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# Who's in the cockpit? The political economy of collaborative aircraft decisions

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## ABSTRACT

Few issues are more important to states' security than their ability to acquire modern weaponry. Today, advanced industrial democracies possess three options for doing this. In principle, they can: autonomously produce their own armaments, import them from foreign suppliers, or collaborate with other states to co-produce common weapons. In this study, we examine the factors driving state decisions to either collaboratively or autonomously procure advanced weaponry. To this end, we analyse French and British decisions about whether or not to collaborate in the domain of combat aircraft. To preview our conclusion, we draw on the Varieties of Capitalism approach to argue that the underlying institutional structures of national political economies explain why otherwise similar states have enacted divergent policies. Within *Étatist* France, dense exchanges and close relationships within elite networks enable large defence contractors to veto government decisions that contravene their preferences. By way of contrast, Britain's liberal market economy empowers its government to impose its preference for collaborative projects onto aircraft manufacturers, even when the latter attempt to lobby in favour of promising national designs. Thus, what variety of capitalism a state practises determines whether governments or contractors occupy the metaphorical cockpit when it comes to making procurement policies.

## KEYWORDS

Defence industries; armaments collaboration; industrial collaboration; aerospace; varieties of capitalism; comparative political economy; security economy.

I. INTRODUCTION<sup>1</sup>

Few issues have been more important to states' security than their ability to acquire modern weaponry. Today, advanced industrial democracies possess three options for doing this. In principle, they can: autonomously produce their own armaments, import them from foreign suppliers, or collaborate with other states to co-produce common weapons. Because of their symbolic importance and military value, armaments collaboration is inherently problematic in an anarchic international system. However, one of the most dramatic developments in the field of armaments has been the rise of international, and especially intra-European, collaboration over the past several decades.<sup>2</sup> Nevertheless, despite the overall growth in armaments cooperation, individual states with comparable resources vary significantly in terms of both the scope and focus of their collaborative activities.

In this study, we seek to answer the hitherto unexplored question of what factors drive government decisions on international armaments collaboration. Doing this will provide scholars and policymakers alike with new insights on the continuing evolution of international armaments cooperation – a form of defence-industrial policy that is rapidly becoming a favoured option by governments in Europe, Asia and North America. Moreover, besides elucidating the 'high politics' of contemporary arms procurement, our analysis will also facilitate a differentiated understanding of a high-tech industrial sector – the production of armaments – that is neglected in much of the literature on comparative political economy because of its unique status vis-à-vis both states and markets.

To achieve these objectives, we employ a historic process tracing analysis to explore French and British decisions about whether or not to collaborate in the domain of combat aircraft. Combat aircraft are amongst the most prestigious means whereby modern states can project power, and France and the United Kingdom (UK) are two amongst a small group of states that have a plausible *choice* whether to collaborate, or not. On the one hand, both states possess the necessary economies of scale and combination of airframe and jet engine manufacturers needed to build aircraft autonomously. On the other hand, however, collaboration should result in weaponry that is both better and more cost-effective than national alternatives because of the advantages achievable through shared research and development (R&D) expenditures and improved scale and learning economies.<sup>3</sup> Thus, while France and the UK can achieve efficiency gains by moving from autarchy to collaborative interdependence, making such a transition has not yet become a necessity.<sup>4</sup> Hence, French and British decisions about whether to collaborate on this form of weaponry are neither over- nor under-determined.

A cursory review of the historic record reveals that the UK has more consistently pursued efficiency gains through collaboration, while France has privileged continued national autonomy. Given this reality, our article explores, firstly, the factors driving the UK's commitment to collaborative aircraft projects and France's infrequent participation in such endeavours. Central to our inquiry is, secondly, determining whether corporations or governments wielded greater influence over decision-making processes. In other words, we aim to ascertain who – governments or large defence contractors – sits in the proverbial cockpit when it comes to deciding whether to build aircraft collaboratively or on a national basis.

To preview our conclusions, careful analysis shows that simple arguments based on the roles of either predominant governments<sup>5</sup> or over-powerful defence contractors<sup>6</sup> cannot adequately account for states' behaviour towards collaborative aircraft projects. While the government shaped aircraft decisions in the UK, defence industries achieved their preferences in France. At first glance, the two countries are so similar in the defence-industrial domain that there appears to be no compelling reason for why France's Dassault and Snecma S.A. should be more successful in achieving their desired ends than the UK's British Aircraft Corporation (BAC)/British Aerospace (BAe) and Rolls-Royce. This article demonstrates that the answer to this puzzle can be found in the realm of comparative political economy.

Based on the 'Varieties of Capitalism' (VoC) approach,<sup>7</sup> we argue that the underlying institutional structures of the states' political economies explain the varying policies pursued by states that are otherwise similar. *Étatist* France is endowed with multiple institutions and organizations that facilitate non-market coordination by defence industries. In particular, the Ministerial Delegation for Armament (DMA, renamed the DGA in 1977) shapes aircraft policy by giving armaments producers greater input into policymaking processes. The dense exchanges and close relationships within the French elite network enable large defence contractors to veto government decisions that contravene their preferences. By way of contrast, Britain's liberal market economy deprives defence contractors of supportive organizations such as the DMA/DGA and French-style networks formed on the basis of common educational experiences. As a consequence, the British government can impose its preference for collaborative projects onto aircraft manufacturers, even when the latter attempt to lobby in favour of promising national designs. Thus, French defence contractors possess greater institutional capabilities to shape national policies than their British counterparts, whose domestic political economy deprives them of mechanisms for non-market coordination.

This argument unfolds in four sections, in which we demonstrate the VoC approach's capacity to explain the British and French aircraft procurement policies. To this end, the next section (Section II) provides a brief

overview of the population of cases, which consists of the four collaborative combat aircraft projects undertaken since the mid-1960s, in which France and the UK were involved. Then, it builds on mainstream international relations theories to discuss possible explanations for aircraft decisions. The inability of these approaches to account for different policy outcomes leads us, in Section III, to explore a framework of analysis based on an institutionalist understanding of political economy. We consequently embed our framework in the VoC approach, which provides a firm-centred political economy ideally suited to analysing interactions between governments and defence contractors. The empirical analysis in Section IV, then, proceeds in two steps: first, we point towards the distinct institutional structures underlying France's and the UK's political economies in the defence-industrial sector; second, we apply this explanatory factor to four aircraft projects. Therefore, it is in this section that comparative process-tracing demonstrates how institutional structures shaped states' decisions on whether or not to collaborate.

## II. EXPLORING AND EXPLAINING COLLABORATION IN COMBAT AIRCRAFT

What motivates states to either collaborate or autonomously develop advanced weaponry? While the economic advantages of collaboration are frequently evoked, states can alternatively build weapons autonomously or purchase them from abroad. However, as a review of procurement policies indicates, advanced industrial states can and do behave in a wide variety of ways.<sup>8</sup> To determine the sources of this variance, we focus on how states decide whether or not to collaborate on combat aircraft. Few states offer better opportunities for examining which factors shape procurement decisions than France and the UK. In terms of defence-industrial capabilities, both states possess the technical capabilities and minimal-scale economies needed to build aircraft autonomously. However, both states' domestic defence markets are also sufficiently small that the gains theoretically obtainable through collaboration are significant.

As a consequence, France and the UK face a *real* choice about whether to collaborate or not on any given project. When combined with the fact that both states pursue similar political-military objectives and possess comparable military capabilities, this identical degree of freedom for political choice provides nearly *ceteris paribus* conditions for analysing how domestic and international factors influence policy outcomes. As summarized below, France and the UK have attempted, with varying results, to collaborate on combat aircraft on four occasions:

1. Anglo-French Variable Geometry Aircraft (AFVG): British and French defence ministers signed a Memorandum of Understanding (MoU) to

- jointly develop and produce a cutting-edge variable geometry combat aircraft in 1965. The project collapsed when France withdrew in 1967.<sup>9</sup>
2. SEPECAT Jaguar: Building on the same 1965 MoU as the AFVG, the UK and France collaborated on a lightweight jet trainer. The project was later transformed into a ground attack aircraft, leading to around 600 aircraft entering service.<sup>10</sup>
  3. PANAVIA Tornado: The UK, West Germany and Italy collaborated on a multi-role combat aircraft (1969–82). France briefly considered joining the project, but ultimately demurred. Around 900 aircraft were produced.<sup>11</sup>
  4. Eurofighter: The UK, West Germany and France agreed to collaborate on a future aircraft (1983). After France's withdrawal (1985), the UK, West Germany and Italy launched the Eurofighter project, and were joined by Spain in 1988.<sup>12</sup> The goal is to produce 700 aircraft.

As can be observed from the above descriptions, the UK proved more reliable as a partner on combat aircraft projects than France, which regularly defected from projects on which it had initially agreed to collaborate. In attempting to account for this variance, one logical step is to examine the preferences of key stakeholders in each state's policymaking process. Within this context, governments and firms are the pivotal actors whose preferences should be ascertained because the former purchase weaponry that the latter must develop and produce.<sup>13</sup>

Perhaps surprisingly, an investigation of policy documents, political declarations and, where possible, archival records reveals that French and British political leaders consistently favoured collaboration over either building national aircraft or purchasing foreign ones. In their eyes, collaboration provided a means for simultaneously maintaining employment in marginal districts, sustaining domestic defence-industrial capabilities and obtaining weaponry more cost-effectively than in national projects.<sup>14</sup> From a geo-strategic perspective, leaders also viewed defence-industrial collaboration as a means of both preserving a degree of defence-industrial autonomy and reaffirming ties with key allies.<sup>15</sup> Originally, this collaborative preference was articulated nearly simultaneously in both states, being adopted in 1963 by France during negotiations with West Germany over the Élysée Treaty and in 1964 by the UK with the Plowden Report on the British Aircraft Industry.<sup>16</sup> Over time, both right-wing (Georges Pompidou, Michael Heseltine and John Major)<sup>17</sup> and left-wing (François Mitterrand and Tony Blair)<sup>18</sup> political figures in the two countries reiterated their commitment to collaboration.

