Strategic Trade and Investment Policies: Implications for the Study of International Political Economy

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1. INTRODUCTION

BUSINESS gurus point out that successful firms often carefully strategise about what to sell, where to sell, how to sell, and how and where to manufacture their goods and services.[1] Suppose a country, drawing inspiration from such firms, were to formulate a set of economic policies to become globally competitive in leading economic sectors. How specific or encompassing would such policies be and what might be the justifications for them? Even though the theory and practicality of such policies — the strategic trade and industrial policies (STIPs) — is contested, they retain their appeal for politicians and policymakers. In this paper we discuss how and why STIPs have created a new agenda for the study of international political economy.

State intervention to directly guide industrial activity is called industrial policy and to guide foreign trade is called trade policy. Industrial policies differ from macroeconomic policies in that they target only a subset of the economy. Whereas macroeconomic policies (such as tax rates, level of deficit spending and interest-rate policies) generally do not discriminate among types of firms or industries, industrial policies (such as R&D subsidies, tax subsidies, preferential loans and credit allocations) are targeted at specific firms or industries.

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[1] The literature on business strategy is vast. Important works include Chandler (1962), Andrews (1971), Porter (1980), Prahalad and Hamel (1990), Hamel and Prahalad (1994) and Mintzberg (1994).

Industrial and trade policies are often compartmentalised as reflected in the administrative institutions of various states, where trade policies are handled by the commerce ministry and industrial policies by the industry ministry. However, trade and industrial policies may overlap if trade policies affect the international competitiveness of domestic firms or industrial policies deny domestic markets and technologies to foreign firms.

Industrial policies have a long history. Nationalists of the late 18th and early 19th centuries, such as List (1966 [1841]) and Hamilton (1964 [1791]), sought state interventions to promote domestic manufacturing in the face of British manufacturing dominance. The infant-industry argument of the German Historical School (Schmoller, 1931 [1895]) suggested that new industries took a while to get established because of startup problems, or because a particular country or region was somehow initially disadvantaged and needed to insulate itself temporarily from competition. The infant-industry argument was resurrected after World War II for justifying state interventions for the industrialisation of the developing countries of Asia, Africa and South America (Hirschman, 1945 and 1971; Singer, 1949 and 1950; Prebisch, 1950 and 1959; and Gerschenkron, 1962).

Debates on trade policy also have a long history — particularly, arguments over the proposition that free trade benefits all countries, as Smith (1937 [1776]) and Ricardo (1873 [1819]) asserted, as opposed to the idea that some countries may benefit more than others, especially if they engage in certain forms of state intervention. A recent example of this ongoing debate centres on the work of the strategic trade theorists (Brander and Spencer, 1981 and 1985; Tyson and Zysman, 1983; Spencer and Brander, 1983; Dixit, 1984; Helpman, 1984a; Krugman, 1986 and 1994a; Stegemann, 1989; Richardson, 1986, 1990 and 1993; and Tyson, 1992). Neoclassical trade theorists assume declining or constant returns to scale (growth of output can never grow faster than the growth of inputs), perfect competition in product and factor markets (many producers and very few barriers to entry for new producers), and no information or transactions costs connected with technology flows. Strategic trade theorists relax these assumptions and deduce that domestic firms can benefit asymmetrically from international trade if the state intervenes on their behalf. By doing so, the state can shift not only profits, but also jobs, from one country to another. Therefore, states are tempted to do this.

Industrial policies may or may not be justified in terms of strategic trade theory. For example, some scholars justify industrial policies as being necessary to reduce adjustment costs connected with changes in international markets so as to prevent the creation of protectionist coalitions without reference to strategic trade (Tyson and Zysman, 1983). Others, stressing the differences in national economic institutions which create barriers to technology flows, argue that R&D subsidies are necessary to compensate for these impeded flows (Zysman, 1983; Hall, 1986; Hart, 1992; Encarnation, 1992; and Tyson, 1992).

In this paper we focus on policies arising due to the overlap between industrial and strategic trade policies. This overlap has become critical since, with increasing globalisation, economic actors are treating the whole globe as the relevant unit for securing inputs, processing them, manufacturing, as well as selling the final product. Traditionally, foreign direct investment (FDI) and exports have been treated as mutually exclusive. However, since FDI flows are now acknowledged to encourage exports, and the intra-firm trade exceeds the arm's-length trade, impediments to FDI (via industrial policy) are equivalent to trade barriers (trade policy) (Julius, 1990; Dunning, 1993; and World Investment Report, 1995). Hence, strategic trade and investment policies (STIPs) need to be seen as two synergistic pillars of state interventions to support domestic firms in the global economy. Though economic globalisation, technologisation of traded goods and the increasing economic salience of multinational corporations (MNCs) constrain contemporary governments, they also create incentives and new rationales for state interventions in the form of STIPs.

