

**SPECIAL PAPERS IN INTERNATIONAL ECONOMICS**

**NO. 15, APRIL 1985**

**STRATEGIC TRADE POLICY: A SURVEY  
OF ISSUES AND EARLY ANALYSIS**

**GENE M. GROSSMAN  
AND  
J. DAVID RICHARDSON**

**INTERNATIONAL FINANCE SECTION  
DEPARTMENT OF ECONOMICS  
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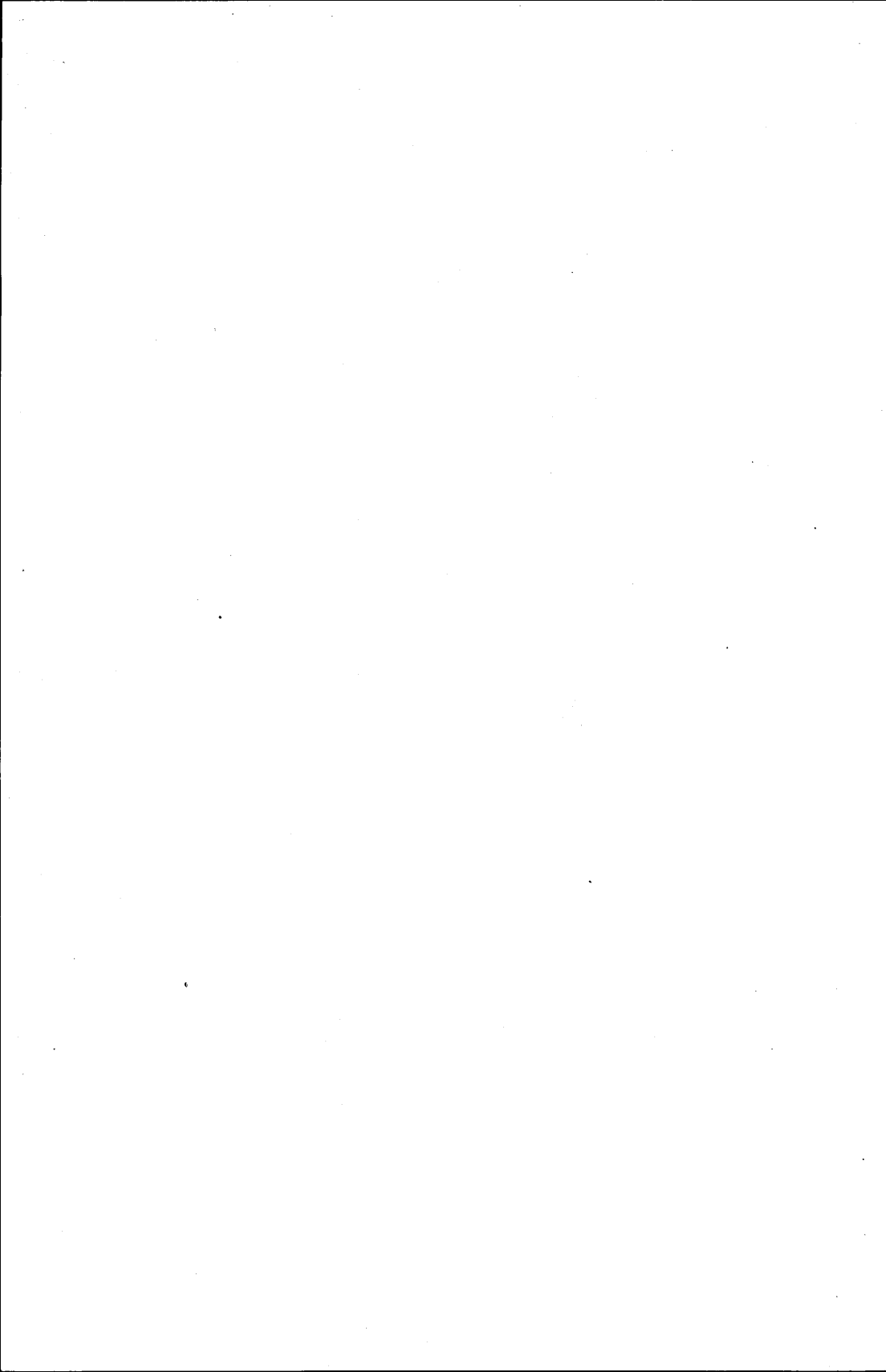
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# 1 Introduction

A well-defined literature has developed recently on the conduct of trade policy in strategic environments. This paper surveys the research reported there and discusses its implications. Strategic environments are those in which a relatively small number of economic agents make interdependent decisions. Strategic environments contrast with the more familiar perfectly competitive environment in which a large number of agents make independent decisions because each agent considers itself too small to influence market outcomes. Until recently, most research on trade policy dealt with the perfectly competitive environment. Governments were deemed to act in the belief that their policies affect market equilibrium, but without regard for the effects of their actions on the behavior of other governments. When agents take the actions of their rivals to be immutable, strategic behavior plays no role.