While government preferences have been identical and stable on a cross-country basis, so too have those of firms. However, whereas French and British governments favoured collaboration, their firms uniformly preferred national projects. For corporate executives, national projects offer

significant advantages in terms of maintaining broad-based technical capabilities and preventing potential corporate rivals from acquiring proprietary technologies or production processes.<sup>19</sup> Otherwise, prime contractors can find themselves gradually relegated to the inferior status of sub-systems suppliers and niche producers.<sup>20</sup>

In addition to these widely-cited reasons for preferring national projects, leaders of French and British corporations have also expressed their belief that simple national aircraft are more likely to win lucrative export contracts than more sophisticated collaborative ones. In the UK, industry's preference for national aircraft was expressed in numerous corporately-financed design studies submitted to successive governments in a vain effort to convince them to develop an entirely British-built lightweight fighter.<sup>21</sup> In France, the preferences of Dassault and Snecma were expressed in their successful lobbying to convince them to privilege national projects.<sup>22</sup> For these reasons, firms in both states consistently sought to convince governments to domestically develop lightweight combat aircraft and supported collaboration only when this was impossible. Table 1 illustrates governmental and firm preferences in France and the UK.

Because governments and corporations have conceptualized their interests in similar terms in each state, preferences cannot be relied upon to explain variations between French and British policies towards aircraft collaboration. With different preference constellations ruled out as *the* driving force, applying two prominent international relations theories – realism and liberalism – to the cases at hand is the next logical step in attempting to account for the divergent collaborative outcomes. In principle, each theory's logic is parsimonious and its predictions are unambiguous about the determinants of states' weapons acquisition choices. Moreover, prominent scholars have already applied both of these two theories to the issue of international armaments cooperation and extolled their explanatory power.<sup>23</sup>

Based on the premise that a state's behaviour should be a function of its position in an anarchic international system, realism assumes that governments will enact policies designed for the sole objective of maximizing their security vis-à-vis military threats.<sup>24</sup> Within this context, a survey of

**Table 1** Preference orders of main stakeholders in collaborative combat aircraft projects

Stakeholder preferences about collaboration	
Governments	Firms
Collaboration	National programme
National programme	Collaboration
Import	Import

realist thought yields three predictions about how states will approach the issue of armaments collaboration. First, because states are the dominant international actors and obey the logic of security maximization, governments will play the primary role in determining whether or not to acquire weapons collaboratively.<sup>25</sup> Second, states are likely to pursue defence-industrial autonomy when feasible because the future behaviour of allies is unpredictable.<sup>26</sup> Third and finally, due to their comparable military assets and analogous positions in the international system, France and the UK can be expected to implement similar defence-industrial policies.<sup>27</sup>

When compared with the empirical record of the four aircraft projects, realism's predictive power appears mixed at best.<sup>28</sup> While a desire to maintain a degree of defence-industrial independence is evident in both countries, one cannot observe a uniform pull towards defence autonomy. Furthermore, in terms of their approaches to individual aircraft projects, France and the UK have pursued distinct policies. While government preferences did indeed prevail in the UK, such was rarely the case in France, where corporations appear to have occupied the metaphorical cockpit of the decision-making process. Hence, contrary to Robert Gilpin's expectations, politics did not determine economics in France.<sup>29</sup> The fact that this outcome is problematic from a realist point of view suggests that the approach cannot account for French behaviour, even if it provides a promising point of departure for analysing the British trend.

In stark contrast to realism's focus on states' pursuit of security, liberal approaches to defence-industrial policymaking emphasize the struggle of societal actors to improve their material welfare.<sup>30</sup> Within this context, liberal theorists consider defence contractors to be the most powerful and best-organized actors when it comes to developing defence-industrial policies.<sup>31</sup> Andrew Moravcsik, for example, argues that, '[p]ressure from economic special interests tends to dominate security concerns, even in "least likely" cases like military procurement'.<sup>32</sup> If this is the case, then states will pursue the national projects that firms favour, rather than collaborative ones preferred by governments.

The empirical record of French and British aircraft collaboration imperfectly corresponds to these predictions.<sup>33</sup> While liberalism provides a persuasive approach for the French case, it cannot explain the British decisions, where government preferences consistently prevailed. Why were two British firms – BAC and Rolls-Royce – less capable of achieving their objectives than their French counterparts – Dassault and Snecma – that were neither larger nor wealthier? This conundrum suggests that liberalism is no more capable than realism of explaining the variation between British and French combat aircraft decisions.

In sum, despite possessing equivalent resources and occupying similar positions in the international system, France and the UK pursued distinct policies towards combat aircraft collaboration. As we have shown,

preferences of societal actors, which are identical on a cross-country basis, cannot explain the variance between these two states. Likewise, two prominent international relations theories – realism and liberalism – can each, at best, explain only one state's behaviour. Judging by the inability of preference constellations or mainstream international relations theories to account for when and why states collaborate on armaments, it is necessary to resort to other frameworks of analysis. In the following section, we examine whether distinct domestic institutions might resolve the puzzle of why states' behaviour differs systematically, despite their facing similar material constraints and opportunities.<sup>34</sup>

### III. BRINGING INSTITUTIONS IN: A COMPARATIVE POLITICAL ECONOMY OF ARMS PROCUREMENT

Because neither realism nor liberalism can fully account for the differences in British and French aircraft decisions, we apply the analytic tools provided by the 'Varieties of Capitalism' (VoC) school of analysis to better explain these defence-industrial outcomes. First articulated by Peter Hall and David Soskice, the theoretical work on the VoC has built on pre-existing research currents in comparative political economy to offer an analytic framework capable of explaining how differences in domestic economic institutions drive states to adapt to structural changes (such as globalization, EU legislation or economic crises) in distinct ways.<sup>35</sup> A core insight of VoC is that firms' strategies are influenced by the nature of national-level institutions for coordinating economic activity. A key form of coordinating institution, particularly in sectors that produce public goods or utilities, are those that link governments and firms.

Compared with other approaches, VoC should be particularly well suited to explaining defence-industrial outcomes in France and the UK because of its success in accounting for why national economic and public policy outcomes differ even when domestic actors pursue similar objectives (profitability, growth and stability) in multiple countries.<sup>36</sup> Considering that the preferences of actors (firms and governments) are essentially identical across both states, employing the VoC approach heeds Peter Gourevitch's advice that 'if we hold preferences constant, we can show how changing the institutions produces different outputs'.<sup>37</sup> We, therefore, model aircraft decisions as a product of governments and defence contractors with specific preferences interacting within distinct institutional contexts.<sup>38</sup> As will be shown in the following pages, institutions shape which actors – governments or firms – occupy the proverbial cockpit (the leading role) in defence-industrial policymaking.<sup>39</sup>

Building on prior VoC scholarship, three building blocks – actors, rules and institutions – define our analytical framework. Firstly, the firm as

the central actor is analysed from a relational point of view, where corporate success depends on firms effectively managing their interactions with other actors.<sup>40</sup> For example, a defence firm that aims to develop, produce and export combat aircraft needs to interact with suppliers, clients and public authorities. While this coordination may be primarily determined by the price (or, *the* market), it can be also based on personal contacts and trustful exchanges between the firms, suppliers and clients.

Secondly, our analysis of rules focuses on national political economies, which can be ideal-typically distinguished according to how firms resolve coordination problems.<sup>41</sup> The key issue at stake is how to acquire credible information on the future behaviour of other actors. In liberal market economies, such as the UK, this coordination takes the form of contractual relations: '[F]irms coordinate their activities primarily via hierarchies and competitive market arrangements.'<sup>42</sup> The market provides the most important source of information. In contrast, coordination problems can also be resolved by strategic or non-market forms of organization.<sup>43</sup> In France, for example, statist governments play an extensive role in planning, structuring, building and governing firms.<sup>44</sup> Such a political economy is normally characterized by numerous non-market coordinative institutions facilitating strategic exchanges between actors.<sup>45</sup>

Thirdly, these different rules and practices give rise to the distinct institutions and organizations that characterize every national economy. These enable or constrain certain forms of interaction between governments and firms. While markets and hierarchies are important components of every national economy, corporatist or étatist economies feature more formal and informal rules that reduce uncertainty and facilitate credible commitments. These institutions and organizations – which are basically absent from liberal market economies – normally serve three purposes: '(i) the *exchange of information* among the actors, (ii) the *monitoring* of behaviour, and (iii) the *sanctioning* of defection from cooperative endeavours'.<sup>46</sup> The presence of such institutions enables firms to coordinate strategies in a manner that is infeasible under normal market conditions. Figure 1 illustrates this comparative political economy of arms procurement.

