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# Industrial Policy as Strategic Trade Policy in a Global Economy

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# Industrial Policy as Strategic Trade Policy in a Global Economy

## **Abstract**

With the introduction of “strategic trade policy” in the 1980’s came two separate theoretical justifications for increased government intervention to promote national industries: first, argued by Brander and Spencer (1985), the government could alter the strategic interaction in oligopolistic competition to shift profits to a domestic firm; second, the government could promote key industries in order to capture the benefits of positive externalities, such as knowledge spillovers. But the creation of the WTO and the regulation of export subsidies soon limited the strategic trade policy options available to governments. This paper examines the case for providing R&D and capital subsidies to domestic firms as a kind of strategic trade policy in the increasingly global economy of the 21st century.

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## I - Introduction

When the concept of strategic trade policy was formulated in the 1980's, deeply entrenched notions of the desirability of free trade were undermined as new applications of the models of imperfect competition seemed to justify increased government intervention. There were two separate, but related theoretical justifications for the government to actively promote the interests of domestic firms. The first, established by Brander and Spencer, argued that the government could alter the strategic interaction in oligopolistic competition to shift profits to a domestic firm.<sup>1</sup> The second, borrowing from the economic development literature of the postwar period, suggested that the government could promote key industries in order to capture the benefits of positive externalities.<sup>2</sup> In both cases, perceived market failures provided intellectual justification for the government to make a strategic choice to increase national welfare.

With the creation of the WTO, however, the strategic choices available to governments were limited by regulations on export and domestic production subsidies, making what was once conceptually desirable as a strategic trade policy now rather impractical. Current literature emphasizes that there still remains a scope for governments to use R&D subsidies to achieve both theoretical justifications for strategic trade policy. While this kind of industrial policy as strategic trade policy is therefore theoretically alluring and practically feasible, in reality the benefits of R&D subsidies are likely to accrue to foreign as well as domestic firms. Furthermore, since the rival promotion of national champions can lead to escalating costs and even all-out trade war, I argue that focusing on economic development fundamentals and perhaps maintaining a spirit of international cooperation remain the most viable strategies.

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<sup>1</sup> James A. Brander and Barbara J. Spencer, "Export Subsidies and International Market Share Rivalry," *Journal of International Economics* 18 (1985): 83-100.

<sup>2</sup> Paul Krugman, "Strategic Sectors and International Competition," *U.S. Trade Policies in a Changing World Economy*, ed. Robert M. Stern. (London: MIT Press, 1987) 221.

## II – Brander and Spencer Revisited

Before showing how WTO regulations have limited the strategic choices available to governments, I will briefly outline the theoretical framework and practical limitations of the type of strategic trade policy proposed by Brander and Spencer. Generally speaking, the importance of the Brander-Spencer argument for international trade theory is that it makes an exception to the rule of classical economics that export subsidies must decrease national welfare by lowering the terms-of-trade. The model shows that in the case of duopoly competition between a domestic firm and a foreign rival in a third market, export subsidies can be used to encourage the domestic firm to increase production. Because it is assumed that the firms are competing simultaneously in quantities, the foreign rival perceives the subsidy as a credible threat and will be forced to respond to the increased production by reducing its own output, thus allowing the domestic firm to capture market share. This increased market share will translate in the form of increased profits for the domestic firm as well as greater domestic welfare if these profits turn out to be greater than the amount of the total export subsidy.<sup>3</sup> Although the analysis is slightly more complicated for reciprocal competition in which each firm competes in each other's home market, the "central game-theoretic insight" remains the same: governments can intervene as a third player to alter the strategic interaction between oligopolistic firms.<sup>4</sup>

The assumptions leading to this conclusion, however, have been challenged on a number of theoretical and practical grounds since it was first proposed. First, the nature of the strategic interaction between firms is centrally important to the Brander-Spencer rationale, as a different assumption about the strategic variable can lead to a different conclusion about the optimal trade

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<sup>3</sup> James A. Brander and Barbara J. Spencer, "Export Subsidies and International Market Share Rivalry," *Journal of International Economics* 18 (1985): 83-100.