We have organised this paper in six sections, including the introduction. In Section 2, we discuss the three categories of industrial policy theories. We focus on the 'technological trajectory' version since it provides a rationale for state interventions in high-technology industries. In Section 3, we review the main theories of international trade: Smith's absolute advantage, Ricardo's comparative advantage and the neoclassical Heckscher-Ohlin theory. We then discuss the infant-industry argument, import-substitution policies and strategic trade theory. In Section 4, we present STIPs as an Intervention Game to highlight the incentives for states to intervene in the economy. We then discuss the criticisms of STIPs. In Section 5, we discuss how STIPs create a new agenda for the study of international political economy, particularly by challenging the post-World War II order based on 'embedded liberalism'. In Section 6, we present our conclusions.

2. INDUSTRIAL POLICY THEORIES

Industrial policies refer to domestic interventions to encourage specific industries. Such interventions have many rationales and we identify three broad categories of industrial policy theories:

(a) the *technological-trajectory theory* (Borrus, 1988 and 1989; Tyson, 1992; Weber and Zysman, 1992; and Borrus and Hart, 1994);
(b) the *structuralist theory* (Servan-Schreiber, 1968; Stoffaes, 1987; Gilpin, 1987; Lake, 1988; and Krasner, 1977); and
(c) the *institutionalist theory* (Zysman, 1983; Hall, 1986; Hart, 1992; Encarnation, 1992; and Tyson, 1992).

Though these categories overlap, they provide different rationales for industrial policies. The technological-trajectory theorists argue that technological flows across national boundaries are imperfect even when capital is highly mobile. State intervention is needed to secure 'first-mover advantages' (Williamson, 1975) for domestic firms in industries where learning curves are steep and supply infrastructures are difficult to reproduce. A good example is the integrated circuit (IC) industry, where average costs decline sharply with cumulative production because of the ability of producers to learn over time how to make the same devices more reliably and using less silicon. IC product and production technologies are often difficult to license from the original producer and sometimes are also difficult to reverse-engineer.[2] First-movers, such as Intel in microprocessors and Toshiba in dynamic random access memory (DRAM) devices, have experienced rapid growth and high profit levels.

Why is technology not perfectly mobile across national borders? A set of supplier firms develops around the industry leader resulting in internalisation of positive externalities within the group. Thus, there is a supply infrastructure or an 'architecture-of-supply' (Borrus and Hart, 1994) supporting the market dominance of the leading firm. Such infrastructures are difficult and/or expensive to reproduce elsewhere. Hence, the set of core technologies associated with that particular high-technology industry will flow only with difficulty across geographic boundaries, and will do so only if that is consistent with the market strategy of the dominant firms.

The structuralists emphasise the differences in the relative positions of countries in the international system, particularly the distribution of economic power across countries. The hegemon, usually the country with the largest GNP, has a self-interest in providing international public goods, such as free trade and investment regimes, a stable monetary order, etc., since it corners the bulk of the benefits (Olson, 1965; and Kindleberger, 1973). For example, if trade is denominated in US dollars — the reserve currency for trade — then the US benefits from monetary seigniorage.

Non-hegemons free ride the liberal trade and monetary institutions by promoting exports and capital to the rest of the world while protecting their domestic economy from international competition. If they can do this along with increasing the international competitiveness of their domestic firms (not an easy task, of course), then over time they advance their relative standing in the world economy, leading to the relative economic decline of the hegemon. Structuralists

[2] Reverse engineering involves improving upon an existing product or production technology by discovering how the product or production technology works, often simply by taking it apart and then reassembling it, and then designing a new product or production technology based on this knowledge. While direct copying of products or production technologies protected by intellectual property laws — such as patent and copyright laws — is often illegal, reverse engineering is usually not illegal.

argue, in short, that industrial policies are one way that non-hegemons can challenge the power of the hegemon.

Another structuralist argument is that when hegemons face a relative economic decline, they begin to act in a predatory manner by copying the industrial and trade policies of their principal competitors. By doing so, they undermine the liberal economic regimes that they established earlier. Thus, structuralists explain the implementation of industrial policies by both non-hegemons and declining hegemons as part of a larger process of economic competition among countries.

