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## TRANSATLANTIC DEFENSE MARKETS?

HERVÉ DUMEZ AND ALAIN JEUNEMAÎTRE

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## **abstract**

The issue of the restructuring of the US/Europe Defense markets has been primarily examined under the assumption of the primacy of transatlantic relations and the importance of the defense industry specifics. So far, it has mainly resulted in simplistic and blurred scenarios opposing visions about fortress America and fortress Europe.

Against that background, a reverse angle is proposed which puts at the forefront a competitive assessment. The assessment concentrates on the dynamic equilibrium produced by demand (public procurement) and supply (the defense industry) and the interactive framework between supply and demand (the regulatory process).

To make intelligible the US/Europe defense markets dynamics, the paper uses the metaphor of the bicycle (supply figuring as the wheel ; demand as the gear and pedal system ; the linkage between supply and demand being ensured by transatlantic relations).

Four bicycle arrangements types are inventoried and isolated to illustrate the likely scenarios for the future of the US/Europe defense markets. The paper illustrates the interest of an approach based on market arrangement types. It brings about clarification and coherence in the analysis of sectors. A beneficial direction to restructure the US/Europe defense markets appears to be the tandem scenario, where public defense procurement are US/Europe centrally or in co-ordination open to competition and run, but the different types of US/Europe army forces define their needs independently.

**JEL classification** : F14, F23, H56, H57, L69 (defense industry)

Is there a defense market, with specific characteristics ? Under which conditions might national defense markets be integrated into a transnational market ?

Two questions that are apparently quite distinct, but we will argue are closely interconnected.

Many experts see defense markets as special. Such an argument can appear self-serving and be viewed a way of protecting vested interests and promoting a kind of “Do It Yourself ” economics [Henderson, 1986 ; Cazes, 1986 ; Dumez and Jeunemaître, 1991 : 52-59]. Any market, whether for yogurt or fighter planes if examined in detail, has special features because of its R&D cycle or the production process or the distribution channels, the competitive structure of the industry or the demand dynamics. Depending on time and place, every industry seems different and to require treatment. Our starting claim here is that defense markets are governed by the dynamics of supply and demand under various regulatory frameworks, and that they are no different from other markets. If specifics there are, they lie in the relationships between State to State, firm to State, firm to firm that structure the market equilibrium [Markusen, 2001].

As for international defense markets, one might ask why transatlantic relationships are of particular relevance as the economy goes global [Dumez & Jeunemaître, 2000]. For example, Japanese or Taiwanese firms are important players in the world-wide defense markets. Indeed, Europe and the US enjoy particular relationships but is the relevant context a transatlantic or a global one ?

Our analysis starts from the assumption that defense markets are comparable to other markets, even though transatlantic relations structure the US and European defense markets. The paper lays out four types of future defense Europe/US market arrangements. Sections 3, 4 and 5 review them according to their likelihood and merits.

## **1. Methodology**

As for any market, defense markets have to be analysed from a supply and demand, and dynamics perspective, notwithstanding the regulatory framework that governs the market equilibrium.

This point is not trivial, for the concept of a “defense market” is unfamiliar or little used by insiders, even by academics studying defense issues. Rather, it is common to refer to the defense industry as the supply side and to the armaments market as demand. Little attention is generally paid to a regulatory framework as a key issue. Competitive assessments and the role of competition policy have also been neglected. For example, if in the US the defense industry is subject to antitrust legislation as any other industry [DoD, 1994], this is not the case in Europe where member states can escape general competition policy procedures [Dumez, 1999 ; Dumez & Jeunemaître, 1999].

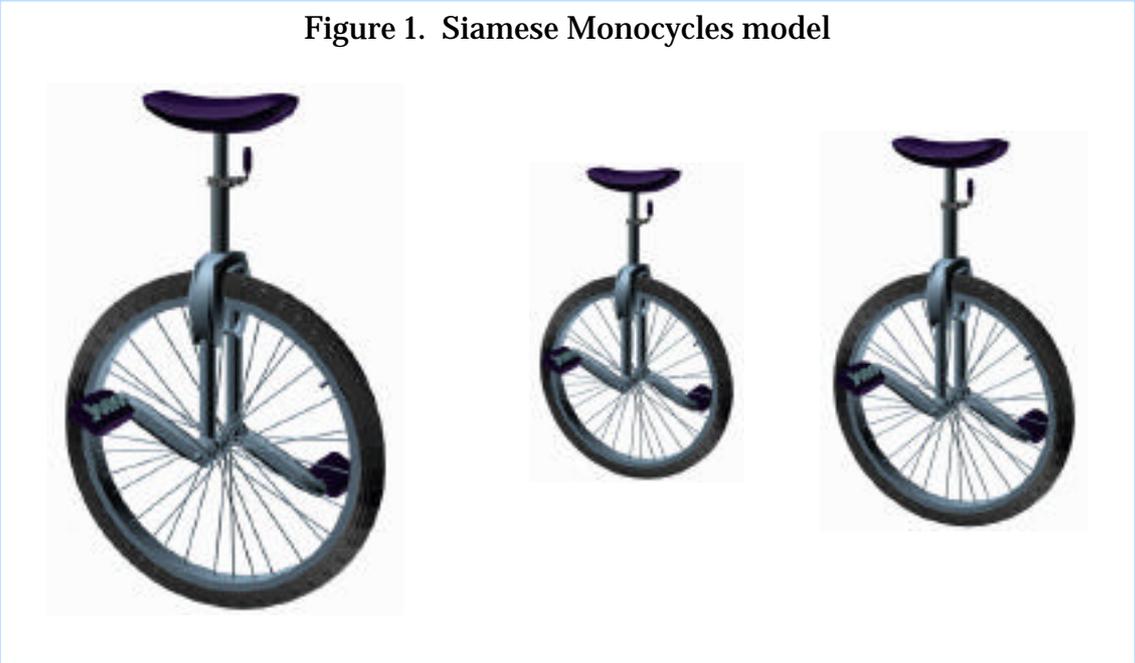
Hence, at the heart of the analysis lies the dynamics of supply and demand considered in a regulatory and transatlantic perspective, in Europe and the US.