It is increasingly important to analyze trade policy in the context of strategic environments, because circumstances do not fit the orthodox paradigm. Firms have grown multinationally over the past few decades. The development of the European Community, of co-production and joint ventures, and of ambitious national development plans has encouraged firms to assume a global identity. In some national markets, a few firms compete for a "prize" that is essentially control of the whole nation's industry. In such oligopolistic environments, firms clearly recognize the effect that their actions have on the behavior of other firms, and each firm must conjecture about its rivals' reactions to its decisions. These same features cause governments to play strategic "games" among themselves. Their choices regarding trade policy influence global market decisions and may induce either retaliation or cooperation by rival governments.

Strategic economic conflict over markets and policy can involve threats and promises, bluffs and commitments. These are familiar features of games and war, and make for rich and complex analyses. None of them has any place in competitive environments. Their object is always to influence the outcome of a conflict in one's own favor. This may imply that the outcome will become more unfavorable for one's opponents—but not necessarily. In some cases, if participants are competing for shares of a pie of roughly fixed

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size, trade policy is bound to be contentious. In other cases, strategic behavior may dictate cooperation that can lead to mutual benefit. In all cases, however, the standard tenets of the orthodox theory of trade policy may fail to apply. Or, if they apply, it may be for new reasons.

Strategic trade policy is topical in the United States because of the perception that governments abroad are taking unfair advantage of the U.S. commitment to open trade and of their countries' relatively small size. This perception underlies support for a new and aggressive "reciprocity" requirement in U.S. trade policy.<sup>1</sup> It is also topical because strategic moves by foreign firms, often with the support of their governments, seem to some observers to be placing U.S. firms under unprecedented pressures. These pressures lie behind many of the recent demands for a U.S. industrial policy. Strategic trade policy is controversial, too. Critics of recent initiatives and proposals wonder whether strategies designed to deter foreign governments will end in mutually destructive trade wars, and whether industrial targeting may merely stimulate unproductive rent seeking by special-interest groups. They wonder further whether the conduct of trade policy along strategic lines will require a case-by-case approach that the U.S. government may be ill-equipped to carry out.

This paper aims to survey only "early" analysis of these matters, because that is all there is. The strategic approach to trade policy is a new, or—perhaps more accurately—reborn, area.<sup>2</sup> Much more research must be undertaken. Some of it will no doubt develop thoughtful counterarguments to those favoring strategic trade policy. Much of it should be empirical and historical.<sup>3</sup>

<sup>1</sup> Sympathetic and unsympathetic descriptions of this new form of "reciprocity" include presentations by William Reinsch, Chief Legislative Aide to Senator John Heinz (e.g., "Reciprocity and Trade-Policy Activism: Is This the Time?", oral remarks, Aug. 9, 1982) and Cline (1983), respectively.

<sup>2</sup> Its roots extend back into U.S. economic history (e.g., David, 1970, and Williamson, n.d.) and into familiar arguments for protection aimed at development based on infant industries, backward linkages, etc.

<sup>3</sup> For example, one group of researchers, in cooperation with the U.S. Trade Representative's Office, is attempting to assess the applicability of various analyses of strategic trade policy to U.S. competitiveness in five global industry groups: aircraft, autos, semiconductors, steel, and telecommunications (see Branson and Klevorick, 1984).



## 2 A Stylized Overview

A useful way to organize an examination of strategic trade policy is outlined in equations (1), (2), and (3), using the United States as point of reference. Equation (1) declares the obvious—that U.S. national welfare, however defined, is dependent on its own trade policy and that of its trading partners (among many other things, of course, the rest of which are irrelevant for present purposes):

$$W_{us} = W(P_1, \dots, P_n, P_{us}), \quad (1)$$

where  $W_{us}$  is U.S. welfare and  $P$  is a trade policy. The subscript "us" denotes the United States; the subscripts 1, . . . ,  $n$  denote other countries.