Institutionalists focus on the historically-rooted differences in state-societal arrangements and their impact on the competitiveness of domestic firms. They highlight how some institutional configurations systematically create barriers to imports and inward investments, and thereby shelter domestic firms from international competition. In particular, they contrast the relatively open US system with the relatively closed Japanese system, with its incestuous forms of business/government collaboration and its industrial combines (*keiretsu*), and how such differences create advantages for Japanese firms to compete in international markets.[3]

In this paper we focus on the technological-trajectory version since it provides a rationale for state intervention in high-technology industries. The twin hallmarks of economic globalisation are mobile capital (fixed as well as portfolio) and the technologisation of trade — the increasing salience of high-technology products in global trade. High-technology could be embodied in the final product or be used in the production process. Technologisation creates incentives for state interventions to develop domestic architectures-of-supplies in critical technologies, enabling firms located in the country to have adequate and timely access to such technologies. Such architectures-of-supplies therefore become a major 'pull-factor' for attracting FDI from multinational corporations, and thereby furthering the economic agenda of the politicians and policymakers.

3. TRADE THEORIES

Smith (1937 [1776]) made a case for free trade based on absolute advantage. If country A has an absolute advantage or lower costs in producing cars, and country B has an absolute advantage in producing bicycles, then both A and B can gain by trading with each other — A by exporting cars and B by exporting bicycles. The Ricardian trade theory (Ricardo (1973 [1819]), also known as the classical trade theory, argued for trade based on comparative and not absolute advantage. Ricardo emphasised that for trade to take place, countries need not

[3] For a review of Japan's industrial policy, see Maganizer and Hout (1980), Dore (1986), Samuels (1987), Friedman (1987), Okimoto (1989), Johnson et al. (1989), Tsuru (1993) and Calder (1993).

have absolute advantages for producing different goods. To use Ricardo's example, consider two countries — Portugal and Britain, and two sectors — agriculture and manufacturing. For trade to benefit both countries, Portugal can be more productive than Britain in agriculture as well as manufacturing, as long as it is not more productive than Britain by the same percentage in both. For example, suppose Portugal's agricultural productivity is higher by 50 per cent versus Britain's. As long as Portugal's manufacturing productivity is less than or greater than 50 per cent versus Britain's, both can gain from trade.

The neoclassical trade theory, pioneered by Heckscher (1991 [1924]) and Ohlin (1933), also identifies comparative advantage as the basis of international trade.[4] Among the main assumptions of the simpler Heckscher-Ohlin models are that: (i) though the factors of production are mobile within the country, they are not mobile across national boundaries; (ii) product markets, both domestically and internationally, are perfectly competitive and there are no super-normal profits; (iii) there are constant returns to scale in production of all goods (or production functions are homogeneous of the first degree) and firms cannot acquire a monopoly position through 'learning curve' advantages; (iv) since there are no transaction costs for technology acquisition, access to technology is not a source of comparative advantage; and (v) since goods have different factor intensities, a labour-rich country exports labour-intensive goods and a capital-rich country exports capital-intensive goods. Note that this specialisation results not from access to a superior technology (technology is assumed to be the same everywhere), but from differences in factor endowments.[5]

[4] Since Ricardian and Heckscher-Ohlin models define comparative advantage on a country basis and countries have comparative advantage in different industries, these theories explain inter-industry flows. However, trade among the major industrialised countries often involves intra-industry exchanges. This led to the development of alternative perspectives such as the product-cycle theory (Vernon, 1966) and other models of intra-industry trade (Balassa, 1966; Grubel and Lloyd, 1971; Helpman, 1982; and Leamer, 1983). Also, the intra-company trade in multinational corporations makes the patterns of international trade diverge from those predicted by country-based comparative advantage (Caves, 1996 [1982]; Helpman, 1984b; Dunning, 1994; and Markusen, 1984 and 1995).

[5] Over the years, Heckscher-Ohlin models have been tested for robustness by easing the assumptions about the number of factors of production (Kenen, 1965; Baldwin, 1971; and Leamer, 1984), the number of countries (Jones, 1987) and the mobility of factors of production (Caves et al., 1993), and in each of these cases the main results still held. In addition, some new theorems relating to the distribution of gains from trade within society (between relatively abundant and scarce factors of production) (Stolper and Samuelson, 1941; Bhagwati, 1959; and Rogowski, 1989) and the equalisation of factor prices (Samuelson, 1948) were put forward, making neoclassical trade theory a highly compelling approach to analysing trade matters. Leontief's paradox — a capital-rich country exporting labour-intensive goods — provided a major challenge to the Heckscher-Ohlin theory. A significant conceptual contribution of this debate was a more precise understanding of what constituted 'labour' and how human capital cannot be equated to 'labour'. For an overview of the debate, see Leontief (1956, 1957 and 1964), Swerling (1954), Valavanis-Vail (1954), Buchanan (1955) and Minhas (1963).

