

## Globalization, corporate identity, and European technology policy<sup>1</sup>

### 1. Introduction

The European Single Market Programme was in many ways a response to the perceived relative economic decline of Europe in the world economy since the 1970s. Nowhere has European concern been greater than in the area of high technology, where competition from American and Japanese corporations became intense over the past decade. This concern prompted the gradual emergence of a counterpart to the deregulatory strategy of the Single Market Programme, a coordinated European high technology policy. Yet the globalization of competition in key high technology sectors has confronted European policymakers with a dilemma: if the promotion of European high technology sectors is increasingly viewed as a central aspect of Europe's economic policy identity, how should the objects of such policies be defined? Specifically, with the growing physical presence of subsidiaries of US and Japanese firms in the EU and with European firms establishing important operations abroad, what does the promotion of 'European high technology industry' mean?

Such existential concerns have not prevented Europe from mimicking Japanese-style government-sponsored research and development (R&D) industrial consortia over the past decade. At the national level, programmes such as Britain's Alvey programme, France's *Programme d'action pour la filière électronique*, and Germany's *Informationstechnik* plan were all aimed at boosting lagging national information technology (IT) champions in the early 1980s. By the mid-1980s, there was a growing realization that national strategies alone would be inadequate, leading to the emergence of a European technology programme. The 'Framework Programme' has come to provide an umbrella for the promotion of European high technologies, such as the ESPRIT (information technology), RACE (telecommunications) and BRITE (materials) programmes. At a wider European level, the EUREKA programme has included such important projects as JESSI in

semiconductors, and the HDTV project. (Okimoto 1989; Fransman 1990; Sharp 1990; Sharp and Pavitt 1993; Mytelka 1991; OTA 1991; Sandholtz 1991). In recent years, however, the issue of how to treat foreign-owned subsidiaries of American and Japanese high technology firms has arisen, not least because of the realization that they make a major contribution to European output and employment.

This paper asks why until now, Europe has tended to allow substantial access for US foreign-owned firms (FoFs) to its technology programmes, but not for Japanese FoFs. This outcome is interesting and requires explanation for the following reasons. First, the Framework Programme, like the Single Market Programme, was designed in large part to promote the competitiveness of European firms vis-à-vis both US and Japanese firms. The European industry has been marked by poor profitability, excess capacity, and declining world market share. By 1992, European semiconductor producers had only 35% of their indigenous semiconductor market, compared with 85% for Japanese producers and 70% for American producers in their respective home markets. The largest European producers, Siemens, Philips and SGS-Thomson, held a mere 10% of the world market between them in a highly oligopolized industry. (*Financial Times* 17 March 1992: Survey ii, vii).

Pressure from the Roundtable of European Industrialists, a lobby group established in 1983 comprising Europe's largest and most important firms (all of which at the time were firmly in European control<sup>2</sup>), was an important factor in generating support amongst national governments both for the completion of the single market and the vigorous pursuit of a European technology policy. (BRIE 1992: ch.3) These firms arguably had an interest in restricting the benefits of public R&D funding largely to themselves. Policymakers also felt that European policies ought primarily to benefit European firms. The EC Commissioner for Research, Maria-Filippo Pandolfi, asserted that the aim of the Framework Programme was 'to provide opportunities to European companies in the true sense of the word...[and] we would like European companies to remain European.' The

Framework Programme has been consistent with a key goal of the Single Market Programme, which has been to enhance ‘the ability of firms to become *truly European* at all levels of management, R&D, production, marketing and distribution’, so as to enable them to compete at a global level against US and Japanese rivals. (Buigues, Ilzkovitz and Lebrun 1990: vii).

Although at first national responses predominated, there was growing recognition that the promotion of national champions by individual countries in Europe had been a major cause of the competitive failure. The transfer of technology policy in part to the European level, along with the single market, might be said to have represented a shift towards a ‘European champion’ strategy, or even a ‘technological Fortress Europe’. The consensus view in Europe (despite British reservations) was that European industrial policies might succeed where national policies had failed.<sup>3</sup> The apparent success of US and Japan high technology policies (in the US case, primarily through defence procurement and related research) strengthened support in Europe for a common technology policy to complement the deregulatory impetus of the single market.