If equation (1) evaluated at one point in time were to be subtracted from equation (1) evaluated at some other point, one could calculate the way U.S. welfare had been changed by changes in U.S. trade policy, *ceteris paribus*. An approximation<sup>1</sup> to the calculation is

$$(\Delta W_{us} / \Delta P_{us}) = W'_{us} + \sum_{i \neq us} W'_i (\Delta P_i / \Delta P_{us}), \quad (2)$$

first  
effect

second  
effect

where  $W'_{us}$  and  $W'_i$  denote the changes in U.S. welfare per unit change in its own and foreign trade policies, respectively, if all trade policies except the one in focus ( $us$  or  $i$ ) are held constant. The left-hand side of (2) is a measure of the effectiveness of U.S. trade policy. Those who doubt that trade policy can increase the national welfare suspect that its value is zero or negative.<sup>2</sup> In any case, the effectiveness of U.S. trade policy is always the sum of the two parts on the right-hand side of (2). The first is the effect of a change in U.S. policy by itself ( $W'_{us}$ ). The second is the effect of all changes in foreign policies undertaken in reaction or retaliation.

The first effect has been thoroughly discussed and estimated for the perfectly competitive environment, where firms behave atomistically rather than strategically. The government can calculate the impact of its policy options on the market outcome, evaluate the attendant welfare consequences, and set policy accordingly. Only if there are specific market fail-

<sup>1</sup> Technically, equation (2) is a linear approximation to a time-differenced version of equation (1), divided by  $\Delta P_{us}$ ; so is equation (3) below, but it is divided by  $\Delta P_j$ .

<sup>2</sup> For a gathering together of many reasons why trade policy may be less effective than it seems initially, see Baldwin (1982).

ures or if the government can exploit some global monopoly power can its trade policy improve upon the free-trade outcome in the perfectly competitive environment.

This first effect has been less thoroughly examined in imperfectly competitive environments. Here, firms behave strategically toward one another and are conscious of the influence of their own actions on market behavior. Policy may increase welfare for two reasons. First, the free-trade outcome is likely to involve a wasteful allocation of resources in an imperfectly competitive market, and trade policy can be used in a standard, second-best way to mitigate the effects of monopoly distortions. Second, and more novel, policy may alter the "rules of the game" among oligopolistic firms. The resulting shift in the market outcome may be to the advantage of domestic participants and thus contribute to overall domestic welfare.

In sum, the sign and size of the direct effect of trade policy on national welfare, identified as  $W'_{us}$  in equation (2), depend importantly on just how perfectly or imperfectly competitive markets really are.<sup>3</sup> Chapter 3 explores their dependence in detail.

The second effect in equation (2) is often mentioned as the effect of retaliation, but it is rarely discussed in detail and is almost never calculated. Strategy has a role through this effect whether markets are perfectly or imperfectly competitive. The effect's sign and size depend on other governments' responses to U.S. initiatives.

In the past, the United States could frequently afford to neglect this second effect in shaping its trade policy. The neglect was justified because the  $W'_i$  terms were made small by the dominance of the United States in the world economy and its relatively slight dependence on world markets. Recently, the United States has been forced to pay attention to the strategic counterresponses of its trading partners. The  $W'_i$  terms have grown larger as U.S. dominance has declined and its international dependence has deepened.

The evolution of equation (1) over time can also be used to calculate the way U.S. welfare changes as a result of changes in the trade policy of any one of its partners (e.g., partner  $j$ ). An approximation to the calculation is

$$(\Delta W_{us} / \Delta P_j) = W'_j + \sum_{i \neq us, j} W'_i (\Delta P_i / \Delta P_j) + W'_{us} (\Delta P_{us} / \Delta P_j). \quad (3)$$

third effect

<sup>3</sup> Even the measurement of national welfare,  $W$  itself, depends on the competitiveness of market structure. As shown in Chapter 3, national welfare as traditionally defined (national purchasing power or the average standard of living) ought to include the domestic firms' share of supernormal profits on sales abroad. These supernormal profits are zero in perfectly competitive environments but positive and welfare-increasing in imperfectly competitive environments.

