequate access to important foreign markets (Bhagwati and Panagariya 1996; de Melo and Panagariya 1993, 5-6; Perroni and Whalley 1996, 57; Yarbrough and Yarbrough 1992, 105-106). Illustrating these countries' concerns, President Salinas of Mexico remarked early in the NAFTA negotiations that “[w]hat we want is closer commercial ties with Canada and the United States, especially in a world in which big regional markets are being created. We don't want to be left out of any of those regional markets” (quoted in Fernández 1997, 19; see also Bhagwati 1991, 72).

Positive contagion in the rate at which countries join preferential arrangements may also stem from the tendency for existing PTAs to conclude agreements with other states contemporaneously rather than sequentially. The EEC/EC followed this pattern, signing hub-and-spoke agreements with multiple European, Middle Eastern, and African countries in particular years. So did EFTA, which (like the EC) initiated a series of preferential agreements with former Soviet republics and Eastern European countries in the early 1990s. This tendency for PTAs to introduce additional members in groups shows no sign of abating. The Association of Southeast Asian Nations, for example, was poised to admit Cambodia, Laos, and Myanmar together,²⁶ until the coup in Cambodia during 1997 prompted a change in these plans.

Finally, the preceding results suggest that regionalism has become increasingly pervasive over time, since a rise has occurred in the frequency with which PTAs have formed and states have joined them during the past 50 years. Moreover, this increase has been more precipitous within the GATT than for the world as a whole, especially when focusing on the incidence of countries entering PTAs. One explanation for this tendency is that the GATT's success in lowering many trade barriers over time has led participants to rely on the discriminatory instruments that it still permits—including PTAs notified to the GATT under Article XXIV or the Enabling Clause—with rising frequency. Another explanation, however, is that multilateral and regional trade initiatives are complementary (Lawrence 1996; Rodrik 1998). Progressive reductions in

26. See *The Economist*, March 1, 1997, 41-42.

protection within the GATT may have been encouraged by the growth of PTAs and also may have stimulated efforts to reinforce and deepen multilateral liberalization at the regional level via PTAs.

CONCLUSION

Arguments that the international economy is experiencing a wave of regionalism are widespread and often based on claims about the recent spread of PTAs. Such claims, however, have not been matched by empirical analyses of the rates at which PTAs form and states join these arrangements. The purpose of this article has been to examine why these rates have fluctuated during the period since World War II.

I have argued that the specter of systemic closure can prompt countries to establish and enter PTAs, since doing so helps guarantee their access to key foreign markets if the international trading system actually fragments. Hegemonic decline and global recessions both increase the risk of closure. That these factors have contributed to the proliferation of PTAs is consistent with this argument. So is the tendency for PTAs to form and grow more rapidly soon after an increase in the number of new PTAs and states entering preferential arrangements.

More generally, my results imply that economic expansions, renewed international economic leadership by the United States, and the advent of more effective means of managing strategic interaction among both states and PTAs are likely to dampen the recent wave of regionalism. The fact that neither of the latter two developments seems to be on the horizon suggests that this wave may not yet have crested.

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