Finally, policies in the US and Japan might have been expected to reinforce any tendency towards a technological Fortress Europe. In the late 1980s, both Japan and the US excluded FoFs from their own high technology programmes, the US as a matter of explicit policy.<sup>4</sup> The European rhetoric of the late 1980s also tended to be exclusionary: External Affairs Commissioner Willy de Klerk had argued in a number of speeches in summer 1988 that the benefits of the single market would not automatically be extended to FoFs whose home countries did not provide equivalent access to European firms. (Woolcock 1991: 14).

There are a number of reasons, therefore, why substantial participation by FoFs in European R&D projects might not have been expected. We need to explain why participation in European consortia by traditional rivals to indigenous European IT firms like IBM and AT&T, while often controversial, has in fact occurred. In addition, we need to explain why a tendency

towards European openness has not been true across the board, particularly with respect to Japanese FoFs.

This article is organized as follows. The next section outlines the way in which European policy on the treatment of FoFs in technology programmes has evolved, focussing on some important cases (IBM and ICL-Fujitsu). A subsequent section assesses the reasons for Europe's relative openness to American-owned firms as opposed to Japanese firms. The conclusion considers the implications of this assessment for different theories or perspectives of international political economy (IPE).

The main argument of this article is two-fold. First, a technological Fortress Europe has not been a real policy option, essentially because neither European champion firms nor national governments have been able to agree on such a policy. The growing difficulty of defining European corporate identity is gradually leading European governments and institutions towards a policy based more upon the *location* of economic activity rather than the *ownership* of assets. Second, this has been less true until now for Japanese firms. The much greater degree of exclusion from European programmes that they have suffered suggests that theories of IPE need to consider more critically the process by which firms achieve insider status within Europe. The cases examined suggest that this is not simply dependent upon the behaviour and activities of individual firms, but also upon broader political, cultural and historical linkages between societies.

## **2. The Evolution of European policy**

As already mentioned, the Commission, and in particular the Commissioner for Industry, Etienne Davignon, played an important role in the promotion of EC technology policies in the late 1970s and early 1980s. Davignon and the firms in the European Business Roundtable played a key role in the design and the promotion of ESPRIT and subsequently the RACE programme, lobbying national governments to support them. By the end of the 1980s, these and other programs were merged into the Framework Programme. The third Framework Programme over

1990-94 was funded at ECU 5.7 billion, and the fourth Programme has recently been extended through 1998. EUREKA, established by 19 European countries including the EC Commission, is 90% privately-funded, with a budget of ECU 7.4 billion over 1985-90. (OTA 1991: 209). Initially, ESPRIT was restricted to pre-competitive or basic research, but over time has moved become increasingly oriented towards commercially-oriented technologies, as with EUREKA projects. (Mytelka 1991a: 187-9).

In practice, EFTA firms have gained good access to the Framework Programme and, along with Turkey, EFTA countries have been members of the EUREKA programme. While this participation was not formalized until recently, with the EC Council of Ministers reserving this for the conclusion of the EEA negotiations between the EC and EFTA in 1993, in practice this did not significantly hamper the participation of EFTA firms. (*Agence Europe*, 28 November 1990). More controversial has been the issue of US corporate participation. As of 1989, the US firms listed in table 1 had gained access.

**Table 1: Participation by European Affiliates of US Companies  
in European Collaborative R&D Programmes, 1984-1989**

As the above table shows, large US firms such as IBM, AT&T and Hewlett Packard as well as many smaller ones gained access to the first and second Framework Programmes and EUREKA. Not all of these firms had European operations as significant as those of IBM or Ford, but nevertheless were admitted. However, the extent of such participation varies by programme. IBM, for example, was a prime contractor in RACE, but requires a major European ‘watchdog’ partner in ESPRIT. Generally, IBM is allowed to participate in EUREKA projects as the sole computer company. (OTA 1991: 222) In JESSI, however, the 1989-1996 EUREKA chip project (the basic research element of which is 25% funded through the EC’s ESPRIT programme), IBM participation was initially very controversial.<sup>5</sup>

This was complicated by the fact that the US had already launched a comparable collaborative programme with Defence Agency funding, Sematech, which is legally open only to firms which are 'substantially owned by citizens of the United States' and which are 'controlled by citizens of the United States'. (Sematech 1988: 2-2.2) Philips, which has US R&D facilities and desired access to Sematech, hoped that IBM participation in JESSI might be conditional upon reciprocal access for European firms to US programmes. Mark Rochkind, President of Philips Laboratories (US), testified before Congress in November 1989 that 'the denial of participation in JESSI to IBM stems directly from the denial of participation by Philips in the Sematech effort. Lest he be seen as threatening the US government, he added that 'Philips, in fact, has encouraged JESSI to accept IBM.' (Rochkind 1989) Since mid-1989, JESSI and Sematech had been engaged in talks on the possibility of allowing reciprocal access to semiconductor projects. (*Financial Times* 13 June 1989:2). In June 1989, they set up a joint study group to discuss possible collaboration and in April 1990 announced agreement to work together on two projects. They also agreed to consider the possibility of working on the joint development of semiconductor manufacturing equipment at a later stage. However, little has materialized.