The left-hand side of (3) is a measure of U.S. exposure to the influence of trade policy abroad. Those who believe that most trade policy is aimed at "beggaring thy neighbor" suspect that its value is on balance negative. In any case, U.S. exposure is always the sum of the three parts on the right-hand side of (3). The first two are comparable to the first and second effects in equation (2). The third effect measures the extent to which the United States could offset any tendency to be "beggared" by adjusting its trade policy in response to that of its trading partner. Examples of such strategically reactive trade policies include antidumping and countervailing duties.

This third effect has not been carefully examined or calculated despite its importance for such matters as the case for aggressive "reciprocity" outlined above. Nor has a closely related strategic measure been investigated: the U.S. policy response,  $\Delta P_{us}$ , that would make foreign beggar-thy-neighbor policies ineffective in influencing foreign welfare (i.e., that would make  $\Delta W_j / \Delta P_j$  zero in the relevant foreign equations). The threat of such a strategic response might by itself be enough to undermine the incentive for aggressive policy abroad.

To be effective, any threat must be credible. Credibility can derive either from reputation or from precommitment. If a government's threats are not to be dismissed as inconsequential bluffs, either it can develop a reputation for actually carrying out threats when circumstances dictate or else it can institute a mechanism that, once established, will make it optimal to carry out the threat *ex post*. That is, it is often strategically advantageous for an agent to constrain its own future actions by some form of total or partial precommitment. Opponents will then perceive at an early stage that later on it will be optimal, or perhaps unavoidable, for the agent to act as stipulated in the threat.<sup>4</sup>

In the past, the United States could frequently afford to neglect this third effect in shaping its own trade policy. The neglect was justified, again, because the  $W'$  terms were small. Even when foreign governments did adopt policies harmful to the United States, the injury was sufficiently minor to be swamped by more welcome trends, such as reduced costs of transportation and communication. As U.S. dominance has declined and as its international dependence has deepened,  $W'$  terms have grown larger. The issue of strategic counterresponse in U.S. trade policy has gained importance, especially with the slowdown of overall economic growth. With slower growth, a larger slice of the pie for its trading partners may mean

<sup>4</sup> Precommitment is illustrated in the story of Odysseus, who recognized that a mere promise not to jump after the Sirens would not be credible. To establish credibility, he had himself tied to the mast, and thereby made not jumping the only feasible action. See also Brito and Richardson (1984), where stocks of reserves serve to make threats credible.

not merely a smaller increase for the United States, as it has in the past, but an actual decline in its absolute welfare.

In Chapters 3 and 4, we discuss these matters at greater length. In Chapter 3 we describe analyses of trade policy in oligopolistic market environments. The common features of these analyses are that firms do not act as price takers and that the market equilibrium is treated as the outcome of a game involving two or more private agents. In this research, the government is considered to be a strategically advantaged player in the sense that firms do not take into account the influence that their behavior might have on the parameters of public policy. This is in keeping with the traditional treatment of government in economic analysis as a Stackelberg leader. In this chapter, then, the government is a player in the game only in the trivial sense that it moves first to set the "rules of the game." Conflict between the firms themselves is central. In Chapter 4, conflict between the governments as full-fledged players is taken up. Here we summarize the literature on the second and third effects of equations (2) and (3). Here the government is an equal player in a policy game. Although most of this literature has considered only instances of rivalry among sovereign governments, it would in principle be possible, and for some purposes interesting, to analyze conflict between the government of one country and private firms in another, using a similar framework.

In Chapter 5, we raise some unanswered questions concerning trade policy in strategic environments and suggest some directions for future research.

### 3 Trade Policy in Imperfectly Competitive Market Environments

When the behavior of foreign nations, firms, and individuals is sufficiently competitive, there are only weak arguments for trade-policy intervention. In the absence of market distortions, market-determined trade wastes fewest resources; in the presence of market distortions, correctives other than trade policy waste fewest resources. But that may not be the case in imperfectly competitive settings, where trade policy can alter the entire economic environment in which firms make their strategic decisions.

The economics of trade policy in an imperfectly competitive environment is scarcely developed by comparison with its exhaustive development in a competitive environment. Such policy is almost certainly more complex than competitive policy. One reason is that the characterization "imperfectly competitive" can take on many different meanings. The specific trade-policy implications may depend on whether static or dynamic scale economies are important, on whether competition in research and development (R&D) plays a major role in industry development, on the ways in which advertising and promotional activities affect the type of competition, on whether competing firms regard quality or product characteristics as strategic variables, and so on. The literature has only just begun to explore the trade-policy implications of these many forms of competition.