<sup>4</sup> James A. Brander, "Strategic Trade Policy," *Handbook of International Economics*, eds. Gene M. Grossman and Kenneth Rogoff. (New York: Elsevier, 1995) 1397.

policy. As Grossman argues, an export tax turns out to be the best policy in the case of simultaneous price competition between the two firms.<sup>5</sup> The reason is that competition in prices tends to lead both firms to produce too much output, and thus the profits of the domestic firm can be maximized if both governments impose an optimal export tax – or at least increased if the domestic government unilaterally imposes an export tax. The problem for policymakers deciding whether an export tax or subsidy is the optimal policy, then, is to determine in which strategic variable, prices or quantities, the firms are actually competing. Otherwise, the wrong judgment can lead to the enactment of a policy that is diametrically opposed to both the interests of the domestic firm and national welfare.

This brings up the second major objection against the Brander-Spencer argument, which is the practical difficulty of obtaining reliable information. In deciding whether or not it is worthwhile to subsidize a domestic firm, it is critical for the government to have near-perfect information about the cost functions, expected payoffs, and strategic behavior of the domestic firm as well as the foreign rival. Lacking this information, it is possible for a government to invest in a potentially disastrous and costly program of subsidies. An early example of the possible pitfalls of strategic trade policy arising from the lack of precise information is the subsidization of the Airbus A300 versus the Boeing 767. European governments gave Airbus an implicit subsidy in the form of a reduced-rate loan of approximately \$1.5 billion in 1975 dollars, but Airbus ultimately ended up losing money on the launch of the A300.<sup>6</sup> This kind of example shows that strategic trade policy does not always translate into instant returns for corporations or greater national welfare, but may in fact lead to losses by encouraging overproduction by the domestic firm or failing to discourage production by the foreign firm. For this reason Grossman

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<sup>5</sup> Gene M. Grossman, “Strategic Export Promotion: A Critique,” *Strategic Trade Policy and the New International Economics*, ed. Paul R. Krugman. (London: MIT Press, 1986) 54.

<sup>6</sup> “The economics of managed trade,” *The Economist* 9/22/90: 19-25.

concluded as early as 1986, only one year after the introduction of the Brander-Spencer model, that “we do not now (and may never) have sufficient knowledge and information to merit the implementation of a policy of industrial targeting.”<sup>7</sup>

Yet the argument that there are practical limitations to strategic trade policy does not necessarily reduce the theoretical attractiveness of the relatively simple conclusion reached by Brander and Spencer in their groundbreaking work. As Brander argues, “the basic insight that strategic interaction between firms creates an opportunity for government action to modify the terms of that interaction is very robust.” The analysis can be adapted to provide for a wide range of policy instruments (tariffs, quotas, voluntary export restraints, and R&D subsidies) or different assumptions about which strategic variable the firms compete in (price, quantity, R&D, etc.).<sup>8</sup> The point is that the Brander-Spencer model in export subsidies is just one example of several possible formulations of the strategic interaction between firms. If governments are willing to risk proceeding without perfect information (which, I might add, they tend to do anyway), then they theoretically have any number of strategic variables to work with through trial and error to gain a competitive advantage for domestic firms in oligopolistic competition with foreign rivals.

But what is conceptually appealing is not always practically possible. The real challenge to the type of strategic trade policy suggested by the Brander-Spencer analysis has been the imposition of international regulations which curtail the use of certain policy instruments. The level of tariffs, for example, is bound by the commitments of individual countries that are annexed to the Marrakesh Protocol to the General Agreement on Tariffs and Trade. And non-

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<sup>7</sup> Gene M. Grossman, “Strategic Export Promotion: A Critique,” *Strategic Trade Policy and the New International Economics*, ed. Paul R. Krugman. (London: MIT Press, 1986) 48.