The problem was that Sematech was concerned that it might give more than it would receive. Moreover, even before Sematech had given any concrete indications of allowing European participation, IBM had already been invited by JESSI to submit project proposals. JESSI's President, Raimondo Paletto, claimed in June 1990 that US and Japanese firms which showed 'sufficient commitment to Europe' could participate in JESSI. (*Financial Times* 21 June 1989: 9; 11 April 1990: 14; 7 June 1990: 2). By November 1990, IBM had been admitted to JESSI (though not to its management board). Why did the EC's attempt (led by Philips) to gain reciprocal access to Sematech fail?

There are a number of reasons. First, there was a powerful anti-industrial policy element in the Bush administration which insisted that Defence Department support could be justified only

on the basis of narrow security arguments, rather than civilian technology policy arguments. If so, then security requirements demanded that participation be restricted to US-owned and controlled firms. This view dovetailed with a more chauvinist but pro-interventionist attitude in Congress that held that the US government had to support its own high-technology firms against the interventionist Japanese and Europeans. Sematech was for national security purposes, and foreign participation could not be allowed. (de Vos 1989) Europe was not in the position to make a similar argument about JESSI.

Another factor which was important in undermining the initial European pro-reciprocity stance was the lack of corporate consensus. Siemens, which has a DRAM chip technology alliance with IBM, argued for the latter's participation in two JESSI projects on semiconductor manufacturing equipment and lithography. Siemens had deserted intra-European alliances in the past. In 1985, it bought 1-megabit DRAM technology from Toshiba which cut across the objectives of the Dutch-German Megaproject, in which Philips had been a major partner .(OTA 1991: 214, n.93). Siemens did so again in July 1991 when it signed new 16-megabit chip technology development agreements with IBM. Only months before, Philips, SGS-Thomson and Siemens had discussed developing chips jointly, and there had long been rumours of a possible merger of the chip businesses of the big three European producers to create a single, viable European chip producer of world scale. (Financial Times 27 April 1991: 2; 5 July 1991: 1). Another problem for JESSI had been the severe financial difficulties of Philips, which led it to withdraw from leadership of a major JESSI SRAM project in 1991. Like the other major European firms, it sought to focus on its strengths through alliances with non-European partners, such as with Sony on interactive compact disk technology and with Motorola on new chip design. (*Financial Times* 5 September 1990: 23; 13 March 1992: 24).

IBM was also steadily conducting its own diplomacy. It said that it supported the European case for participation within Sematech, but that the US government had been opposed.<sup>6</sup>

Furthermore, IBM's case for participation was strong: it is Europe's major producer and buyer of chips, had a strong presence in a number of European countries, and conducts 12% of its global research in Europe. It could bring much to the table in terms of technology and R&D capacity, where European firms perceptibly lagged. There were also some in the Commission and elsewhere in Europe, including perhaps Mr Pandolfi, who believed that the IBM-Siemens link could reinforce the European competitive position against the Japanese producers. (*Agence Europe*, 4 August 1990). Whether this was true or not was made more unclear in 1992 when IBM, Siemens and Toshiba agreed to develop a next-generation 256 megabit DRAM chip in IBM's American laboratories. Nevertheless, IBM's successful entry into European high technology programmes was indicative of Europe's rejection of the Fortress Europe option, at least vis-à-vis American-owned firms.

The different European attitude towards Japanese-owned firms was indicated by the case of ICL, the British computer firm. An original member of the European IT Roundtable and a British national computer champion since the 1960s, ICL was acquired by Fujitsu in 1990.<sup>7</sup> Paletto initially assured the British that ICL could remain within JESSI if Japan could reciprocate in some way over European participation in Japanese projects. Japan was in fact moving towards a policy of unconditional access for FoFs in national technology projects, which MITI dubbed 'technoglobalism'.<sup>8</sup> However, the Community acted in March 1991 to expel ICL from membership of the IT Roundtable and to remove it from three of the five JESSI programmes in which it participated (all in computer-aided design), as well as from JESSI's management committee. JESSI claimed that it acted after consulting other companies involved in projects with ICL whether the latter's continued participation was necessary for the project's success. (*Financial Times* 27 March 1991: 22; 6 September 1990: 7). It appeared as if Europe would act much more decisively to prevent Japanese participation in European technology programmes than it would against US firms, without first exploring the possibilities of reciprocal access for



European firms to Japanese programmes. Japanese firms have been conspicuously absent from Framework and EUREKA project teams.