#### *Supernormal Profits*

A common feature of imperfectly competitive environments is the existence of supernormal profits (sometimes described as "pure" or "economic" profits, or, pejoratively, as "excess" profits). These are profits larger than the minimal amounts necessary to provide an incentive for entrepreneurial activity. The source of supernormal profits is often market power, which may be identified with the existence of significant barriers to entry or may arise in an R&D-intensive environment from the application of patent-protection laws.<sup>1</sup> Supernormal profits may be ongoing or transitory and in either case have important implications for trade policy.

In a series of papers, Brander and Spencer (Brander and Spencer, 1984a, 1984b, and Spencer and Brander, 1983) have pioneered a line of research

<sup>1</sup> Supernormal profits also accrue to firms (or individuals) that adjust most rapidly to structural change, even in competitive environments (to be exact, between the equilibria of a structurally shocked competitive system). Furthermore, quick capture of supernormal profits is analytically the same as quick escape from subnormal profits. On the obvious importance of defining equilibrium and characterizing extra-equilibrium phenomena in these matters, see footnote 3 and Chapter 5 below.

that investigates the conditions under which "our" country can use trade policy to capture (or preserve) a larger share of these supernormal profits.<sup>2</sup> They consider an oligopolistic global industry with a fixed number of firms and assume that, at least temporarily, barriers to entry prevent economic profits from being driven to zero. Other things being the same, we would prefer that "our" producers had a larger share of the total industry profit pool than "theirs." That preference seems compelling whether such a pool is ongoing or transitory (because new entrants could eventually compete it away). And it seems compelling whether we are consciously aggressive (out to maximize our share of the spoils from oligopoly, much as we might maximize our share of the gains from trade by setting an optimal tariff) or conservatively and honorably defensive (out to prevent our oligopolistic trading partners from maximizing *their* share at our expense).

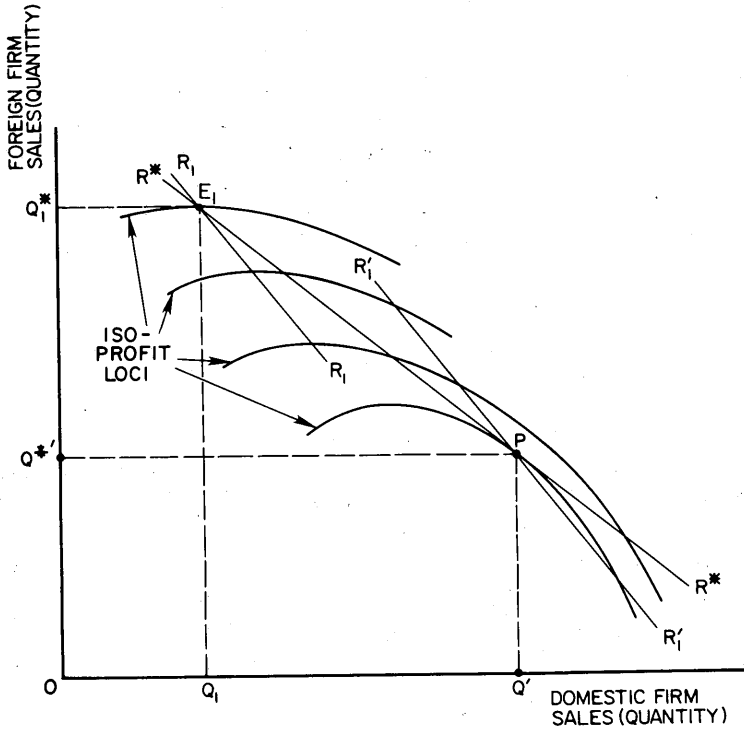
The basic Brander-Spencer point is very simple. If oligopolistic profit is inevitable, then trade patterns that give "us" greater access to it are economically superior to other trade patterns, given everything else. Policy would seem at first blush to have no place here, and especially not trade policy. "Our" private oligopolists would seem to have exactly the same goals as outlined above and to be perfectly capable of taking care of themselves if they are given the market freedom to do what comes naturally to oligopolists. The Brander-Spencer contribution is to show that this intuition is misleading in some cases. Depending on the nature of the strategic competition among firms, policy may have a role. Depending on the degree of segmentation among national markets, even trade policy may be appropriate.