a. Strategic Trade Theories

Though comparative advantage creates gains from trade and specialisation, such gains may be distributed unequally across countries. Strategic trade theorists suggest that certain types of state intervention can shift such gains, in special circumstances, from foreign to domestic firms (Brander and Spencer, 1983 and 1985; Dixit, 1983; Helpman, 1984a; Krugman, 1986; and Tyson, 1992).

Brander and Spencer (1983) suggest that in industries with imperfect competition and super-normal profits, subsidies can shift global profits to domestic firms such that the increase in their profits exceeds the subsidies. Hence, on the aggregate, there is a net increase in national welfare. Krugman (1994a) gives a hypothetical example of the application of strategic trade theory. Imagine that there is some good that could be developed either by an American or a European firm. If either firm developed the product alone, it could earn large profits; however, the development costs are large enough that if both firms tried to enter the market, both would lose money. Which firm will actually enter? If European governments subsidise their firm, or make it clear that it will have a protected domestic market, they may ensure that their firm enters while deterring the US firm — and thereby also ensure that Europe, not America, gets the monopoly profits. Strategic trade theories therefore:

> … demonstrated that, under conditions of increasing returns, technological externalities, and imperfect competition, free trade is not necessarily and automatically the best policy (Tyson, 1992, p. 3).

Strategic trade policies are not the same as governmental interventions in strategic sectors (Flamm, 1996). A strategic sector may generate externalities only for the domestic economy and does not necessarily have international linkages. A good example of this would be a governmental subsidy to promote the construction of fibre-optic networks. If such a network does not enhance the global competitiveness of domestic firms, then the subsidy is not a strategic trade policy.

Strategic trade theories, in conjunction with the technological-trajectory theory of the industrial policies, provide the rationale for STIPs. A case can be made for state support of high-technology industries through a combination of trade and industrial policies, with an objective that the country retains thriving domestic architectures-of-supply in critical industries, thereby enabling domestic firms to be competitive in global markets characterised by super-normal profits and creating incentives for foreign firms in those same industries to invest directly in the country. Tyson (1992) defends STIPs in the United States as preferable to the incoherence and ineffectiveness of the military-oriented industrial policies of the past. In the cold-war era, the US government intervened in militarily sensitive sectors. Such interventions, however, were not designed to maximise ‘spin-offs’ to civilian sectors, but rather to assure local sources of supply for key military

components and systems. Tyson's message is clear: since states need to intervene anyway, they should do it in a way which maximises economic welfare, which means that they should do it in a manner consistent with strategic trade and industrial policy theories.

4. THE LOGIC OF STIPs

Do STIPs have any historical validity and will they be equally efficacious across political systems? Some scholars see STIPs as being the key to the rapid industrialisation of Japan and the Newly Industrialised Countries (NICs). It is suggested that Japan followed a phased process of industrial development (Hout and Magaziner, 1980; Johnson, 1982; Yamamura, 1986; and Weber and Zysman, 1992). During the first phase, the Japanese firms were disadvantaged in both development and production costs. To shelter these firms against international competition, the domestic market was closed with a combination of import barriers and inward investment restrictions. Without inward investment restrictions, foreign firms would have been tempted to jump the import barriers by establishing local subsidiaries. This would have impeded the development of local architectures-of-supply. In contrast to the import substitution models in operation in other regions of the world, fierce domestic competition ensured that domestic firms did not become complacent rent-seekers.

In the second phase, Japanese and other Asian firms borrowed technology from abroad to bridge the technology gap. The state therefore relaxed import restrictions while maintaining inward investment restrictions. The state also encouraged firms to export by linking state support, such as concessional credits, to export performance (Park, 1994). Hence, the domestic firms, having established themselves in the home market, were gradually exposed to foreign competition.

The close networking of *keiretsu* firms in Japan allowed them to compete domestically without fear of hostile takeovers.[6] The role of the Japanese Ministry of International Trade and Industry (MITI) as 'gate-keeper' and dispenser of subsidies to specific firms and industries was also important since it created hurdles for foreign firms to sell and invest in Japan (Johnson, 1982; and Encarnation, 1992). As a result of increased US awareness of the implications of the *keiretsu* system, a major US demand during the Structural Impediment Initiative talks with Japan in 1989–90 was the reform of that system (Kahler, 1996). Since neoclassical explanations of industrial performance denied the importance of institutions like the Japanese *keiretsu*, they were unable to explain the impact of such 'relational structures' (Goldberg, 1980) on business performance.