In sum, the coordinating institutions of national political economies confront firms with specific opportunities and constraints, which, in turn, encourage these companies to pursue corporate strategies that take advantage of opportunities and circumvent constraints.<sup>47</sup> For example, a French defence contractor can be expected to pursue a different strategy than a British one to achieve relatively similar objectives, such as profits and market share. Both the individually selected strategy and its chances for ultimate success depend on the presence or absence of certain institutions and organizations.<sup>48</sup>

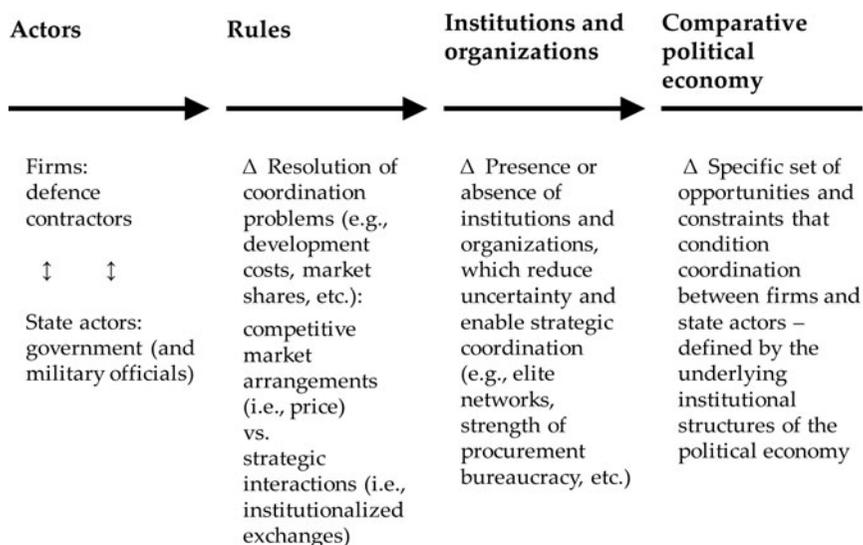


Figure 1 A comparative political economy of arms procurement.

#### IV. EXPLAINING COMBAT AIRCRAFT DECISIONS: CORPORATIONS, GOVERNMENTS AND THE INSTITUTIONAL UNDERPINNINGS OF THEIR INTERACTIONS

While the UK is clearly a liberal market economy with a strong reliance on market mechanisms, France is a paragon of statist (étatist) planning.<sup>49</sup> This basic differentiation between the institutional structures of each national political economy has powerful implications for how firms coordinate their activities with the government in each state. Whereas coordination occurs via arm’s-length price negotiations and contracting in liberal market economies such as the UK, strong informal elite networks result in firms and the government interpenetrating each another’s decision-making processes in statist economies such as France. These institutional differences, which first emerged during the industrial revolution, have generated patterns of defence-industrial policymaking that have diverged consistently over time.<sup>50</sup>

In the UK and other liberal market economies, market relations are characterized by the ‘arm’s-length exchange of goods or services in a context of competition and formal contracting’.<sup>51</sup> Deliberate state planning plays little role in the market and the government ideally remains aloof from freely interacting consumers and producers. Elite networks in such countries are highly fragmented (regardless of how elitist educational systems may

be) both because formal competition regimes preclude collusion amongst elites and because the lack of inter-sectoral (that is, public-private) career mobility results in early career decisions canalizing individuals into sector-specific elite networks.<sup>52</sup> In industrial sectors, such as armaments, where the state itself is a consumer, this fragmentation of elite networks forces firms and the government to coordinate their activities through competitive tenders, formal regulation and detailed contracting.<sup>53</sup> In other words, corporate strategies in liberal market economies focus less on indirect contacts with government officials, and more on competitive market arrangements. Both the cause and the consequence is that there is a lack of institutional support for non-market forms of coordination.<sup>54</sup>

Conversely, the defining characteristics of statist countries such as France are a high degree of interpenetration of state and economic elites, such that each group participates in the other's internal decision-making processes.<sup>55</sup> In France, the institutional foundations for this system lie in the state apparatus' meritocratic recruitment process and the highly permeable boundaries between the state and the economy.<sup>56</sup> Members of France's elite network are first selected in competitive examinations to study at *grandes écoles* and then recruited into the state administration's upper echelons (the so-called *grand corps*).<sup>57</sup> Because of the French state's predominant role in providing industrial credit for and, in many cases, owning (outright or partially) large firms, members of France's civil service elite are frequently 'parachuted' into leadership positions within corporations. As a result of such dynamics, corporate leaders and public policymakers possess an inherent capacity for coordinating their activities and influencing each other's internal decision-making.

At a fundamental level, the different institutional structures that characterize liberal market and statist economies oblige firms to adopt different strategies. In liberal market economies, individual firms can make major decisions without direct state interference so long as they refrain from violating formal legal and regulatory controls. However, this apparent freedom on the part of corporate decision-makers has as its corollary corporate elites possessing few means for influencing public policymaking in ways favourable to themselves. By way of contrast, governments in statist economies possess the strategic levers needed to direct (hence the term *dirigisme*) firms to adopt specific policies.<sup>58</sup> However, firms also possess greater informal resources for steering public policymaking in ways beneficial to their interests.<sup>59</sup> Large firms regularly capitalize on this relational advantage to harness public resources and institutions for their own private purposes.<sup>60</sup>

Having highlighted the salient *institutional variations* of British and French political economies, we will now discuss how these apply to defence-industrial policymaking.<sup>61</sup> As previous scholarship has demonstrated, the arms industry differs fundamentally from most sectors of

capitalist economic activity.<sup>62</sup> In functioning capitalist markets, a multitude of buyers decide which products to purchase from a large number of sellers. These sellers, in turn, develop products of their own initiative. Firms raise the capital to develop products and consumers collectively decide with their purchasing decisions which production decisions should be rewarded with profits.

In contrast to this classical economic view of how markets function, the nature of the arms industry is such that, according to Merton Park and Frederic Scherer, 'a market system in its entirety can never exist for the acquisition of weapons'.<sup>63</sup> In fact, when examined in detail, none of the preconditions for efficient markets exist in defence industries. States are the major (and only legitimate) consumer of armaments and also exercise the right to regulate domestic firms' exports. However, the monopolist role of the state as a purchaser is, in part, counterbalanced by the absence of competing producers within any given single domestic market.

With only one or two corporations capable of producing a given product, states are frequently confronted with arms producers that are monopolists or oligopolists. As with other forms of market failure, this state of affairs gives rise to information asymmetries that render it very difficult for states to either ascertain the real costs of weapons or control the profits earned by the firms that produce them. To complicate matters further, weapons projects require R&D investments the size of which are so large that they are often impossible to raise from banks or capital markets. As a consequence, states must pay up-front to develop the products they will ultimately purchase.<sup>64</sup>

To sum up, the role of the state is necessarily greater in defence industries than in most other sectors of economic activity. However, defence industries are not alone in their distinctiveness and share many characteristics in common with network industries – energy, railways and postal services – where the coordination dynamics between 'national champion' firms and national governments are equally critical. Notwithstanding their peculiarities, prior research demonstrates that the institutional structures of states' political economies exercise a decisive influence on corporate strategies in network industries.<sup>65</sup>

Considering the similarities between defence and network industries, it should come as no surprise that substantial differences exist between how defence procurement is organized in statist and liberal market economies, despite the fact that states play a primordial role in both types of state.<sup>66</sup> Conceptually, what states must decide is whether the efficient provision of armaments should be guaranteed by close cooperation between government and corporations or, contrarily, keeping them at arm's length from one another. At base, different political economic systems provide distinct responses to this question.<sup>67</sup>

In statist economies, procurement authorities seek to maximize the efficiency of defence industries through deliberate government steering and extensive cooperation between public and private actors. In theory, by cultivating 'national champions' and collaborating with them to penetrate export markets and select critical technologies to develop, public authorities can improve the long-term competitiveness of their defence industries. For public authorities to steer defence industries in this way, civil servants must possess technical expertise, a deep knowledge of the interior workings of firms and extensive contacts within defence industries. As a consequence, in statist economies, there is a deliberate blurring of the roles of public procurement authorities and defence industries.<sup>68</sup>

In liberal market economies, procurement authorities strive to leverage the forces of competition, or at least contestability, to oblige firms to provide products at a reasonable cost. Even though perfect competition may be illusory, the weapons acquisition process in liberal market economies is founded on the principle that competitive pressures should be applied to corporations by encouraging foreign suppliers to bid for contracts and enticing non-defence corporations to enter the market.<sup>69</sup> For such a system to function, it is necessary to maintain a certain distance between the procurement authorities and the defence industries. Within this context, weapons acquisition in liberal market economies is founded on distrust insofar as too close a relationship between government and industry could lead to corporate actors capturing and exploiting government purchasing in their own interests.<sup>70</sup>

Having analysed how different political-economic systems influence the weapons acquisition process, we will now examine the critical *organizational differences* that shape French and British combat aircraft decisions. In terms of defence procurement, the key organizational characteristic of France's political economy is the interaction between the DMA/DGA and domestic arms producers, such as combat aircraft manufacturer Dassault Aviation. To impose centralized statist planning on the Ministry of Defense, French President Charles de Gaulle created the Ministerial Delegation for Armament (DMA, renamed the DGA in 1977) in 1961.<sup>71</sup> Because of their comparatively small numbers – between 1,500 and 2,200 – and their recruitment from France's premier engineering school (the École Polytechnique), armament engineers are homogeneous and cohesive. In their dealings with the armed services, armament engineers benefit from military rank and accelerated promotions, with more than 10 per cent holding the rank of general.<sup>72</sup>

More specifically, the DMA/DGA derives its authority and thus its power position from (1) its direct access to the Minister of Defense; (2) its control over every stage of the weapons development process from basic research to series production; and (3) its custodianship over France's

state arsenals and research facilities.<sup>73</sup> The ubiquity of DMA/DGA personnel in firms and the state ensures permanent informal exchanges between both sets of entities. For instance, on detached service, DMA/DGA personnel play a prominent role managing private defence contractors, such as Dassault Aviation, which featured 16 armament engineers occupying key posts in 1990. Moreover, firms such as Dassault also recruit much of their top leadership, including Dassault's past two Directors of International Affairs, from amongst the DMA/DGA's former personnel.<sup>74</sup> State-owned defence firms, such as engine manufacturers Snecma and Turbomeca, feature an even higher degree of DMA/DGA penetration, recruiting their chief executive officers (CEOs) from within its ranks.<sup>75</sup> At the same time as representing the state within firms, these managers take advantage of their dense networks within state organizations to promote corporate interests. In short, the widespread intermingling of personnel facilitates non-market coordination in France.