However, total exclusion even in this highly controversial case was not imposed upon ICL. Despite the opposition of Siemens, Olivetti and Bull, ICL was awarded new ESPRIT and JESSI contracts in 1992, which implied a gradual readmittance into the European circle. A number of factors help explain this. First, Fujitsu's arms-length treatment of ICL and its promises to float off ICL within five years helped to assuage some European concerns. In early 1992, Fujitsu announced that it was placing some of Fujitsu's US and European operations under the direct control of ICL. (*Financial Times* 21 February 1992: 21). Second, ICL remained one of the few European computer companies with a successful technological track record and was perhaps the only profitable firm in the industry in Europe by 1992. Third, British government support was very important in gaining ICL's readmittance. As in other cases (such as Japanese automobile transplants), Britain was willing to argue strongly within Europe that local commitment was more important than ownership for policy purposes.<sup>9</sup>

Though few of Britain's European partners fully accepted such an argument, a British alliance with less protectionist forces in Europe could generally defeat the more exclusionary-minded Franco-Italian bloc. The French government had requested a Council discussion on the issue of foreign firm participation, which took place on 24 April 1991. Ireland, a host to a number of major US electronics MNCs, was concerned that an exclusionary policy would only concentrate research grants in the large countries, a concern shared by other small countries in Europe. Germany's position on this matter has been ambiguous, given Siemen's own vacillating position, but its government wished to ensure that Central and East European countries were rapidly admitted to the programmes. Nor did it desire to see Europe turn into a 'research fortress'. (*Agence Europe* 25 April 1991: 8; 29/30 April 1991: 7-8). The Council therefore decided not to adopt general rules for foreign participation in European programmes, but to allow case-by-case

assessment. While this considerably strengthened ICL's position, it sent a strong signal to other Japanese-owned firms that they would need to continue to invest heavily in Europe to obtain equal treatment.

### **3. Assessing European Policy**

The IBM and ICL cases reveal much about European attitudes to FoF participation in technology programmes. Although European technology policy in the 1980s has in many ways been designed precisely as a means of improving the competitiveness of European high technology companies vis-à-vis the likes of IBM and Fujitsu, this did not ultimately prevent their subsidiaries from gaining access to the most sensitive programmes. As suggested earlier, why this occurred requires some explanation, given European policy objectives and the more exclusionary policies of the US and Japan. What also needs explanation is why in general there has been much better access for American-owned than for Japanese-owned firms, which have tended to be largely excluded. The following sections will examine the preferences and interaction between two of the most important actors in this European policy arena, large firms and national states.<sup>10</sup>

#### **Corporate preferences**

As we saw in section 2, different firms in the European industry had divergent preferences regarding the question of FoF participation in European R&D programmes. A number of factors affect corporate preferences in this policy area. First, local firms are likely to look favourably upon the participation of foreign-owned partners which are able to make crucial technological or financial contributions to joint R&D projects, particularly in areas where local firms are weak. Local firms are likely to be less concerned than host states about the actual levels of local content in the operations of FoFs, as long as the transfer of technology and/or finance occurs. The technological strength of firms like IBM and AT&T may be an important factor in their admittance to European projects such as RACE and JESSI. However, this might also be said of many of the large, integrated Japanese electronics firms, which have not so far gained admittance.

A second factor which has pushed against Japanese participation from the European corporate viewpoint has been strategic concerns. As Kenneth Flamm has written:

Because Japanese chip producers were part of larger [computer] systems houses, foreign competitors began to suspect that systems divisions of the same Japanese companies were getting access to leading edge products before their foreign competitors...Back in the late 1970s, reliance by European systems houses on US semiconductor companies for supplies of advanced chips, though far from welcome, did not pose a strategic problem for European industry. The US merchant chip manufacturers were not, for the most part, vertically integrated into downstream systems. (Flamm 1990: 247, 262)

Indeed, the success of the Japanese in gaining the leading edge in certain chip technologies in the 1980s was a major factor behind the decision of the major European IT firms to push governments to create the Single Market and a European high technology policy in the 1980s. (Sandholtz 1992) The strength of this concern is presumably an important factor behind the reluctance of the major European firms to allow a significant role for the large Japanese electronics firms in European programmes.