[6] The same function is served by the *chaebol* firms in South Korea.

In the third phase, Asian producers began to build world market positions without fearing foreign competition. They now tapped foreign markets through exports as well as through foreign direct investment. The international expansion of Japanese and other Asian multinational corporations was now perceived to be impeding the development of architectures-of-supply in other regions, as Asian component manufacturers followed the main manufacturing companies to foreign countries. Since the main research and development competencies remained in Asia, especially in Japan, the non-Asian firms chafed over their limited access to critical Japanese technologies.

Japan's policies have changed the contemporary game of economic rivalry by creating an enormous temptation for other states to copy them. This situation can be conceptualised as a form of prisoner's dilemma game (Richardson, 1986). Suppose state A is debating whether to intervene or not to intervene in a particular strategic industry. It faces the following payoff structure, as discussed in Table 1.

We assume that: (1) $e > c$ and $e > d$; (2) a, b, c, d and $e > 0$; and (3) $c > a$ and $d > b$. For B, 'intervene' (defect) is the dominant strategy no matter whether A intervenes ($a > 0$) or not ($e > c$). Similarly, for A, the dominant strategy is to intervene irrespective of whether B intervenes ($b > 0$) or not. Thus, both countries intervene and the Nash equilibrium (a, b) is pareto inefficient because the highest joint payoffs occur when both refrain from intervening ($c > a$ and $b > d$).

The intervention-game captures the logic of the 'cult of the offensive' that arose among the great powers prior to World War I (Snyder, 1984; Van Evera, 1984; and Weber and Zysman, 1992). The military and political leaders of that time saw offence as the dominant strategy, assuming that wars would be short and the 'first striker' would have an overwhelming advantage. The prisoner's dilemma payoff structure of the intervention-game creates incentives for a new kind of cult of the offensive, leading to the widespread adoption of STIPs. This suggests that new or modified international institutions are needed to change incentives, which make STIPs less attractive to politicians and policymakers. We elaborate on this in the next section.

TABLE 1
The Intervention Game

Country A *Country B*	***Intervene***	***Not Intervene***
Intervene	Rents Shared Between A & B (a, b)	All Rents to B (e, 0)
Not Intervene	All Rents to A (0, e)	Rents Shared Between A & B (c, d)

Source: Adapted from Richardson (1986, p. 271).

a. Criticisms of STIPs

The efficacy of STIPs in promoting economic development is disputed. While some scholars attribute the recent economic successes of Japan and the newly industrialised countries (NICs) of Asia largely to STIPs (Maganizer and Hout, 1980; Johnson, 1982; Yamamura, 1986; Dore, 1986; Okimoto, 1989; Johnson et al., 1989; Weber and Zysman, 1992; and Tsuru, 1993), others attribute it to low wage and inflation rates, rapid copying of the product and process technologies of competitors, high domestic savings rates (enabling low interest and high investment rates) and undervalued currency exchange-rates (Bergsten, 1991; Krugman, 1983 and 1994c; and Saxonhouse, 1979), just to name a few of the possible alternative explanations.

STIPs are also criticised for normative, positive, as well as theoretical reasons. The normative critics focus on the dangers of giving too much power to the state. Classical liberals and neoclassical economists argue that the state should be restrained from asserting its authority in new terrains unless there is no other way to resolve market failures. Critics question particularly the need for strategic intervention to increase aggregate economic welfare. Consider a situation where a state identifies a set of strategic industries and provides them with an export subsidy. Suppose that such strategic industries compete for the same scarce factors. In this case, state support drives up the prices of the scarce factor (a pecuniary externality) and no industry benefits (Grossman, 1986). Further, if equity is also an objective of state policy, then such interventions will skew the income distribution in favour of the scarce factor.[7]

Critics also point out that STIPs can advance the interests of a particular country only if others do not retaliate by providing matching supports to their domestic firms and industries. If such retaliation occurs, then the relative gains promised by STIPs may not materialise.

It is also suggested that special interests will abuse the willingness of governments to intervene. Firms, as rational actors, have incentives to externalise their problems to avoid painful internal restructuring. Such firms can therefore be expected to lobby for state support (Nelson, 1988). It will therefore be difficult to separate strategic interventions from non-strategic interventions.