If French defence procurement institutions are powerful, centralized and expert, the UK's are weak ciphers, administering the commercial interactions between military services and companies.<sup>76</sup> Unlike the French, non-technically trained civil servants run British procurement institutions. Because they lack independent technical expertise, British procurement institutions fulfil only the intermediary role of transmitting requirements to industry and overseeing industry's efforts to meet them. George Edwards, the dominant figure of Vickers Aviation and BAC between 1945 and 1975, observed the technical superiority of DMA/DGA officials vis-à-vis their British counterparts:

The French senior civil servants were drawn from chaps who had been put through the l'École Polytechnique system. The result was you got on one side British Greek scholars de luxe who were absolutely ace on what I would describe as public school and Oxford projects, whereas, on the French side, you had chaps who knew what a pound per square inch was.<sup>77</sup>

In the UK, the very different career paths pursued by technically-trained career civil servants meant that few informal ties unite the two professional groups. Thus, weak British procurement institutions and a dearth of organizations facilitating strategic coordination are the principal characteristics of its political economy of arms procurement. Table 2 summarizes the institutional differences between the two countries' political economies.

In conclusion, these distinct institutional underpinnings of the British and French political economies offer a promising explanation for the observable differences in the two states' aircraft decisions. However, to test this explanation, we need to 'dig deeper' into the causal mechanisms of

**Table 2** France's and the UK's political economies of arms procurement

Dimensions of national political economies	France	UK
Actors	Government and large firms	Government and large firms
Rules for how to resolve coordination problems	Étatist structure and predominance of non-market modes of interaction	Liberal market structure and predominance of competitive market arrangements
Institutions	Predominance of one meritocratic network and intermingling between government and large firms	Several competing networks and relatively clear separation between government and large firms
Organizations	Strong role of DMA/DGA and close personal and professional exchanges with large firms	Weak defence procurement organization – only to monitor the functioning of the market

how these decisions actually emerged and what role these institutions – rather than power or preferences – played therein.

### The AFVG: The first abortive collaboration

The 1960s brought home to Europe's arms producers the harsh reality that it was becoming difficult to autonomously develop and produce world-class combat aircraft. Fuelled by superpower investments in R&D and production runs numbered in thousands, aircraft were growing faster and longer ranged, and featured increasingly exotic technologies (such as variable-geometry wings and automatic terrain following). Despite previous successes, British and French political leaders came to believe that collaboration offered the best hope of remaining technologically and militarily competitive. The UK's Plowden Report argued this point in 1964, when it concluded that Britain could only obtain world-class combat aircraft through either collaboration or by importing them from the United States.<sup>78</sup> The cabinet's 1965 cancellation of the over-budget TSR.2 (Tactical Strike-Reconnaissance Aircraft Mach 2) reinforced this point. For its part, France's government recognized that only armaments collaboration would enable it to retain a degree of geopolitical autonomy vis-à-vis the superpowers.<sup>79</sup> In short, Europe's premier aircraft producers had to join forces.

While structural changes in the aircraft industry convinced governments to collaborate, firms continued to prefer national alternatives. France's premier aircraft producer, Dassault Aviation, saw commercial advantages to

be gained from the growing complexity of superpower weaponry. As foreign combat aircraft became increasingly costly and complicated, simple French products would be poised to win a growing share of the international export market.<sup>80</sup> British firms also hoped to retain broad-based industrial capabilities, but by sacrificing complexity for national autonomy. To this end, one of Britain's aircraft producers, Hawker-Siddeley, proposed to domestically (and economically) fulfil the UK's strike aircraft requirements with an upgraded version of its 1950s-era Buccaneer fighter-bomber.<sup>81</sup> Meanwhile, Britain's other major producer, the BAC, clung until the last minute to the hope that the national TSR.2 project would be resuscitated.<sup>82</sup>

Despite corporate preferences, British and French leaders launched Europe's first collaborative combat aircraft programmes in May 1965 with an ambitious Memorandum of Understanding (MoU), stating that the two countries would jointly produce two jet aircraft (detailed in Table 3) – a cutting edge combat aircraft, the Anglo-French Variable Geometry Aircraft (AFVG), and an advanced jet trainer.<sup>83</sup>

British and French political leaders now expected their procurement bureaucracies and firms to cooperate in producing the two aircraft envisioned in the MoU.

From the outset, Britain's BAC collaborated on the AFVG because its government foreclosed the possibility of an autonomous national project by refusing funds to non-AFVG research and ordering the destruction of the existing TSR.2 prototypes, which might serve as the basis of a national project.<sup>84</sup> By way of contrast, Dassault obtained ready support from the DMA in its efforts to substitute a national programme for the collaborative endeavour the French politicians attempted to force upon them. Sharing a common background and densely functioning networks, DMA and Dassault personnel collaborated in their common endeavour to maximize France's indigenous aircraft-producing capabilities and share of international markets.<sup>85</sup>

As the British and French armed forces slowly negotiated the AFVG's exact specifications, the DMA and Dassault joined forces to promote national

**Table 3** Prime contractors of the first collaborative attempt

Anglo-French MoU (1965)	France	UK
Anglo-French Variable Geometry Aircraft (AFVG)	Dassault Aviation SNECMA	British Aircraft Company (BAC) Bristol Aero-Engines
Advanced Trainer	Breguet Aviation Turbomeca	British Aircraft Company Rolls-Royce

alternatives to it. To sabotage collaboration with the UK, the DMA authorized Dassault (in October 1965) to develop an entirely French variable geometry aircraft.<sup>86</sup> Operating in secret and employing as many existing components as possible, Dassault hastily produced the Mirage G in 16 months and at the comparatively low cost of \$35 million.<sup>87</sup> Because of Dassault's haste and the glacial progress of the Anglo-French negotiations, Dassault's prototype was complete by the time the British and the French armed forces agreed on common requirements.

For this reason, Dassault was well positioned by the time the British and French governments agreed on the military requirements and industrial work-share arrangements for the AFVG. Thus, in May 1967, when Dassault learned to its chagrin that it would be the subordinate contractor on the airframe, its leadership decided to sabotage the AFVG. To accomplish this objective, Dassault publicly unveiled the Mirage G at the Paris Air Show, exactly three weeks after the British and the French had agreed on the modalities of building the AFVG.<sup>88</sup> This inauguration of France's national alternative to the AFVG outraged British decision-makers and excited France's nationalistic press, prompting *Le Figaro* to comment, '[T]his aircraft is the finest, sleekest, most elegant and purest that one can see.'<sup>89</sup> In the aftermath of the Paris Air Show, Dassault and the DMA successfully lobbied French elected leaders to the effect that Dassault could unilaterally develop a better and cheaper aircraft than the AFVG. On 22 June 1967, French Minister of Defense Pierre Messmer informed the British government about the decision.<sup>90</sup>

The principal reason for the AFVG programme's failure was Dassault's and the DMA's collusion to supplant an Anglo-French aircraft with a purely national project. Although Dassault's opposition to the AFVG motivated its behaviour, it would not have been able to build the Mirage G prototype without the funding or engines provided by the DMA, and it would not have been capable of displaying its product at the Paris Air Show (a government-orchestrated event) without the DMA's permission. In short, France's existing institutional structures facilitated non-market strategic interactions between Dassault and the DMA, which ultimately subverted the government's policy of collaboration. Such an institutional underpinning was unavailable to BAC once the British government destroyed its existing national prototype (the TSR.2) and starved it of R&D funds not associated with the AFVG. While BAC was obliged to collaborate to survive, the DMA gave Dassault the opportunity to build a national product.<sup>91</sup>

As this case study reveals, neither realist nor liberal analytic frameworks can account for the AFVG's fate. While the French decision-making processes reflect the preferences of a powerful domestic corporation, the British case demonstrates how the strongest societal interests were not translated into government policy. In this context, a liberal approach seems

to tell us only one part of the story and cannot account for British decision-making. By way of contrast, realism is faced with the opposite challenge: political decision-makers failed to impose their preferences in France and their actions are, therefore, incompatible with the realist notion that high politics drives defence-industrial outcomes.<sup>92</sup> Consequently, the two countries' collaborative decisions are not only dissimilar, but even fundamentally opposed. This suggests either a subordinate role of the state's international power position or, at least, the causal importance of intervening factors (as, for example, threat perception, state structure), such as those introduced by neoclassical realists.