A third factor which further complicates corporate preferences on this issue is the growing importance of international strategic R&D alliances between firms in the electronics sector. Firms which acquire such linkages with foreign MNCs may come to prefer greater openness in local technology programmes, at least for their alliance partners.<sup>11</sup> As we have seen, the alliance with Siemens may have been useful for IBM in its quest to gain insider status within European technology programmes. At the same time, however, alliances between European and Japanese firms (e.g.: Toshiba-Siemens, Philips-Matsushita, Bull-NEC) have not been sufficient to gain access for the Japanese partner, because there were other factors pushing against Japanese participation, including possible opposition from other major European firms.

A fourth factor behind corporate preferences may be the desire to use access for FoFs to local programmes as a bargaining weapon to gain access to foreign technology programmes. Access to R&D consortia can help FoFs overcome barriers to market access such as discriminatory government procurement, the difficulty of establishing local supplier networks, and

problems relating to technical standards. It is increasingly important for firms not to be left out of consortia if standards-setting is involved, as shown in the cases of the RACE telecommunications programme in Europe and the various HDTV consortia in Europe, Japan and the US. The desire to make FoF access conditional upon home government reciprocity is likely to be stronger for firms with substantial existing overseas R&D operations (such as North American Philips), rather than for firms (such as Thomson or Bull) with limited foreign R&D activities.

The array of possible motivations behind corporate preferences on the issue of FoF access to European technology programmes suggests that firms are likely to prefer a case-by-case approach to a hard and fast rule. While it is likely that firms would desire access for their strategic partners, it is unlikely that they would desire a general policy of openness which could allow major rivals into consortia.

### **State preferences**

The central question for states is how important ownership is in a sector in which competition is increasingly global. A debate on this question has occurred in recent years between those who generally agree that state intervention in 'strategic' high technology sectors is justified. (Reich 1990 and 1991; Tyson 1991; Hu 1992) Governments have long sought to ensure that certain industrial activities, which can have a direct impact upon the ability of the state to provide for its defence, are located within state borders. Often, they have gone further to argue that national ownership of the defence-industrial base is important for national control and autonomy. In most contemporary states, foreign ownership in defence-related sectors is restricted, and this is true even for countries such as the US and UK, which have otherwise tended to be highly open to foreign investment. However, there is no necessary reason why state control of particular industries ought to depend upon national ownership (either by the state or by private national investors). In times of war, states can assert control over the operations of FoFs producing within

their territory without much difficulty, as did Nazi Germany with GM and Ford subsidiaries during World War Two. (Graham and Krugman 1991: ch.5).

Complications arise in knowledge-intensive sectors, however, which may make ownership an important consideration. Not only do high technology industries provide a basis for advanced weapons systems and hence national security, but technology externalities or spillover effects may be important for the competitiveness and long term growth prospects of other sectors of the economy. (BRIE 1992; Sen 1984; OECD 1992; Dosi, Pavitt and Soete 1990). Many would argue that FoFs are much less likely to undertake substantial knowledge creation outside their home base, so that ownership matters a great deal for the diffusion of technology throughout the local economy. (Tyson 1991) At the same time, the perceived growing importance of 'spin-on' from civilian to military technologies provides justification in some quarters for renewed attention to ownership and control issues. (BRIE 1992: ch.1) Although MNCs have recently been internationalizing the geographical spread of their R&D, US MNCs conducted 89% of their total R&D and employed 74% of their total workforce in the US in 1989. (Lowe and Mataloni 1991: 29) The possibility that FoFs may be less likely to utilize locally the technologies developed within a publicly-funded programme suggests to some that in practice FoFs should be excluded. (Hall 1989; Hecht 1989) However, others argue that there is no reason why FoFs might not locate core R&D activities within host states, particularly if they are encouraged to do so through policies such as local content rules. (Reich 1991; Kline 1989)

The academic disagreement over this issue is mirrored in the disagreement between governments in Europe. The French government, for example, has assiduously maintained national ownership and control of firms in high technology sectors and promoted national champions such as Thomson, Bull and Alcatel in the IT sector. The British government, as we have seen, is much more hospitable towards FoFs, and has recently opened its national technology programmes to FoF participation on the condition that the R&D is performed within Britain. Since

the UK has received approximately 40% of all Japanese FDI (and well over half of the R&D laboratories established by Japanese firms) in Europe, one might argue that this policy has become self-reinforcing.<sup>12</sup> Small countries such as Ireland who have been very dependent upon the activities of high technology MNCs have also favoured their admission into European programmes.