Many scholars question the implementability of STIPs (Grossman, 1986; Dixit, 1986; Krugman, 1986; Richardson, 1993; and Bhagwati, 1993). They consider STIPs to be similar to infant-industry and import-substitution policies, encouraging rent-seeking and leading to misallocation of resources. One of their concerns is that it is difficult, *ex ante*, to specify which industries are strategic.

[7] Rogowski (1989) argues that trade benefits the relatively abundant factor. Thus, exports from a labour-rich country benefit providers of labour. Here, trade corresponds to natural comparative advantage. Since state interventions through STIPs create comparative advantage, trade may now benefit the scarce factor.

TABLE 2
Forms of Technological Alliances in New Technology, 1970–1989
Cumulative Total Number and Percentage

Form	*Biotechnology*	*Information Technology*	*New Materials*
Joint Research Venture	164 (13.5)	458 (16.9)	177 (25.7)
Joint R&D	362 (29.8)	749 (27.6)	173 (25.1)
Technology Exchange	84 (6.9)	328 (12.1)	54 (7.8)
Direct Investment	234 (19.3)	357 (13.1)	65 (9.4)
Customer-Supplied Relations	186 (15.3)	245 (9.0)	42 (6.1)
Uni-Directional Technology Flows	183 (15.1)	581 (21.14)	1771 (25.7)
Total	1213 (100.0)	2718 (100.0)	688 (100.0)

Source: UNCTAD (1995, p. 156).

This is, in part, related to the difficulties in measuring externalities. In the absence of reliable and objective measures of externalities, political rather than economic criteria may dominate the choice of strategic industries. Bhagwati points out that:

> Edward Mansfield did careful work on the returns from seventeen industrial innovations, and he found that the highest discrepancy between social and private returns from innovation was in 'thread innovation' and then in 'stain removers', neither of which would rank high on a high tech list, or even appear on such a list at all. Besides, these discrepancies are so different across industries, and so difficult to predict, that selecting any one industry, or any bunch of industries, for prior support is nothing more than an act of faith. The empirical basis for such a selection is shaky indeed (Bhagwati, 1993, p. 36).

Strategic interventions have to be focused on industries with super-normal profits and states often have only limited ability to identify such industries. Further, it is difficult to determine whether a particular level of profit is super-normal. Imperfect competition also does not *per se* signal super-normal profits since competition among a few rival firms can be fierce enough to drive the prices down to competitive levels.

STIPs require that the national firms be clearly distinguished from foreign firms and that policies be targeted to benefit national firms only. However, in a globalised economy it is often difficult to distinguish between national firms (us) and foreign firms (them).[8]

We have suggested that STIPs help to create domestic architectures-of-supplies, a source of competitive advantage if technology is not mobile across national boundaries. However, as shown in Table 2, technology flows across national boundaries are growing with the help of innovative institutional arrangements such as joint research ventures, technology exchange agreements, customer-supplier relationships, etc.

[8] On the issue of the nationality of a firm, see Reich (1990) and Tyson (1991).

Critics argue that STIPs cannot explain how domestic firms became R&D leaders in the absence of government assistance, or how state-assisted industries failed in the face of massive assistance. Hence, they argue, STIPs can at best be only a facilitating condition for the success of domestic firms.[9]

Scholars also point out that there are different forms of capitalism and that only some forms are consistent with strategic interventions (Gerschenkron, 1962; Shonfield, 1965; Katzenstein, 1978; Johnson, 1982; Zysman, 1983, Hall, 1986; Lodge and Vogel, 1987; and Hart, 1992). An important research question is whether some countries are more willing and capable of using STIPs than others. The US has rarely engaged in strategic interventions in the past, partly because of the ideational and institutional grip of neoclassical economics. On the other hand, since neoclassical ideas are less influential in Japan, the Japanese state faces less opposition to its interventionist role. Tyson puts it this way:

> The invisible hand is at work in Japan, but it is not Adam Smith's invisible hand — it is the invisible hand of the government working with Japanese industry (Tyson, 1992, p. 57).

STIPs do not show instantaneous results since their effects are usually visible after considerable time lags, sometimes longer than the electoral cycles. The successful implementation of STIPs requires that firms believe that state support will continue, irrespective of political changes. Can every state make such credible commitments (Lenway and Murtha, 1994)? Johnson (1982) identifies two kinds of states: regulatory and developmental. Regulatory states have minimal capabilities for strategic economic interventions, and their policies seek to ensure an unfettered working of markets and a correction of market failures wherever they arise. The developmental states, in contrast, are capable of adopting and willing to stick with STIPs even in the face of temporary difficulties.