### **The Jaguar: From collaborative success to commercial failure**

The origins of the Anglo-French Jaguar programme can be traced back to the same 1965 MoU as the AFVG. However, unlike the AFVG, the Jaguar was developed to completion and served with the British and French air forces, as well as those of four export clients. Being the only case when France remained committed to a collaborative combat aircraft, the Jaguar superficially poses a challenge for a theoretical approach stipulating that institutions enhance the ability of French firms to achieve their preferences for *national* projects. However, the incentive structure facing the firm responsible for the Jaguar, Breguet Aviation, differed from that affecting its larger domestic rival, Dassault. Once a powerful and autonomous aircraft producer, Breguet Aviation struggled in the post-war era because it was unable to develop and produce aircraft on an independent basis.<sup>93</sup> Thus, while Dassault preferred national projects and sabotaged collaboration, Breguet had no alternative but to collaborate with Britain's BAC.<sup>94</sup>

Just as the DMA assisted Dassault in its opposition to the AFVG, it supported Breguet in its advocacy of the Jaguar. In this case, Breguet enjoyed exceptionally close relations with the DMA via its president, General (Retd) Henri Ziegler. An aeronautical engineer and a graduate of France's École Polytechnique, Ziegler had been deeply enmeshed in the air force technical directorates that preceded the DMA (founded in 1961). From this background, he went on to have a career mixing positions of political responsibility (including cabinet-level positions) and commercial activities (director of Air France and CEO of Airbus). As long as he remained at the head of Breguet Aviation (until 1968), Ziegler ensured that Breguet and the DMA cooperated smoothly with their British counterparts.<sup>95</sup> Ziegler's role in France's combat aircraft decisions reflected the institutional setting of the country's political economy and his career was prototypical within this context.

Meanwhile, Britain's Royal Air Force (RAF) responded to the AFVG's cancellation by demanding that the trainer aircraft envisioned in the 1965 memorandum be transformed into a ground-attack aircraft capable of

fulfilling some of the AFVG's missions. Innumerable modifications were necessary to accomplish this objective. The aircraft's wings had to be re-designed to provide stability during low-level flight, the aircraft had to be lengthened to store fuel in the fuselage, and the fuselage had to be reinforced to carry a large payload of bombs. Taken as an ensemble, these modifications to the Jaguar's design doubled its weight from 3,500 kg to 7,000 kg.<sup>96</sup>

Had Breguet sought a justification to cancel the Jaguar, the RAF's insistence on changing its specifications would have furnished an ideal pretext. Indeed, France's military high command preferred to withdraw from the Jaguar, which no longer suited its requirements and whose development costs were escalating seven-fold (864 million French francs versus 120 million FF).<sup>97</sup> However, Ziegler actually viewed Britain's demanding requirements as providing an opportunity for Breguet to enter the technically-demanding market for jet combat aircraft. Breguet, therefore, convinced the DMA to continue supporting the project, despite the rapidly escalating development costs.<sup>98</sup> In fact, even as the costs of the programme soared, the DMA and the British Ministry of Aviation agreed to increase the numbers of aircraft they would procure (from 300 to 400) in 1970.<sup>99</sup>

Despite playing a subsidiary role to a much smaller company, the UK's BAC also supported the Jaguar throughout its vicissitudes. With the Ministry of Aviation unwilling to finance a national project, the Jaguar represented BAC's only possibility of remaining a premier combat aircraft producer. According to Managing Director George Edwards:

The great thing about the Jaguar programme is that it gives us the chance to work from an initial order base of 400 aeroplanes for the two sponsoring countries, and thus provide[s] the opportunity to go on to sell off the thin end of the learning curve instead of the more usual thick end.<sup>100</sup>

Thus, the combination of Breguet's inability to autonomously develop combat aircraft and BAC's failure to convince the British state to provide resources for doing so ultimately led both firms to collaborate wholeheartedly.

Breguet's actions require no justification as its limited technical capabilities and prime contractor status rendered the Jaguar's industrial arrangements ideal from its point of view. Contrarily, BAC's superior capabilities and subordinate role raise the question of why it supported the Jaguar. Ultimately, the explanation for BAC's behaviour lies in institutional structures that provided few opportunities for British corporations to promote alternative policies to those favoured by the government. Therefore, buoyed by support from both corporations, the Jaguar entered service in 1973 and appeared destined for commercial success in the 30 states targeted as potential export customers.<sup>101</sup>

Unfortunately for the Jaguar, the interests that undergirded the aircraft's development evaporated as it approached the production stage. When France, at Dassault's urging, chose to build the Mirage F1 (initially called the Mirage 3F1) in 1967, it committed itself to procuring a lightweight fighter, whose capabilities and price meant that it would soon compete with the Jaguar for export markets. Essentially, the Mirage F1 was a fighter with a secondary ground-attack capability, while the Jaguar was a ground-attack aircraft with marginal air-to-air combat potential. Thus, Ziegler warned his British counterparts that the 'Mirage 3F1 would of course be competitive in export markets with the Anglo-French Jaguar' and urged that 'in the common interest of maximizing Jaguar sales, it would be entirely appropriate for the H.M.G. [British Government] to attempt to influence the French Government against proceeding with the Mirage 3F1'.<sup>102</sup> Neither Breguet nor the British government persuaded the French government to abandon the Mirage F1, which indeed deprived the Jaguar of export contracts.

More prejudicial to the Jaguar was Dassault's acquisition of Breguet in 1971. By this act, Dassault became the producer of half of the Jaguar's airframe and obtained privileged information on the aircraft's strengths and weaknesses. However, Dassault faced a conflict of interests because the Jaguar competed for export orders with the Mirage F1, which was wholly produced by Dassault. Not surprisingly, Dassault used its inside knowledge about the Jaguar to sabotage Jaguar sales and favour Mirage F1 exports. According to BAC's publicity manager, Charles Gardner:

There were acute problems on the sales side from the time Dassault took control of Breguet . . . . Quite often the French were trying to sell the Dassault F1 fighter . . . against the Jaguar. To help them in this they had, of course, all Jaguar performance and cost data, and were able to highlight any development problem of the day, while keeping silent on any hitches with the Mirage F1. The French were, by various stratagems, also able at one time, to keep the cost quotation of possible export Jaguars high and to delay deliveries.<sup>103</sup>

Dassault's efforts to sabotage Jaguar exports produced considerable animosity at BAC, leading Edwards to publicly question the French understanding of 'partnership'.<sup>104</sup> Drawing on France's institutional facilities for non-market coordination, Dassault also persuaded the DGA to oppose any Jaguar upgrades that might increase the aircraft's export potential vis-à-vis the Mirage F1.<sup>105</sup> Although it is difficult to ascertain how many Jaguar sales were lost due to Dassault's machinations, the Jaguar would clearly have enjoyed more commercial success had it not been for the behaviour of BAC's partner/rival.<sup>106</sup>

In sum, the Jaguar's development benefited from Breguet's need to partner with a more powerful company to develop a modern combat aircraft and BAC's inability to persuade the British government to support anything other than a collaborative project. In each state, national aircraft policies were conditioned by the structures of their political economies, rather than domestic preference constellations or international power considerations. In France, non-market structures for strategic coordination enabled Breguet to protect the Jaguar's development from the pressures exerted by soaring costs and changing military requirements. In the UK, the absence of such institutions deprived BAC of any means of lobbying for a more advantageous outcome than playing a subordinate role to a weaker partner on a collaborative project. However, the community of interests supporting the Jaguar came to an end when Dassault acquired Breguet. Once this occurred, Dassault did everything within its power to sabotage efforts to upgrade the Jaguar or export it. In contrast to British prime contractors, Dassault's tremendous success – mediated via the DGA – demonstrated once again that corporations sat in the French cockpits.

### **The Tornado: Collaboration without France**

Given the UK's bitter experiences with the AFVG and the Jaguar, it would have been hardly surprising if the state had turned its back on future collaborative projects. However, paradoxically, the difficulties with the above-mentioned projects ultimately led to the tri-national PANAVIA Tornado, which became Europe's largest combat aircraft project of the Cold War. This outcome was more the product of continuing British political support for collaboration than corporate enthusiasm for pursuing further multinational programmes. Although French political leaders considered joining the Tornado programme, they were ultimately dissuaded from doing so by the combined lobbying efforts of Dassault and the DGA.

After the AFVG's cancellation, BAC attempted to convince the British government to finance an indigenous United Kingdom Variable Geometry (UKVG) aircraft.<sup>107</sup> At first, the Ministry of Technology appeared favourable to the UKVG and provided limited research funding beginning in 1967. However, it rapidly emerged that the British government and BAC had diametrically different positions about the UKVG. Whereas BAC hoped that it would result in an entirely British combat aircraft, the Ministry of Technology merely wanted to keep BAC's design teams employed in researching variable geometry aircraft until new partners could be found for a collaborative programme.<sup>108</sup> While the design of the UKVG proceeded, the UK's Ministry of Defence urgently sought partners with which it could jointly develop a multinational aircraft similar to the UKVG.

Even after problems with France over the AFVG, the British government considered that, in the long run, 'a reasonable solution [for the British aircraft industry] will only be found through some adequate tie-up between our own and French firms'.<sup>109</sup> However, the French had already embarked on a national aircraft project and, therefore, were not interested in a joint programme. West Germany and Italy were thus the only two allies with aircraft industries and defence budgets large enough to collaborate on a sophisticated aircraft. As soon as the British government had convinced these two governments to collaborate, the British Ministry of Technology terminated the UKVG and directed that BAC's efforts should henceforward be dedicated to the collaborative Multi-Role Combat Aircraft (MRCA), which was later renamed Tornado.<sup>110</sup>

Given the fact that Western Europe's other principal states were now collaborating on a common aircraft, French political leaders began to question whether they had been wise in ceding to corporate pressures for national projects. When France's ambitious national Avion de Combat du Futur (ACF) programme encountered troubles in 1975, the government immediately considered joining the MRCA consortium.<sup>111</sup> However, French industries – in the form of Dassault and Snecma – responded to the ACF's financial woes by arguing that France should purchase an economic French-built lightweight fighter – the Mirage 2000 – based on Dassault's prior designs and powered by an experimental Snecma engine. The DMA supported Dassault and Snecma by purchasing Snecma engines that were then 'lent' to Dassault so that that company could build a prototype aircraft. Then, once the prototype had been built, the DMA and French industry convinced President Valerie Giscard d'Estaing to fund the aircraft's production.<sup>112</sup>

This kind of strategic coordination between the procurement organization and a private corporation to sway political leaders into abandoning their policy of European collaboration would have been impossible in the UK.<sup>113</sup> Regardless of France's refusal to join the MRCA, political support for the programme remained high amongst the consortium's three members, even though the Tornado's price soared until it became one of the world's most expensive aircraft. Despite doubts about the aircraft's cost-effectiveness, the British government never seriously considered a national programme.<sup>114</sup>

In sum, the Tornado case highlights the value of the institutional mechanisms revealed in the two former aircraft projects. While the British government's policies prevailed once again over industrial preferences, French institutional structures empowered corporations to pursue their favoured courses of action. In the UK's case, the government effectively forced industry to engage in a collaborative programme despite the corporate leaders' preference for a purely national aircraft. Contrarily, in France's case, the connivance of DGA functionaries with corporate (Dassault and Snecma)

managers permitted the latter to subvert the political leaders' preference for joining the collaborative MRCA/Tornado and once again impose on them a national aircraft project. With these results in mind, we turn to Europe's most recent collaborative combat aircraft project, the Eurofighter.