Different attitudes across states in Europe created the need for a compromise, since firms were pressing for a clear answer. For the UK, attracting large numbers of Japanese R&D operations, the Japanese were heading in the right direction, something confirmed by Fujitsu's treatment of ICL after 1990. From the French viewpoint, no Japanese firm could be said to have achieved the degree of localization of IBM or some of the other large American MNCs. Even so, requiring substantial local content of FoFs for their admission to European programmes might encourage Japanese firms to do so. Thus, European governments moved towards a case-by-case approach which downplayed the importance of nationality and moved towards a policy based on the contribution of any particular firm to the local economy. Such a policy could safeguard the interests of the major and the smaller European states, despite the disagreement that otherwise prevailed. It also coincided with the overall preferences of the European large corporate sector.

### **From policy preferences to outcomes**

The identification of various factors behind both state and corporate preferences in this area of economic policy is only the first step towards an explanation. To provide a fuller account, it would be necessary to discuss how the preferences of particular states and firms interacted to produce the outcomes outlined in section 2. In the limited space that is available, only the broad lines of such an analysis can be provided.

The argument so far is that the only available compromise for both states and firms in Europe was to adopt a case-by-case approach which allowed these actors some flexibility. However, behind this consensus lurked some major conflicts of interest. In the highly complex

political system of the EC or wider Western Europe, power is relatively dispersed between states and firms. Although it might appear that European technology policies have mainly played to the interests of the large European IT firms, it would be wrong to push this argument too far. In fact, despite the visibility of Franco-British conflict over technology policy, the main conflicts have been as follows: first, between mainly small states who are heavily dependent upon FoFs for their presence in high technology and the large states who have attempted to promote their national champions as European champions; second, between states in general, who have increasingly seen local content rules as in their interests, and large firms (including European-owned firms), who naturally prefer to avoid such conditions for access. Neither large states nor large firms have consistently dominated policy outcomes.

The 'small state position', as exemplified by Ireland, which is that ownership should not be important in setting policy, has been relatively successful because Britain and to a lesser extent Germany have supported it. In part, this is also due to the norm in the EU that the interests of smaller states should not be overlooked. In a similar vein, initial criticism that the bulk of the funding of the European programmes was going to the major IT firms located in the major states resulted in efforts to divert funding towards smaller firms and states. (Mytelka 1991a: 190) As a result, the preferences of the large national champions and their usually supportive governments have not always predominated.

Second, states have at times had an important autonomous impact upon policy outcomes, in part because large firms have not always agreed between themselves. Given the natural suspicion of ICL after the Fujitsu takeover on the part of many other European firms and governments, the willingness of the UK government to argue forcefully that it be allowed to continue as an important participant in European programmes was probably crucial.<sup>13</sup> The ability of European states to insist that FoFs locate sufficient local content (whether in terms of R&D or production or both) in the host economy, something to which local firms may be indifferent, also

suggests that policy is more than the mirroring of corporate policy preferences. This may be because high levels of unemployment have become at least as pressing a policy matter for European governments as the fortunes of national champions.

One reason for a weak consensus among large firms on the details of technology policy is that the sensitivity of firms to the sharing of proprietary technology with competitors reduces the scope for common interests. Firms may prefer narrow alliances with trusted partners than participation in national or regional consortia which may have broader objectives (such as local technology diffusion). Shared technological weakness vis-à-vis US and Japanese rivals seems to have produced a consensus amongst European IT firms for moderate trade protection, but there is no similar consensus for wholesale technological protectionism. On the contrary, the very weakness of European IT firms has tended to push them towards technological collaboration with US and Japanese firms.

At the European level, national governments and the Commission may sometimes be more able to resist the demands of national champions than of foreign MNCs. Large, established MNCs such as IBM, Ford and GM, with operations spread much more evenly over Europe than the national champions, can often enjoy more cross-governmental support within European forums. In the words of Hans-Olaf Henkel, CEO of IBM Europe, 'IBM is more German than the Germans, more French than the French, and more British than the British'. The Commission can also play a role in this regard. In recent discussions on information networks in the EU, while the major countries nominated national champions for the preliminary working party (the UK nominated ICL), the Commission nominated IBM.<sup>14</sup> Over time, as Japanese FDI in Europe diversifies towards other European countries, we are likely to see growing acceptance of Japanese firms as insiders on a cross-European basis. It is not clear that the national champions can easily overcome this disadvantage.