<sup>8</sup> James A. Brander, “Strategic Trade Policy,” *Handbook of International Economics*, eds. Gene M. Grossman and Kenneth Rogoff. (New York: Elsevier, 1995) 1402.

tariff barriers, such as quotas and VER's, have been restricted through the Agreement on Import Licensing Procedures.<sup>9</sup> In regards to subsidies, the Agreement on Subsidies and Countervailing Measures, explicitly prohibits subsidies which are contingent upon export performance. Nearly all other firm or sector-specific subsidies are labeled as "actionable," meaning that they are subject to retaliation if the complainant country can prove that the subsidy causes "injury" to its domestic industry or exhibits "serious prejudice" meant to displace its exports in the market of the subsidizing country or a third country.<sup>10</sup> This has reduced the range of policies available for governments to affect the strategic interaction between firms – that is, without also facing the potential costs of countervailing measures if such subsidies are discovered. On the other hand, subsidies for up to 75 percent of industrial research and 50 percent of precompetitive development activity are explicitly permitted by the WTO regulations.<sup>11</sup> In other words, R&D and capital subsidies are still legitimate policy tools. This allows a certain degree of latitude for governments to continue experimenting with strategic trade policy, albeit at a stage considerably further removed from the competitive game in prices or quantities originally proposed.

Spencer has actually shown that there are certain theoretical and practical advantages to considering the strategic interaction between firms as a three-stage process. In this game, the firms begin with a simultaneous choice of R&D levels, then proceed to the second stage where each invests in productive capacity, and finally to price or quantity competition in the open market.<sup>12</sup> It should be noted that this model helps to alleviate the concern that governments may not correctly assume the nature of the strategic interaction between firms (price or quantities) by

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<sup>9</sup> World Trade Organization, *Understanding the WTO*, World Trade Organization website, 19 December 2006. <[http://www.wto.org/english/thewto\\_e/whatis\\_e/tif\\_e/tif\\_e.htm](http://www.wto.org/english/thewto_e/whatis_e/tif_e/tif_e.htm)>, 25, 49.

<sup>10</sup> World Trade Organization, "Subsidies and Countervailing Measures: Overview," World Trade Organization website, 19 December 2006, <[http://www.wto.org/english/tratop\\_e/scm\\_e/subs\\_e.htm](http://www.wto.org/english/tratop_e/scm_e/subs_e.htm)>.

<sup>11</sup> Marcus Noland and Howard Pack, *Industrial Policy in an era of Globalization*, (Washington: Institute for International Economics, 2003) 89.

<sup>12</sup> Paul Krugman, "Strategic Sectors and International Competition," *U.S. Trade Policies in a Changing World Economy*, ed. Robert M. Stern. (London: MIT Press, 1987) 213.



suggesting the more important competitive struggle may actually take place earlier in the game. If Spencer is correct, then the WTO regulations may actually benefit governments by limiting the number of strategic variables to the ones most likely to have the greatest impact on domestic competitiveness: R&D and capital development. But as Krugman points out, Spencer's recommendation that strategic trade policies target these variables instead of affecting trade flows directly essentially "amounts to saying that competitive policy should be industrial policy rather than trade policy."<sup>13</sup> For better or worse, then, the realm of strategic trade policy has returned to the field of industrial theory upon which it was founded, leaving us to seek out our answers there.

### **III-Externalities and Industrial Policy**

It is with this point in mind that I turn to the second justification for strategic trade policy, which is the idea that certain key industries exhibit positive externalities that should be promoted by the government to increase national welfare. Although Brander implies that this kind of policy is not properly "strategic" because it does not condition or alter a strategic relationship between firms,<sup>14</sup> most of the literature considers it under the same heading as "strategic trade policy," and not without reason. In this case, the government still acts strategically, but under the pretext of competing with other countries to promote industries in which the social benefits of output are not entirely represented in private returns. The concern here is that the benefits to national welfare of these externalities will be lost if a government does not act strategically to ensure that such industries are located within the country's borders. It is important to note that this differs from the "infant industry" argument, which I will not consider here, because the goal is to ensure that established and sizeable firms in these industries do not relocate abroad for

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<sup>13</sup> Ibid.