### **The Eurofighter: More partners and similar dynamics**

The Eurofighter provides an ideal test of the ability of institutions to determine whether states sustain or defect from collaborative armaments projects. Following the cancellation of the AFVG and BAC's fratricidal struggle with Dassault over Jaguar exports, Britain's combat aircraft producers were united in their resistance to future collaborative projects. In other words, the preference constellation clearly privileged a purely British combat aircraft. At the same time, France's new socialist government, which came to power in 1981, was more committed to European integration and less insistent on national independence than its predecessors. As a consequence, President François Mitterrand's government intended to make European armaments collaboration a cornerstone of its defence-industrial policy. In other words, French political leaders clearly privileged a collaborative decision with respect to future combat aircraft. For both of these reasons, it would have been logical to predict that the British would have pursued a national combat aircraft and the French would have engaged in an international collaborative endeavour. That this did not occur bears powerful testimony to the distinctiveness of the British and French procurement institutions.

Disappointment with past collaborative endeavours led the British aircraft industry to conduct a series of design studies aimed at convincing its government to support an indigenous lightweight fighter. Beginning in the mid-1970s, Hawker-Siddeley explored a series of designs, whose reliance on engine pods should have theoretically made them cheaper and easier to maintain than foreign alternatives.<sup>115</sup> Meanwhile, BAC also sought to develop several national lightweight fighter designs.<sup>116</sup> Once both firms merged to form British Aerospace (BAe) in 1977, the company attempted to convince the British government that it could efficiently produce a national aircraft. To this end, BAe launched a sequence of design projects, initially financed with company funds alone (for example, AST.403, P.110 and P.106). However, without financial support from the Ministry of Defence's Procurement Executive, none of these projects could be developed to the prototype stage, where they would have become politically viable. In fact, only the AST.403 project attracted any support from the Procurement Executive, and this was not enough.

Bereft of official support, BAe employed desperate measures to promote national projects. In one effort, BAe attempted to convince Saudi Arabia to commit to financing the development of the P.110. In another, the same

company used leaks to tabloid (and nationalist) newspapers to convince the British public that a national P.106 would be preferable to the multinational Eurofighter.<sup>117</sup> These efforts are reminiscent of Dassault's 1967 strategy for generating public support for a national variable-geometry aircraft, rather than the AFVG. Outcomes, however, differed because the efforts of the French corporations were organized around a single elite network and supported by a complicit DGA, while their British counterparts encountered a less favourable institutional environment.

Despite the concerted lobbying efforts of aerospace industries, British political leaders decided that the future of British defence procurement lay in European collaboration. Britain's Chief Scientific Advisor supported this view when he wrote to the Prime Minister in 1976, arguing that, without European collaboration on a future combat aircraft, Europe's aerospace industries would eventually cease to exist.<sup>118</sup> To ensure against this eventuality, British political leaders led the way in creating a multinational coalition to explore building a collaborative combat aircraft. Once they achieved this objective, obtaining support from the French and West German governments in 1979, the British Procurement Executive cancelled all funding for the AST.403, thereby foreclosing the possibility of a national programme.<sup>119</sup> Again, the absence of institutional mechanisms for non-market coordination between British corporations and procurement agencies prevented industrial actors from realizing their preferences. Contrary to liberal predictions, the preferences of powerful domestic actors – defence corporations – were *not* translated into government policy.

Initially, Franco-British cooperation on the Eurofighter appeared promising. Because of their deep commitment to European integration, both Presidents Giscard and Mitterrand were enthusiastic about developing a truly European combat aircraft. This enthusiasm was echoed by the French Air Force, which understood that only European collaboration would permit France to acquire aircraft larger and more sophisticated than the lightweight fighters that Dassault classically built. As a consequence, France became a founding member, in 1979, of a future fighter aircraft consortium comprised of the UK, West Germany, France and Italy.<sup>120</sup> However, French corporations opposed collaboration for predictable reasons. Given its previous success at developing commercially successful lightweight aircraft, Dassault preferred to develop an entirely national aircraft and believed that the Eurofighter's specification would render it too costly to export. Meanwhile, France's jet engine manufacturer, Snecma, was concerned that its future technical capabilities would be compromised if it did not play a key role in the development of the combustion chamber of a new jet engine.<sup>121</sup>

Ultimately, French political leaders' preference for a European aircraft was fatally compromised by institutions theoretically designed to enact the

government's policy. As usual, the organization charged with bargaining on behalf of the French government was the DGA and, more particularly, its director, Emile Blanc. As with his predecessors, Blanc's educational and professional background tied him closely to the leaders of France's aerospace industry.<sup>122</sup> In formulating France's negotiating position for the quadripartite meetings designed to lead to a European combat aircraft, Blanc and the DGA adopted a maximalist stance that would optimize the advantages to be obtained by French industry, but would likely prove unacceptable to France's potential partners. The French delegation demanded that Dassault be accorded the position of prime contractor for the future combat aircraft; Snecma should be accorded a nearly equal position with Rolls-Royce for the development of the engine's most sophisticated components; the aircraft's overall weight should be 8.500 kg, which would optimize export prospects; and Dassault should have full control of any export sales. Taken as an ensemble, these demands equated to France demanding half of the total work share, while purchasing less than a third of the aircraft produced.<sup>123</sup>

France's potential partners proved willing to compromise on many, but not all issues.<sup>124</sup> The sticking point where France's demands met with intransigence from its potential partners was the domain of aircraft engines. Whereas the DGA wanted Snecma to play a significant role in the engine's development, the UK remained adamant that Rolls-Royce should develop all of the engine's most sensitive components and refused to consider the creation of a joint design bureau.<sup>125</sup> Unable to obtain this additional concession, Blanc concluded at Turin in 1985 that French defence-industrial interests would be best served by withdrawing from the Eurofighter programme.<sup>126</sup> Thereafter, France proceeded with its own national rival to the Eurofighter, the Dassault Rafale. Again in France, the fact that corporate preferences prevailed over those of the government relegated considerations of international power politics to a negligible role in the weapons acquisition process.

In sum, despite the initial eagerness of French political leaders for a European aircraft and the desire of British industrialists to develop a national aircraft, national-level institutions ensured that the autonomous inclinations of industrialists predominated in France, while the European preferences of political leaders shaped outcomes in the UK. Once he had understood how his collaborative policies had been thwarted, Mitterrand bitterly told an assembly of France's defence policy-making elite in 1988 that the 'failure of the negotiations for a European aircraft was largely the fault of [French] industries that were not inclined to reach an accord'.<sup>127</sup> Unrepentant, Blanc gloried afterwards that abandoning the Eurofighter saved France's engine producer, Snecma.<sup>128</sup> Perhaps not coincidentally, Blanc was named Snecma's managing director the year following France's withdrawal from the Eurofighter. Contrarily, British aerospace companies

found themselves obliged to collaborate on yet another multinational project, the Eurofighter.<sup>129</sup>

### CONCLUSION: INSTITUTIONS AND AIRCRAFT COLLABORATION

This paper analysed the four major British and French combat aircraft projects in order to determine why British aircraft decisions reflected governmental preferences for collaboration, while France's were driven by corporate preferences for national programmes. Within this context, our process-tracing analysis demonstrates that, despite important similarities in size, threat perception, alliances, industrial structure and military posture, distinct institutions in each state drove different outcomes. These institutional differences are, in turn, deeply rooted in each state's broader political economy. Thus, as we have demonstrated, the evolution of defence industries and procurement policies in France and the UK is a product of the distinct variety of capitalism practised in each state.

As the VoC approach predicts, outcomes were shaped by how institutions structured the interactions of governments and defence corporations. In other words, similar actors with identical preference constellations, occupying comparable positions in the international state system, were faced with distinct institutional opportunities and constraints.

Overall, two institutional structures characteristic of France's statist political economy account for why that country pursued national projects. Firstly, the centralization of the levers for controlling France's defence-industrial sector in the hands of the DMA/DGA gave the bureaucratic elite (the armaments engineers) the capacity to bring France's aircraft decisions in line with the interests of armaments producers. Secondly, exchanges and relationships within France's elite network of armament engineers (both within the DMA/DGA and firms) enabled defence contractors to overturn government decisions that diverged from their preferences. In the UK, the absence of equivalent structures for non-market strategic interactions meant that firms were unable to instrumentalize public resources and institutions to further their own private ends. In a sector such as armaments, where the state itself is a consumer, this enabled the government to impose its preferences on firms through the arm's-length mechanisms of competition and contracting. As a result, large firms such as BAC/BAe and Rolls-Royce found themselves repeatedly obliged to collaborate, despite their considering it a 'second-best' solution.<sup>130</sup>

The four case studies demonstrate that institutional differences in the states' political economies – rather than preference constellations or power configurations – are responsible for the varying outcomes of France's and the UK's combat aircraft decisions.