FoFs may also engage in the kind of lobbying with single host states that national champions have traditionally excelled in. Over time, rising unemployment and growing state frustration with coddled and uncompetitive national champions has made this easier, with states becoming more willing to compromise on the issue of foreign investment in strategic sectors and technological autonomy. This is even true for France. In early 1992, the French government approved the purchase by IBM of a strategic stake in Bull, the French state-owned computer maker, and technical and marketing agreements between the two firms (the Japanese firm NEC already had a similar arrangement with Bull). This provided the French firm with access to IBM's RISC chip technology, and to IBM's collaborative alliance with Apple and Motorola. Bull has now been slated for privatization, while SGS-Thomson is also collaborating with IBM on chip technology. (*Financial Times* 29 January 1992: 24). The national security state has eroded substantially, although it has not been replaced by a European security identity. This has made it easier for MNCs originating from third countries to become 'policy insiders'.

The result of these factors is an emerging policy consensus in Europe to move away from policies which discriminate based upon ownership towards policies which see location as the primary consideration. This was evident in the late 1980s in the treatment of transplant production by Japanese automobile firms, and it has become evident in the treatment of FoFs in European and even some national technology programmes. In practice, this has meant that local content rules are applied to FoFs only, although in the long run, rules may be applied regardless of whether the firm is foreign or European-owned. Local content rules in technology programmes means that participating firms should have substantial local R&D facilities which are directly involved in the research programme and which actively foster the diffusion of skills and technology throughout the host economy. Additional requirements may be significant production facilities within the nation or region providing the funding, and the ability to source locally and promote the diffusion of technology in supplier industries. In the latest European Framework Programme, in which

Japanese firms will officially be allowed to participate for the first time, FoFs will even be able to participate in some consortia without providing local R&D content, but will be required to do so if they wish to receive European funding.<sup>15</sup>

Until now, however, Japanese firms have been essentially excluded from European programmes, whereas even relatively small US FoFs with a limited local European presence have gained access (table 1). This suggests that factors other than the difference in the degree of globalization/localization of US and Japanese firms have influenced outcomes. In some sense, Europe has tended to treat US firms in general, not just large insiders like IBM and Ford, as part of the relevant policy community, but have not treated Japanese firms similarly. The most likely explanation is Europe's deep political, economic and military relationship with the US, which goes beyond inter-governmental relationships. That is, not only are important countries like Britain, Germany and the Netherlands unlikely to wish to antagonize the US government on this issue, but there appears to be a broader perceived community of interests between European and American societies, including firms. There is no comparable perceived community of interests between Europe and Japan, which helps to explain the greater difficulty its own firms (particularly smaller ones) have had in obtaining insider status within Europe.

## **5. Conclusion**

Rather than summarize the foregoing argument, this conclusion will draw out some implications for different theories of IPE. The first is that realist theories, which focus on the security interests of the national state (Waltz, 1979), cannot easily account for the way in which corporate and state interests interact to produce a differentiated pattern of outcomes in European technology policy. Greater attention to the impact of transnational corporate alliances and FDI in the policy process is crucial for understanding the way in which policy in Europe has evolved.

Pluralist or society-oriented theories of state policymaking can allow for the impact of sub-state agents upon state policy. (Milner 1988; Moravcsik 1993) However, 'corporate diplomacy' of

a thoroughgoing kind is rarely allowed for in society-based models of foreign policymaking, which do not usually consider transnational influences on policy. For example, Fujitsu's careful treatment of ICL was an important factor in reducing opposition to ICL's participation in European consortia, and in the British government's ability to defend ICL in European forums. Similarly, IBM's array of alliances with different European IT firms and its strong presence across the various countries provides it with considerable influence in European corporate and government circles, including the Commission. Where powerful actors disagree, apparently weaker actors in technology policy such as small states, the Commission, and foreign firms have a greater influence on policy outcomes.

This suggests that the Stopford and Strange model of 'triangular diplomacy', in which firms and states are treated as actors of equal status in a global economy, may be preferable to either the realist or pluralist models of policymaking. (Stopford and Strange 1991) The main difference with traditional pluralist models is that here MNCs are seen as influencing the policy process through direct bargaining with host as well as home governments and perhaps with supranational institutions. This model diverges from realist and pluralist models in arguing that these both overplay the role of the national actors relative to transnational firms. Yet it has in common with both a focus upon the interplay of interests. There is good reason to think, however, that interest-based models of IPE are not wholly adequate.