<sup>14</sup> James A. Brander, "Strategic Trade Policy," *Handbook of International Economics*, eds. Gene M. Grossman and Kenneth Rogoff. (New York: Elsevier, 1995) 1397.

whatever reason (reduced costs, lower taxes, etc.) rather shelter smaller, developing sectors from foreign competition.

Krugman suggests that there is a convincing economic rationale behind these concerns which can be illustrated by the example of externalities arising from knowledge spillovers. While there exist other possible causes of technological and linkage externalities, the generation of knowledge is a particularly useful target because it is “an activity unlikely to be rewarded at its marginal social productivity.” Patents and other intellectual property rights are meant to ensure that the developers of knowledge benefit from their ideas at least for a time, but such instruments are by no means perfect and cannot completely prevent what one firm learns through experience or R&D from being appropriated by another firm.<sup>15</sup> Because the social benefits of the knowledge generated are not fully represented in private returns, there is a role for the government to provide subsidies that encourage R&D. Carried to its full conclusion, this would suggest that the best policy is to subsidize all firms that engage in the generation of knowledge in order to ensure that the socially optimal level of research is achieved and national welfare is maximized. Furthermore, if foreign promotion of such knowledge-generating sectors is occurring, then subsidization appears to be particularly crucial as the home country may be deprived of valuable spillovers if the government fails to counteract the advantages granted to foreign firms.<sup>16</sup>

This logic assumes, however, that the external benefits of generating knowledge can be internalized within a country’s physical borders, which is not always the case. As Krugman points out, it is useful to think about an “idealized three-part scheme” when considering what

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<sup>15</sup> Paul Krugman, “Strategic Sectors and International Competition,” *U.S. Trade Policies in a Changing World Economy*, ed. Robert M. Stern. (London: MIT Press, 1987) 221.

<sup>16</sup> Paul Krugman, “Introduction: New Thinking about Trade Policy,” *Strategic Trade Policy and the New International Economics*, ed. Paul R. Krugman. (London: MIT Press, 1986) 14.

kinds of knowledge firms may generate: (1) knowledge that can be appropriated within the firm, (2) knowledge that diffuses beyond the firm but stays within national boundaries, and (3) knowledge that becomes easily available internationally once it is generated.<sup>17</sup> It is only in the second case that there exists a possible strategic rationale for the government to promote a particular sector. In the first case, the knowledge will be represented in the private returns of each firm. In the third case, it would be in the interest of a global government to promote the generation of such knowledge in order to increase global welfare, but obviously no such government entity yet exists.

Despite this major caveat, this model is useful because it allows us to think about what scope remains for a strategic trade policy based upon capturing knowledge spillovers for the domestic economy. As in the first formulation of strategic trade policy, the WTO regulations on the use of certain policy instruments reduce the strategic options available to governments to achieve this end. But there still remain the policy tools of R&D subsidies and capital subsidies. These can be employed to correct the failure of the market to appropriate the external benefits of knowledge generation to individual firms. R&D and even capital subsidies are more appropriate policies anyway because they more directly address this market failure, whereas export or domestic production subsidies are only second-best policies. Yet, the use of R&D and capital subsidies as a kind of strategic trade policy does not seem to have much to do with trade at all, or at least not directly. Therefore, at the risk of parsing words, we may conclude that so-called “strategic trade policy” in each of its formulations has been reduced to industrial policy which is calculated to improve the international competitiveness of domestic firms.