To begin with, the AFVG case demonstrates that France's Dassault could not have promoted a national project without support from the DMA, which financed the Mirage G's development and promoted its public disclosure. Contrarily, BAC was obliged to collaborate in order to survive because the government would only guarantee future contracts if BAC obeyed its injunctions.

The second case, the Jaguar, demonstrates that French corporations can draw powerful support from the DMA/DGA to support their preferred policies. Because Breguet lacked the capability to autonomously develop aircraft, its management lobbied in favour of its partnership with a technologically advanced British firm even when the project encountered significant technical problems. When Dassault acquired Breguet, however, French corporate preferences changed. Preferring sales of the nationally developed Mirage F1 to the collaborative Jaguar, Dassault manipulated the French government into foregoing Jaguar upgrades and exports. Meanwhile, in the absence of mechanisms for non-market coordination, the British government obliged BAC to collaborate on the Jaguar by refusing to either consider or fund alternative proposals.

The third case, the Tornado, further highlights the predominance of political decision-makers in British procurement policy. Within this context, British industry's push for a national project was immediately halted by the government when Italy and West Germany agreed to build a collaborative aircraft. Meanwhile, French firms mobilized sufficient opposition to dissuade the government from joining the consortium.

Finally, the fourth project examined, the Eurofighter, constitutes a 'critical case study' for the paper's framework because numerous factors should have made collaboration likely in France, but not in the UK.<sup>131</sup> Nevertheless, despite these background conditions, the combination of a cohesive elite network and the DGA led to France developing the national Rafale, whereas the UK collaborated with three partners in the Eurofighter consortium. Thus, it was, again, the presence or absence of institutional structures facilitating non-market modes of coordination that made the difference.

In short, in each case, the DMA/DGA's custodial role over defence industries, its technocratic 'engineering' culture and its direct relationship with the Defense Minister led it to privilege industrial concerns over political or military considerations. Political and military concerns, such as furthering European integration, acquiring better and cheaper weaponry and achieving interoperability with allies, received short shrift. By way of contrast, the less cohesive nature and greater separation vis-à-vis industry of British procurement institutions left corporations little choice but to obey the dictates of the government, which sought to maximize military effectiveness through collaboration.

Thus, this article points towards a differentiated result. While corporations occupy the French cockpits, the government does so in the UK. These differences can be inferred from the nature of each state's political economy and – more specifically – the presence or absence of institutions enabling non-market coordination among the stakeholders. This finding, that defence-industrial policies have been shaped by the institutional structures of states' political economies, has powerful implications for scholars of both comparative political economy and defence-industrial issues.

For scholars of comparative political economy, our finding demonstrates the value of a VoC approach in analysing a sector – armaments – whose basic characteristics are very different from those (such as automobiles, information technology and biotechnology) that have featured in most VoC literature. Indeed, once sector-specific institutions are accounted for, patterns of corporate behaviour and public policymaking in the defence-industrial domain mirror those defining more conventional economic sectors in each state. Therefore, rather than merely explaining cross-national differences in corporate strategies and performance in 'normal' economic sectors, the VoC framework of analysis is also capable of elucidating dynamics at work in sectors where the government is a major consumer and where national security considerations suffuse debates.<sup>132</sup>

Besides demonstrating the applicability of a VoC approach to atypical economic sectors, our finding that the institutional structures of states' political economies shape procurement decisions also has broad implications for the study of defence-industrial issues. Indeed, by demonstrating that a VoC approach can better explain defence-industrial outcomes than frequently-employed international relations theories – realism and liberalism – this study suggests that scholars need to examine the structure of national-level institutions for economic coordination to understand how individual states respond to defence-industrial challenges. Consequently, rather than merely examining the security environment confronting governments – as the realists suggest – or exploring the motivations of corporate decision-makers – as the liberals argue – it is also essential to determine whether governments or corporates occupy the metaphorical cockpit when it comes to making procurement policies.

Within this context, firms in statist economies – a category that includes Italy, Japan, South Korea and Spain – are likely to mirror their French counterpart's ability to impose their preferences via permissive procurement institutions. Similarly, governments in liberal market economies – such as Australia, Canada and the United States – should be just as successful as the British government at leveraging the arm's-length tools of competition and contracting to achieve their ends. Thus, what variety of capitalism a state practises determines how it procures weapons to defend both itself and its interests.

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## NOTES

- 1 This article draws extensively on archival documents accessed at The National Archives (TNA) of the UK. Selected interviews and published studies by the European Defence Agency (EDA) and the British National Audit Office (NAO) have also been of great assistance.
- 2 'Defence Data of EDA Participating Member States in 2007', <<http://www.eda.europa.eu/defencefacts/>> (accessed 22 October 2009).
- 3 On the potential advantages of collaboration, see NAO, 1991, 2001; Matthews, 1992; Hartley and Martin, 1993.
- 4 Brooks, 2005: 57.
- 5 Waltz, 1993; Lorell and Lowell, 1995.
- 6 Tucker, 1991; Moravcsik, 1993; Brooks, 2005.
- 7 Hall and Soskice, 2001; Thatcher, 2007; Hancké, 2009.
- 8 Statistics on individual European states' collaborative endeavours can be found in Hébert (2004).
- 9 TNA CAB 148/32/47 DOP Committee, The Aircraft Programme, 23 June 1967.
- 10 Evans, 1998.
- 11 Lake and Crutch, 2000.
- 12 Harkins, 1997; Chin, 2004.
- 13 Moravcsik, 1993.
- 14 Hartley and Martin, 1993; Lorrell and Lowell, 1995.
- 15 Kapstein, 1991–92.
- 16 TNA T 225/2685, Committee to Redecide the Aircraft Industry, 1 February 1966; Soutou, 1996.
- 17 TNA PREM 15/1290, Extract from Meeting PM/Pompidou, 22 May 1972; Heseltine, 1986; NAO, 1991; Chin, 2004.
- 18 NAO, 2001; Guisnel, 1990.
- 19 Hartley and Martin, 1993; Tucker, 1991; Kapstein, 1991–92.
- 20 Spain's CASA, for example, has seen its systems integration capabilities gradually atrophy since Spain has engaged heavily in collaborative projects; Molas-Gallart, 1992.
- 21 Butler, 2000; Gardner, 2006.
- 22 During the Cold War, Dassault's success in exporting its lightweight Mirage fighters bore out the accuracy of its calculations. France succeeded in exporting 66 per cent of Mirage III/V aircraft, 63 per cent of Mirage F1 aircraft and

- 50 per cent of Mirage 2000 aircraft. Altogether, Dassault managed to export 1,717 of the 2,841 combat aircraft it produced between 1960 and 1995. By way of contrast, the three collaborative aircraft projects that the British were involved in, which led to the production of more specialized aircraft (the Jaguar, Tornado and Eurofighter), yielded a sum of only 387 aircraft exported, or 26 per cent of the total ordered; Simon, 1993; Jackson, 1994; Hébert, 1995; Evans, 1998; Lake and Crutch, 2000.
- 23 As Kapstein (1990) argues, most international relations scholars have implicitly drawn on these theoretical frameworks to account for defence-industrial policies. For example, Moravcsik (1993) applied liberalism to explain collaborative outcomes, while Jones (2007) explicitly applied realism. Prior to Jones' work, Kapstein (1991–92) implicitly employed realism to the same issue. Although Krotz (2007: 28–39) has applied constructivism to armaments collaboration, we have not pursued such an approach because our dependent variable – the state's collaborative decisions – favours approaches such as realism and liberalism, which are closer to rational choice theorizing.
- 24 See, for instance, Waltz, 1979; Mearsheimer, 2001.
- 25 Posen, 1984; Gilpin, 1987; Kapstein, 1990; Jones, 2007: 136–80.
- 26 Waltz, 1979: 104–7.
- 27 Koenig-Archibugi, 2004: 144–5; Kapstein, 1991–92.
- 28 For our assessment of realism's predictive power, we have consciously restricted our focus to neo-realism. Because of its clear focus on states' quest for security in an anarchic international system, neo-realism offers predictions that are both comparatively unambiguous and recognizable products of realist thought. By way of contrast, while the attempts by partisans of neoclassical realism to incorporate domestic variables into their frameworks may redress realism's shortcomings, it detracts from the clarity of its predictions.
- 29 Gilpin, 1987; see also, Kapstein, 1990: 2–5.
- 30 Moravcsik, 1997: 519.
- 31 Tucker, 1991; Moravcsik, 1993.
- 32 Moravcsik, 1997: 539.
- 33 For our assessment of liberalism's analytic purchase, we restrict our focus to the interpretations of liberal theory offered by scholars who have examined defence-industrial issues from an explicitly liberal perspective (such as Moravcsik). However, in order for *any* liberal approach to account for occasions when the most powerful domestic stakeholders did not impose their preferences, it would be necessary to conceptually stretch liberal theory.
- 34 This analytic strategy is suggested by Lake and Powell, 1999; Homolar, 2010.
- 35 Hall and Soskice, 33–36.
- 36 In conducting our study, we considered building on prior research on interest group politics, which categorizes democratic political systems as pluralist or corporatist (e.g., Schmitter and Streeck, 1999; Lijphart, 1999, 171–84; Beyers *et al.*, 2008). After conducting a plausibility probe, we discovered that firms interacted directly with government representatives, rather than using the intermediary associations central to theories of interest group politics. For this reason, we concluded that the VoC approach is more appropriate because it combines an institutional perspective and a firm-centred political economy (Hancké, 2009: 8). Likewise, we contemplated applying the conceptual framework of the Military-Industrial Complex (MIC) theory to explain procurement outcomes. The MIC theory contends that collusion between defence industries, politicians and military commanders leads to sub-optimal public policy outcomes (such as threat inflation and excessive defence spending).