First, even if we allow an important role for corporate interests, it is at least as difficult to predict with any accuracy corporate preferences as to predict state preferences in technology policy, given the large number of considerations which go into corporate strategy. This creates a considerable problem for theorists. Second, there appear to be factors at work other than a simple cost-benefit calculation for each possible strategy by individual actors, whether states or firms. Why, for example, should many large Japanese firms with a much greater European presence than some smaller US firms have been excluded, while the latter have been admitted to R&D

programmes? This might be due to the length of time which individual firms have had a local presence in Europe. Yet although it is certainly true for Japanese firms on average, this cannot explain why relatively recent American arrivals have found it easier than their Japanese counterparts to become insiders. European fears about the high degree of vertical integration of Japanese firms, and their close relationships with traditional suppliers, has contributed to their exclusion. Divergent corporate cultures have contributed significantly to outcomes. Another factor could be that Japanese firms may not enjoy similar access to established networks of influence of which even newly arrived American firms can take advantage. Finally, the role of cultural difference could be important in providing American firms with an advantage in working through European networks and corporate consortia.

The above considerations raise difficult issues concerning the relationship between the gaining of insider status by individual firms and broader economic and cultural factors, which will require much additional research. It also suggests that globalization is a much more complex phenomenon than 'stateless' firms competing for market share and political influence in various jurisdictions. FDI not only reflects changing markets and production structures in certain industries, but it also embodies and is constrained by deeper cultural and historical factors. The relative weakness of European-Japanese societal linkages compared to European-American linkages seems to play an important part in the explanation of Japanese firms' exclusion from European programmes.

A final point is that interest-based models rely upon the ability of the scholar to establish the identities of agents. Yet this is increasingly difficult, at least in Europe, as globalization has made the identification of 'truly European' firms increasingly problematic. (Dunning 1993; Humbert 1993; Ostry 1990; Julius 1990) Indeed, there is little agreement as to what a truly European firm would actually look like. Large European firms, like their American and Japanese counterparts, are still predominantly owned and managed by nationals of their home country.

However, there are many, particularly those from smaller European countries, whose assets, production, sales and increasingly their R&D lie outside the home base. Even for larger countries like the UK and Germany, the long history of FoF participation in their economies has complicated the issue of European-ness in the context of the deepening of integration in the 1980s. Put differently, the economic and social identity of 'Europe' has always been more diffuse than that of the US, but globalization has made this much more so. In turn, exclusionary technology policy is difficult to pursue consistently. Critical attention to the manner in which perceived identities evolve over time is important to an understanding of European policy in this and other areas.

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## Footnotes

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<sup>2</sup> These firms were GEC, ICL and Plessey from the UK; Bull, CGE and Thomson from France; AEG, Nixdorf and Siemens from Germany; Olivetti and Stet from Italy; Philips from Holland.

<sup>3</sup> The enhanced powers of the Commission to promote competition and to restrict the ability of member states to provide aid and discriminatory procurement in favour of national champions made a European industrial policy a priority for interventionist countries such as France.

<sup>4</sup> Due to space limitations, this article will not discuss US and Japanese policies in any detail.

<sup>5</sup> *Agence Europe*, 6 September 1990, p.7. The objective of JESSI was to produce static and dynamic random access memory chips (SRAMs and DRAMs) and logic chips using 0.3 micron feature sizes by 1995.

<sup>6</sup> IBM interview, 28 February 1994.

<sup>7</sup> Fujitsu now owns 80% of ICL, though even before this had transferred technology to the British firm on a long-term cooperative basis.

<sup>8</sup> *Nature*, 360, 10 December 1992.

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<sup>9</sup>IBM interview, 28 February 1994.

<sup>10</sup>Given space constraints, the role of the Commission will not be examined, but it is fair to say that in such a sensitive area of policy its role has been relatively weak.

<sup>11</sup>Analogously, Helen Milner (1988) has demonstrated that rising levels of economic interdependence and international production have led firms to support more open trade policies.

<sup>12</sup>Interviews, Tokyo, November-December 1994.

<sup>13</sup>A similar argument might be made concerning the UK government's support of Japanese automobile 'transplants' in the EC against French opposition.

<sup>14</sup>IBM interview, 28 February 1994.

<sup>15</sup>Interviews, Tokyo, November-December 1994.