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<sup>17</sup> Paul Krugman, “Strategic Sectors and International Competition,” *U.S. Trade Policies in a Changing World Economy*, ed. Robert M. Stern. (London: MIT Press, 1987) 222.

#### **IV-Potential Pitfalls**

Is this kind of industrial policy as strategic trade policy an efficient one for governments to pursue in a global economy? Will it increase national welfare? The answer, of course, depends upon which government. I will focus on countries that are both members of the WTO and largely industrialized. Such countries are constrained in regards to the policy options available to them due to general WTO regulations as well as the more stringent rules that apply to developed countries, allowing us to simplify the normative analysis. But my central policy recommendations will be important for all nations to consider because, generally speaking, industrial policy is not the right answer for improving international competitiveness. Even treating industrial policy on its own terms by ignoring the informational difficulties of picking “winners,” there are a number of theoretical and practical limitations to its application as a strategic trade policy. First, in all likelihood the benefits of R&D subsidies are likely to accrue to foreign rivals as well as domestic firms. Second, empirical studies have shown that targeted industrial promotion is not particularly beneficial to national welfare. Finally, the rival promotion of national champions may negate the potential benefits of such policies. All of these complications are related to the fact that tools of industrial policy are not particularly effective in a global economy.

Returning to Krugman’s simplified model of knowledge spillovers, it becomes apparent that R&D subsidies to domestic firms are just as likely to benefit foreign rivals if we assume that most of the knowledge generated is the kind that becomes available internationally. In this age of telecommunications and low transportation costs, with multinational firms operating across the globe, the economic boundaries of the state have in many ways withered away. This changing economic landscape makes it difficult to continue to justify the assumption that the

knowledge generated by firms represents an externality that is internalized within the physical boundaries of the state. Without this assumption, however, it is difficult to justify the implementation of an R&D subsidy to achieve either goal of strategic trade policy, whether the government is attempting to capture rents from a foreign rival or the positive externalities of a strategic sector. As Spencer concedes, a domestic firm is only a good candidate for an R&D subsidy if “there is a minimum spillover of new domestic technology to rival firms.”<sup>18</sup> This is problematic because it is likely to be more difficult now to find industries that exhibit such a “minimum spillover” than ever. If this is the case, then a subsidy which cannot be fully appropriated by domestic firms essentially represents a gift to rival foreign firms at the expense of domestic taxpayers.

In regards to the effectiveness of sector-specific subsidies in general, Noland and Pack conclude in their study of the so-called “Asian Miracle” that targeted industrial policy was only marginally beneficial to the rates of growth of Japan, Korea, and Taiwan. Specifically, the authors found that total factor productivity (TFP) growth rates did not support the theory of early postwar advocates of industrialization that “the entire manufacturing sector, and perhaps the entire economy, is the beneficiary of widely diffused external economies.” Instead, the TFP growth which did occur within individual sectors was explained by more conventional explanations such as learning-by-doing and the importation of foreign technology at the level of the individual firm.<sup>19</sup> This last point, particularly, should give us pause. For contrary to the oft-proposed notion that “countries are better able to apply new technology if the technology is

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<sup>18</sup> Barbara J. Spencer, “What should trade policy target?” *Strategic Trade Policy and the New International Economics*, ed. Paul R. Krugman. (London: MIT Press, 1986) 79.

<sup>19</sup> Marcus Noland and Howard Pack, *Industrial Policy in an era of Globalization*, (Washington: Institute for International Economics, 2003) 96.

developed at home,”<sup>20</sup> this is evidence that individual firms can indeed succeed in the application of technology – and by extension, knowledge – which has been developed abroad. Therefore, the importance of industrial policy for promoting the development of specific sectors vis-à-vis foreign rivals is not entirely clear, as individual firms appear entirely capable of adopting foreign technology and appropriating it for their own benefit.