The nature of domestic socio-political institutions such as the relative autonomy of the state from domestic interests groups (Katzenstein, 1978; and Hart, 1992), the transparency of domestic decision making (Cowhey, 1993), and social and political cohesiveness (Katzenstein, 1985) critically shape firms' perceptions of state commitments. For example, if political power is dispersed domestically, then it may be difficult for the government to make credible commitments. In a relatively decentralised federal system, the executive may face strong opposition from provincial governments, as well as from the national legislature and competing bureaucracies, and therefore may not be able to sustain its interventionist policies. Thus, one would expect countries with more centralised and bureaucratic (and therefore relatively autonomous) political regimes to be more likely to adopt and sustain STIPs.

[9] For excellent summaries of the positive critiques, see Grossman (1986), Dixit (1986) and Richardson (1993).

Are developmental states always more credible in providing such assurances, or are they credible only in some phases of economic growth? Porter (1990) identifies four phases of economic growth: factor-driven, investment-driven, innovation-driven and wealth-driven. STIPs are linked with the investment-driven phase in which the developmental state actively facilitates economic growth (Lenway and Murtha, 1994). State support may in fact constitute a credible commitment to deter foreign competitors from engaging in predatory strategies such as reducing prices to drive domestic competitors out of business. However, Lenway and Murtha (1994) argue that in the innovation-driven phase of growth, the micromanagement of the economy by the developmental state is counter-productive, since bureaucrats seldom have the information needed to correctly pick winners. In this phase, the regulatory state (which does not undertake STIPs) may provide a more appropriate institutional setting, since it focuses on providing macroeconomic stability, guaranteeing intellectual property rights and preventing inefficiencies caused by imperfect competition. A recent example which seems consistent with this theory is the development of digital high-definition television (HDTV) in the United States under the guidance of the FCC, as contrasted with the commitment of the Japanese government to the hybrid analog-digital system called MUSE/Hi-Vision.

5. IMPLICATIONS FOR THE STUDY OF INTERNATIONAL POLITICAL ECONOMY

The debate on STIPs, though inconclusive, highlights the incentives for states to manipulate market processes. Importantly, this debate reminds us of the power of ideas in influencing the political discourse, even when such ideas may not be unanimously accepted within the academy. As Keynes noted:

> The ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Practical men, who believe themselves to be quite exempt form any intellectual influences, are usually slaves of some defunct economist (Keynes, 1937).

Krugman (1994a and 1994b), one of the original contributors to strategic trade theory, also argues that it would be unwise to translate the findings of strategic trade theory directly into policy. He views the theories of academic economists as more qualified and cautious than those of the policy makers who implement them.

If STIPs are politically attractive and may get implemented, then what are the implications for international political economy? STIP theories help in explaining the increased activity to form regional economic alliances, particularly the ones in high-technology industries. For example, the Single European Act of 1987 as well as the Maastricht Treaty were preceded by a series of programmes to

promote high-technology industries in the region to ensure that Europe does not fall behind Japan and the United States in key technologies and industries. Esprit, Eureka, JESSI and the Airbus Consortium are examples of such programmes (Tulder and Junne, 1988; Sandholtz, 1992; and Mytelka, 1995).

Similarly in the US, the Sematech consortium for R&D in semiconductor technologies is co-funded by the federal government and industry (Borrus, 1988). Sematech was motivated largely by the success of the Japanese VLSI (very large-scale integrated circuits) Programme co-sponsored by the Japanese government and Japanese industry. The VLSI Programme subsidised the imports of US semiconductor manufacturing equipment as well as their reverse engineering.

Another US STIP project, the National Flat Panel Display Initiative, has created an umbrella for R&D funding for commercialisation of new flat panel display technologies by US firms. This initiative was the US government's answer to the large lead of Japanese electronics firms in the production of active matrix liquid crystal displays, mostly for laptop computers (Flamm, 1994 and 1995; Barfield, 1994; and Hart, 1995).