However, while the MIC theory offers a plausible explanation for why policy outcomes may run contrary to public interest, it cannot explain why these outcomes would diverge in states with similar resources.

- 37 Gourevitch, 1999: 137.  
 38 Lake and Powell, 1999.  
 39 Hall and Soskice, 2001: 5–6.  
 40 *Ibid.*, 6–7.  
 41 *Ibid.*, 8.  
 42 *Ibid.*, 8.  
 43 There is considerable debate within VoC literature on how many ideal types of market coordination there are. In their pioneering work, Hall and Soskice (2001) postulated the existence of two forms of market organization – liberal market economies and coordinated market economies. Other scholars have since expressed the need for at least one other category to account for states (France, Italy, Spain and South Korea) where the government plays the predominant role in economic governance. For example, Schmidt (2002) argues that an ideal type of ‘state capitalism’ should be added to those of LMEs and CMEs. Molina and Rhodes (2010) prefer to refer to these economies as Mixed-Market Economies (MMEs) because, in addition to the government playing a large role, they also bear certain characteristics of both LMEs and CMEs. We prefer to use the terms, ‘statism’ or *étatisme*, suggested by Shonfield (1965) to describe this form of economic organization.  
 44 Schmidt, 2002.  
 45 See, for instance, Hancké, 2001, 2009: 2–5.  
 46 Hall and Soskice, 2001: 10.  
 47 Hall and Soskice, 2001: 15; see also, Hancké, 2009: 3–5.  
 48 Hall and Soskice, 2001: 37.  
 49 Hall and Soskice, 2001: 21–2; Schmidt, 2002; Thatcher, 2007: 1030; Hancké, 2009: 4.  
 50 Grant, 2007.  
 51 Hall and Soskice, 2001: 8.  
 52 Hancké *et al.*, 2010: 16–9.  
 53 Thatcher, 2010.  
 54 Hall and Soskice, 2001: 27–33; Hall and Gingerich, 2004: 10–2; Hayward, 2009: 117.  
 55 Thatcher, 2007: 1043.  
 56 Hancké *et al.*, 2010: 17–9.  
 57 Hancké, 2001: 313.  
 58 Schmidt, 2002; Thatcher, 2007: 1030–1.  
 59 Thatcher, 2010.  
 60 Hancké, 2001: 312.  
 61 Hall and Gingerich, 2004: 14.  
 62 Peck and Scherer, 1962: 55–97; Sandler and Hartley, 1995: 113–55; Rogerson, 1995: 311–7.  
 63 Peck and Scherer, 1962: 57.  
 64 Sandler and Hartley, 1995.  
 65 Thatcher, 2010.  
 66 Hayward, 2009: 117.  
 67 Dunne, 1995: 420–1.  
 68 Serfati, 1992; Samuels, 1994; Hébert, 1995: 5–38.  
 69 Baumol, 1982; Laguerre, 2007.  
 70 Dunne, 1995; Sorenson, 2009; Chin, 2004.

- 71 Pestre, 2002: 9–10.
- 72 Rasmussen, 2002: 14–5.
- 73 Gautier, 1999: 346–7.
- 74 Guisnel, 1990: 254–5.
- 75 Bodemer and Laugier, 1996.
- 76 Segell, 1998; Hartley, 1998; Chin, 2004; Gardner, 2006.
- 77 George Edwards, cited in Gardner (2006: 202).
- 78 TNA T 225/2685, Committee to Redecide the Aircraft Industry, 1 February 1966.
- 79 TNA PREM 15/1290, Extract from Meeting PM/Pompidou, 22 May 1972.
- 80 Deplante, 1985.
- 81 TNA AIR 20/10576 ASR 343 – Historic Diary; TNA DSIR 23/33256, Royal Aircraft Establishment, The Cost and Cost/Effectiveness of the Buccaneer 2 and 2\*, July 1965.
- 82 Gardner, 1981: 58.
- 83 TNA PREM 13/1308, P. Reilly, Anglo-French Aircraft Collaboration, 24 January 1967; Evans, 1998: 1–35; Gardner, 2006: 147–217.
- 84 Thornborough, 2005.
- 85 Déplante, 1985: 181–2.
- 86 Déplante, 1985: 182; Bodemer and Laguier, 1996: 150.
- 87 Perry, 1975: 20.
- 88 Déplante, 1985: 187.
- 89 Guisnel, 1990: 214.
- 90 TNA CAB 148/32/47, Cabinet-DOP Committee, The Aircraft Programme, 23 June 1967.
- 91 Although the Mirage G's existence motivated France's withdrawal from the AFGV, Dassault and the DMA eventually supplanted it with a smaller and more conventional (national) aircraft, the Mirage F1 (Jackson, 1994: 77–78). Frustrated with this outcome, France's Air Force's embittered Chief of Staff reflected that procurement 'was more often than not motivated by the desire to create and support an important industry rather than concern for the operational value of weaponry' (Paul Stehlin, cited in Vadepied, 2000: 298–9).
- 92 Kapstein, 1990: 5.
- 93 Breguet's acquisition by financial speculators liquidating their holdings in Indochina prevented the company from adequately investing in human and material capital. By 1965, Breguet possessed a workforce half as large as Dassault's (4,000 versus 8,000) and was saddled with aging equipment. See Lert, 2006: 5; de Narbonne, 2006: 50–5; Butler, 2006: 173–5.
- 94 Tucker, 1991.
- 95 Benichou, 2000; Ziegler, 2008.
- 96 Evans, 1998: 20.
- 97 Carlier, 1979: 148.
- 98 Lorell and Lowell, 1995; Evans, 1998.
- 99 Evans, 1998: 21–7.
- 100 Gardner, 2006: 217.
- 101 Evans, 1998: 101.
- 102 TNA PREM 13/1308, P. Reilly, Anglo-French Aircraft Collaboration, 24 January 1967.
- 103 Gardner, 1981: 146.
- 104 *Ibid.*, 147.
- 105 Fleury, 1997: 129–44.

- 106 Ultimately, 192 Jaguars were exported to four states, while 457 Mirage F1s were sold to 10 clients. BAC negotiated all four Jaguar contracts in the face of stiff French opposition. See Evans, 1998: 101; Gardner, 2006: 217; TNA DEFE 11/653, I.S. McDonald, Director of Sales to Hd/DS13, 28 January 1974; TNA CAB 148/121, DOP Committee, The Supply of Arms to Egypt, 13 September 1972.
- 107 Butler, 2006: 180–1.
- 108 TNA FCO 46/178, Military Aircraft Industrial Potential: Defence and Foreign Policy Considerations, 22 September 1967.
- 109 TNA PREM 15/1374, Solly Zuckerman to Prime Minister, The MRCA, 8 July 1970.
- 110 Lake and Crutch, 2000.
- 111 Rocher, 2004: 35.
- 112 Déplante, 1985: 231.
- 113 Simon, 1993.
- 114 TNA PREM 15/1374, Burke Trend to Prime Minister, The MRCA, 28 July 1971; House of Commons, Commons Written Answers, 20 January 1993; Lorell and Lowell, 1995: 14.
- 115 Butler, 2000: 143–5.
- 116 *Ibid.*, 133.
- 117 *Ibid.*, 135–7, 141.
- 118 TNA DEFE 72/52, Defence Equipment Policy Committee, 9 June 1976.
- 119 Butler, 2000: 133–5.
- 120 Chambost, 2007: 65–78.
- 121 Interview with François Heisbourg, Paris, 13 July 2004; Guisnel, 1991: 214.
- 122 Both Emile Blanc and Serge Dassault were graduates of the École Polytechnique and the Ecole Nationale Supérieure de l'Aéronautique. Moreover, as with many other DGA officials, Blanc's stellar career within the DGA was followed by his exercising direct managerial responsibility over the industries that he had formerly protected. In Blanc's case, he served as managing director of Snecma, France's state-owned jet engine producers, from 1986 to 1989 (Chambost, 2007: 63–73).
- 123 Harkins, 1997: 14.
- 124 West Germany proposed adopting a compromise weight specification of 9,500 kg as opposed to France's demand for 8,500 kg and the UK's insistence on 11,000 kg (Harkins, 1997: 13). France's would-be partners also acceded (reluctantly on West Germany's part) to the DGA's demand that Dassault be given prime contractor status (Schwartzbrod, 1992: 137–41).
- 125 Schwartzbrod, 1992: 139–40.
- 126 After lengthy negotiations, Blanc asked Defense Minister Charles Hernu on 2 August 1985 for permission to withdraw from the Eurofighter (Chambost, 2007: 79–80). Confident in Blanc's professional judgement, Hernu acceded (Interview with François Heisbourg, Paris, 13 July 2004).
- 127 Mitterrand, cited in Guisnel, 1990: 218.
- 128 Chambost, 2007: 82–3.
- 129 Molas-Gallart, 1992: 127, 134–5; Harkins, 1997: 37; Chambost, 2007: 170–1.
- 130 Kapstein, 1991–92.
- 131 Eckstein, 1975.
- 132 Thatcher (2010) began this process by demonstrating the value of the VoC theory in analysing network industries, where the government is a significant actor, but where national security considerations are absent.

## NOTES ON CONTRIBUTORS

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