Furthermore, Noland and Pack suggest that a large part of the success of Japan, Korea, and Taiwan can be attributed to good macroeconomic policy, such as low government deficits, stable real exchange rates, and low rates of inflation. While these measures in themselves do not guarantee increased national welfare, they may lead to high rates of saving and investment which, in combination with government spending on higher education and basic infrastructure, as well as “a favorable attitude toward international technology transfer,” can create the proper conditions for growth.<sup>21</sup> In this same vein, broader measures to encourage general research have actually proven to be more successful at developing strategic sectors than subsidies aimed specifically at a certain industry. Beginning in 1960, the US and Germany began investing large amounts of money in biotechnology, but by 1997 the US biotechnology sector was ten times larger than that of Germany. The most important factor in determining US success was that US subsidies for basic research allowed for “organic development” of the industry while German pharmaceutical firms were faced with “weak incentives in the university system to transform basic research into patentable innovations.”<sup>22</sup> Thus, the empirical evidence shows that a return to the fundamentals of growth and economic development could be far more beneficial than the

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<sup>20</sup> Paul Krugman, “Strategic Sectors and International Competition,” *U.S. Trade Policies in a Changing World Economy*, ed. Robert M. Stern. (London: MIT Press, 1987) 229.

<sup>21</sup> Marcus Noland and Howard Pack, *Industrial Policy in an era of Globalization*, (Washington, D.C.: Institute for International Economics, 2003) 100-101.

<sup>22</sup> Steven McGuire, “No more euro-champions? The interaction of EU industrial and trade policies,” *Journal of European Public Policy* 13:6 (September 2006) 887-905.

sophisticated targeting of industrial policy. But, perhaps more importantly, there is an indication that R&D subsidies may be most effective precisely when they are in fact the least strategic: by promoting general research in universities where the benefits of generated knowledge are practically open to everyone, domestically and internationally.

In addition to these potential pitfalls of employing industrial policy as strategic trade policy, intense rivalry between countries to promote the interests of national champions can negate the potential benefits of subsidization. Busch has created a model which shows how this may occur, but it reflects his optimism that all-out trade war can be avoided. The central argument is that governments will fight for domestic firms in industries exhibiting external benefits and fight harder when these benefits are internalized nationally, but then seek to ease tensions when both sides are made worse-off.<sup>23</sup> In order to justify this conclusion, Busch simplifies the strategic calculus of the state by creating two binary independent variables: the first describes whether or not the economy is capable of utilizing the externalities, while the second indicates whether or not these externalities are contained strictly within national boundaries. This, of course, is a vast oversimplification, but it allows Busch to model the qualitative differences in the strategic trade policies between states for three separate case studies: the US-Europe civil aircraft rivalry, the US-Japan semiconductor rivalry, and the US-Japan HDTV rivalry.

For the purposes of our analysis, the first case is the most significant because it suggests the optimistic scenario in which both sides reach the brink of a trade war, but still find a way to reach a mutually beneficial compromise that limits subsidization. According to Busch's argument, the civil aircraft industry exhibits externalities which are internalized within national

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<sup>23</sup> Marc L. Busch, *Trade Warriors: States, Firms, and Strategic-Trade Policy in High-Technology Competition*, (New York: Cambridge University Press, 1999) 12.

borders, making each government particularly desirous of subsidizing its national champion to capture these benefits for national welfare.<sup>24</sup> This dynamic, however, leads to a situation in which both sides are made worse off due to overproduction, creating an incentive to enter into an agreement to reduce subsidies. In this case, Europe and the US were able to achieve the Large Civil Aircraft (LCA) Agreement in 1992, which essentially sought to limit overspending by each government and reduce international rivalry to achieve a Pareto-superior outcome. Busch recognizes the apparent difficulty of maintaining such a negotiated equilibrium when each government still has an incentive to renege on its promise<sup>25</sup>, but the real problem is that his model is too simple.