In the simplest setting they consider, Brander and Spencer examine a duopoly consisting of one home firm and one foreign firm, with competition taking place only in a third-country market. If domestic consumption is zero, the only effect the third market has on national economic welfare is as a source of "producer surplus"—the difference between export revenue and the opportunity cost of resources devoted to production. When factor prices accurately reflect opportunity cost in the home and foreign economies, producer surplus is nothing other than the profit of the exporting firm.

When the two firms compete in the absence of policy intervention, each firm can be deemed to calculate a range for quantity sold by its foreign competitor. For each conceivable foreign quantity sold, the home firm can calculate its optimal response on the assumption that foreign sales remain constant. We can depict this behavior graphically. In Figure 1 we show a

<sup>2</sup> Freeman (1982), Ordoover and Willig (1983), Dixit (1984), and Eaton and Grossman (1983) share this orientation in asking what policies a country can use to augment its share of the industry profit pool.

FIGURE 1  
BEST-RESPONSE CURVES AND COURNOT EQUILIBRIUM



series of iso-profit loci for the home firm. Along any one of these curves the home firm earns constant profits. The level of profits increases as we move southeasterly from one iso-profit locus to the next, since the home firm's market share increases in this direction. If the home firm assumes that the foreign firm's sales are given, say at  $Q_1^*$ , it maximizes profits by setting its own output at  $Q_1$ . For each level of the foreign firm's sales, we can find the optimal response by the home firm. The collected points form a "best response" curve for the home firm— $R_1R_1$  in the figure. It generally slopes downward because the more the foreign firm offers for sale in the third-country market, the lower will be the marginal revenue for any quantity sold by the home firm, and therefore the less the home firm will wish to offer. Similarly,  $R^*R^*$  illustrates the best response of the foreign firm to any home-firm quantity when the foreign firm takes the home firm's sales as given. The intersection  $E_1$  is a market equilibrium in the sense that each

firm's strategy (its choice of export quantity) is optimal given the other firm's choice.

The home firm would actually earn higher profits at a point such as  $P$  than it does at  $E_1$ . At points like  $P$ , it has a larger market share, and this more than offsets any fall in the price of its product caused by the expansion of its output. (Notice that foreign output is lower at  $P$  than at  $E_1$ , which *ceteris paribus* increases the market price of the home firm's good.) So the home firm might threaten to produce an amount  $Q'$  "no matter what," in which case the optimal foreign response would appear to be  $Q^{*'}.$  However, such a threat is not credible. The foreign firm knows that the home firm would not actually want to carry out its threat if the foreign firm continued to offer  $Q^*_1$  rather than deviating to the optimal response to the threatened quantity.

### *Policy Precommitments*

In an equilibrium without policy, information that every oligopolist has about others deprives each of any credible new threat. That information is that each oligopolist has already chosen optimally in light of the underlying environment. This knowledge removes any incentive for further alteration in oligopolist instruments. Price, quantity, quality, investment, R&D, etc., are already at their optimal values when there is genuine equilibrium.<sup>3</sup>

Credible policy, however, may be able to change the underlying environment and shift the equilibrium. Suppose that the home government acts first and announces a subsidy for exports. Suppose further that the policy declaration is taken to be credible, in the sense that foreign competitors take the subsidies into account as a precommitment—an inhospitable aspect of the competitive environment. It may be credible because the government has developed a reputation for sticking to its announced policies, or because the trade-policy mechanism has sufficient inertia that once a subsidy is in place foreign firms do not expect it to be removed. In either case, the curve  $R_1R_1$  is no longer the optimal response function for the home firm once the export subsidy has been enacted. Instead, it should want to supply more at every level of foreign output than it would without the subsidy. The export subsidy will thus shift the home firm's response function to  $R'_1R'_1$ , and the new oligopolistic equilibrium would indeed be at  $P$ , with a permanently higher share of the industry's pool of supernormal profits accruing to the home firm.

Why can the government do for its firm what the firm cannot do for itself? Intuition suggests that the firm *can* undertake such a strategic "first strike" or precommitment, as demonstrated in the literature on preemptive

<sup>3</sup> The point made here and the power of policy throughout this chapter depend crucially on the definition of equilibrium, and on firms' ability to recognize it. In Chapter 5, we discuss the need for further refinement of the concept of equilibrium.