Recent work on high-technology industries suggests that the traditional emphasis on spin-offs from military to civilian technology needs to be supplemented with consideration of spin-ons from civilian to military. An example of this is the use of computer displays and microelectronic circuits developed for commercial products in military avionics systems (Borrus and Hart, 1994). Political arguments over this question have fuelled a debate within the national security community over dual-use technologies which have both civilian and military applications. Advocates of strategic trade theory support strategic interventions to promote dual-use technologies, while critics of the theory argue that such policies should be avoided because it is impossible to accurately assess the degree of technological interdependence of civilian and military technologies, and that such interventions may simply encourage domestic rent-seeking behaviour. In short, STIPs pose important questions about what kinds of R&D the state should subsidise.

a. STIPs and 'Embedded-Lib eralism'

STIPs undermine the postwar Bretton Woods order based on 'embedded-liberalism' and underline the need for developing new international institutions to meet the challenges of a globalised world economy. Ruggie's (1982) notion of embedded-liberalism links the rise of the welfare state (which generally combines a variety of social insurance schemes with Keynesian demand management) to an agreement among the major industrialised nations to keep the global trading system as open as possible. In many major trading nations, as long as there was some faith in the efficacy of Keynesian demand-management policies to smooth out economic cycles, the free-traders were able to make side-payments to

supporters of social welfare policies in order to secure their acceptance of the liberal trade regime. Within the domestic economy, embedded-liberalism combined macroeconomic state intervention with non-intervention in micro markets.

Challenges to embedded-liberalism posed by STIPs create pressures for changing the liberal international economic regimes established after World War II (Gilpin, 1987). In particular, the World Trade Organisation, the main guarantor of an open trading system, will have to adapt to the proliferation of STIPs by a growing number of states. Free-traders, in particular, will have to identify new domestic and transnational coalitions to support non-intervention of the state at both macro and micro levels, and the preservation of an open trading system. The putting together of such alliances is increasingly challenged by the progressive dismantling of the welfare state. The welfare state permitted governments to promise assistance to those elements of society most badly hurt by adjustments to changes in the world economy. It permitted governments to compensate the losers with some of the gains extracted from the winners in international economic competition, to maintain support for free trade policies abroad and the regulatory state at home. As that padding is removed, governments find themselves less and less able to defend free trade and investment policies against the forces of protectionism.

6. CONCLUSIONS

In an increasingly globalised world economy, trade and industrial policies need to be viewed as two complementary aspects of state interventions in market processes. Globalisation is marked by the increasing salience of high-technology products and services in world trade. STIPs are designed to create: (1) domestic architectures-of-supply in critical technologies, enabling domestic firms to compete in international markets; and (2) incentives for multinational corporations to invest in the country. Hence, STIPs are attractive to politicians and policymakers.

STIPs differ from infant-industry and import-substitution policies in that state interventions are not designed to encourage manufacturing by raising barriers to imports. However, STIPS, like infant-industry and import-substitution policies, are inconsistent with classical and neoclassical theories of international trade, since any action by the state to promote specific industries will lead to allocative inefficiencies. Further, critics argue that it will be difficult to unambiguously identify strategic industries.

We have discussed the positive, normative and theoretical criticisms of STIPs. The positive critiques include the inability of governments to identify strategic industries *ex ante* due to difficulties in measuring externalities, problems in

differentiating normal from super-normal profits and domestic from foreign firms, and the dangers of public officials and/or private interest groups using STIPs for rent-seeking. Since such problems are more significant in regulatory states than in developmental states, the implementation of STIPs becomes critically dependent on state-societal relationships, transparency in policy-making processes and the credibility that changes in governments will not lead to withdrawal of state support.

Even though STIPs are challenged on theoretical as well as practical grounds, they remain attractive for politicians and policymakers. The intuitive appeal of STIPs should not be underestimated. Ideas influence policies by providing roadmaps to cause and effect relationships about contemporary societal problems (Goldstein and Keohane, 1993). STIPs provide such roadmaps of why certain economies are on a relative decline and what policies need to be adopted to ensure competitiveness of domestic firms in the global economy. However, STIPs as intervention-games create incentives for systems of trading states to adopt a cult of the offensive. They highlight the need for developing new international institutions to prevent costly and senseless competitive interventions. Cowhey observes that:

> … contemporary experience with economic development has rekindled fundamental debate over the respective roles of governments and markets. The countries that are catching up with the United States in scientific and economic capabilities have typically relied on much more government intervention in the economy than the United States … the same countries are also experimenting with the introduction of more market-oriented policies in the sectors traditionally subject to extensive government control. Deregulation is not an idiosyncratic American experiment, however; most of the countries look for new roles for government even as they deregulate … in short, the broad internationalization of science and technology has prompted both more government intervention and a growing reliance on market competition (Cowhey, 1990, pp. 107–8).

Thus the controversy over STIPs, on the one hand, is provoking new domestic debates on how to modify the relationships between states and markets to enhance the economic well-being of a country's population, and, on the other, highlights the dangers of widespread adoption of such policies.

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