As Goldstein and McGuire point out, the model cannot explain why the trade conflict between Brazil and Canada in the regional aircraft industry has not led to a similar mutually beneficial compromise.<sup>26</sup> As Busch concedes, his treatment of the state as a rational unitary actor has forced him to pay “little attention to the domestic politics of strategic trade.”<sup>27</sup> In their account, on the other hand, Goldstein and McGuire attempt to account for interest group politics, the importance of ideas, and the impact of international institutions on the perpetuation of the Brazil-Canada trade conflict. The basic explanation provided is that the governments of Brazil and Canada, influenced by powerful lobbies, have deemed that the stakes are too high to reduce subsidies and risk losing the international competitiveness of their flagship corporations when there is no guarantee that the other party will follow suit. Instead of arguing this is evidence that the regulations and oversight mechanisms of the WTO need to be increased, however, Goldstein

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<sup>24</sup> Ibid. 37.

<sup>25</sup> Ibid. 59-60.

<sup>26</sup> Andrea E. Goldstein and Steven M. McGuire, “The Political Economy of Strategic Trade Policy and the Brazil-Canada Export Subsidies Saga,” *The World Economy* 27.4 (April 2004): 541-566.

<sup>27</sup> Marc L. Busch, *Trade Warriors: States, Firms, and Strategic-Trade Policy in High-Technology Competition*, (New York: Cambridge University Press, 1999) 147.



and McGuire suggest that the automatic dispute settlement process may actually make “a resolution of the dispute more difficult by dramatically increasing the cost of losing.”<sup>28</sup> Because the governments are not able to enter into a private negotiated settlement, the conflict has become protracted as neither side can seem to find a politically viable way of backing down.

## **V-Conclusion**

If we accept this conclusion, then it seems that even in the case of R&D subsidies it is possible that everyone can lose, as the competitive ethos may lead to increasingly drastic steps to stay ahead of the competition, thus reducing the profitability of both firms and undermining the basic principles of negotiation and the rules-based system upon which the WTO was founded. Yet, as the analysis by Noland and Peck of the “Asian Miracle” illustrates, it is not even entirely clear that targeted industrial policy is a useful way of increasing international competitiveness of domestic firms or sparking growth. Instead, it has been shown that a policy of openness to the adoption of foreign technology and the encouragement of general research may be the keys to success when they are combined with the appropriate macroeconomic policies. This arises from the fact that, in the global economy, the external benefits of knowledge generated at the level of the firm or industry are difficult to contain within national boundaries even despite international agreements on intellectual property rights. Therefore, the use of R&D subsidies as a tool for shifting rents from foreign rivals or capturing positive externalities is particularly dubious as a strategic trade policy; if such a policy does not actually decrease national welfare by helping rival firms at the expense of domestic taxpayers or sparking retaliation from foreign governments, then it is at least likely to be rather ineffective.

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<sup>28</sup> Andrea E. Goldstein and Steven M. McGuire, “The Political Economy of Strategic Trade Policy and the Brazil-Canada Export Subsidies Saga,” *The World Economy* 27.4 (April 2004): 541-566.

I have argued that there is not a strong case for governments to employ industrial policy as a kind of strategic trade policy in today's economy. Yet there are certain questions that remain which I have not been able to fully cover within the scope of this paper. First, I have suggested that targeted industrial policy is not generally effective in comparison with broader-based policies meant to promote macroeconomic stability, basic infrastructure, and innovation. But it is not entirely clear that the use of targeted capital subsidies suffers from all the same drawbacks as targeted R&D subsidies given that the goal is the development of capital capacity rather than knowledge. Second, and on a more positive note, I have concluded that a policy of openness to the use of foreign technology, rather than a strict emphasis on developing and applying "home-grown" knowledge, can be highly beneficial to growth. But more research needs to be done on whether this open-sourcing of knowledge in a spirit of international cooperation might represent a more viable "strategic trade policy" than the nationalistic policies attempted thus far which tend only to spark intense rivalry and bitter competition.

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