## **2. Modelling defense markets from a transatlantic relations perspective**

In both transatlantic and national defense markets there is a dynamic equilibrium between supply and demand within a regulatory framework. Demand can be seen as the engine in the dynamic process : public spending and research and development expenditures drive supply even if supply itself through firms’ research budgets and products’ proposals may also influence the military demand.

The idea of a dynamic equilibrium, of interactive elements and of a support structure, can be illustrated by thinking about a defense market as if it were a bicycle. The analogy may seem odd but we have found it fruitful. Finding a dynamic equilibrium in a defense market with a driving force that can be transmitted by a framework resembles solving the bicycle problem. There are a few possible solutions and

combinations for solving the problem of getting a bicycle to move forward, by coordinating the action of the gears, pedals, the wheels and the bicycle frame. If we see demand as the push (the pedals), supply as the dynamic support (the wheels) and the regulatory framework as the structure (bike frame), then we can imagine a number of different models. Moreover we can imagine different US-European models. Using the bicycle analogy we see four main types of markets arrangements. They are to be taken as pure types, and as we will see, are complex with contradictory tendencies. Above all these models should be viewed as a tool for positive and normative thinking about the possible and the desirable in defense markets equilibrium.



A first transatlantic market arrangement type looks at Europe and the US as twin markets attached by some form of loose foreign policy common objectives but independently managed. The US and Europe do not co-ordinate in defining their needs and defense efforts either in terms of amount [R&D public spending] or in performance [characterisation of armament products subject to procurement and army requirements]. To satisfy these requirements, the Ministry of Defense agrees with suppliers of first rank [the national prime contractors] or sub-suppliers who would primarily be American in the US and European in Europe. In ad-hoc fashion,

Europe and the US reciprocally open their tenders to suppliers abroad. For example, Europe requires specific armaments but the technology is not mature or available –for example, location and guidance systems such as AWACS airplane. The US too has such needs, although to a lesser extent; the US Marines have bought the Harrier fighter with the vertical take-off system which they have greatly valued. However the main characteristic of this model relationship is the separation of two frameworks, each of which is based on enforcing a home market supplier preference rule, even if in practice, due to defense industry transatlantic business relations -alliances and joint ventures- the principle is more symbolic than effective (Cornu, 2001).

First, we observe that there is no European market arrangement type. European defense markets are nationally fragmented. There is not one European monocycle but as many as the number of member states in the European Union. Over the past five years, a clear attempt has been made to create the conditions of a European demand – with a centralized procurement system through OCCAR and the European Armament Agency. At the same time the European supply side has witnessed rapid concentration –with mergers such as EADS<sup>1</sup>- and a European regulatory framework is emerging along with an embryonic European defense policy. All these conditions for creating the possibility of a European monocycle, were already noted years ago in the 1978 Klepsch report [Guay, 1998 ; Dumez, 1999]. But this model is embryonic.

A second observation regards the size of the European and US monocycles. In real terms, the US monocycle is far bigger than the European one. Even if Europe carries out a massive restructuring of its demand and supply sides, will it be able to create for itself a long term dynamic market equilibrium ?

In the recent past, the Europeans have ended up developing at least three major fighterplane programmes : the French Rafale, the Eurofighter, the Swede Gripen. In the future, such costly diversity certainly is impossible. But US experts ask whether even more co-ordinated policies will be enough, as European defense budgets will not be able to match the increased costs of developing new technology. For example, would Europeans be able to manufacture an airfighter contesting the US advanced

technology in this area ? US experts think not –for example the Lockheed-Martin Chairman, Coffman, 2000- while Europeans are more optimistic in this respect. The dynamic stability of a truly European monocycle is therefore open to question and challenge.

With this first model, how does the issue of transatlantic relations affects outcomes ? Only at the margin, with intermittent purchases of specific armament supplements [i.e. AWACS, Harrier] or occur US and Europe defense industry sub-contracting and business alliances. Therefore the above drawing illustrates a model where there is no common and unique direction, but a possible split in the management of defense markets. At the same time monocycles are coupled in a sort of elastic relationship which makes it both necessary but precarious and harder to define a common dynamic equilibrium. The essential support structure here lies in the management of defense exports markets.

In fact, even in the US market, the increasing cost of developing new sophisticated defense technologies makes it problematic to continue with the monocycles market arrangement type. R&D investment needs to be financed by large scale production, hence the requirement of substantial exports to ensure profitability. In 1995, the White House published two ‘policy briefs’ expressly referring to the need to maintain the supplier base through exports. European member states –France in the first instance- are in the same situation except with a more difficult equation to solve because their home markets are smaller. Under such circumstances developing exports means competing fiercely for market shares, primarily to the Middle East, South East Asia, to some extent South America, and to those European member states which do not have significant defense industries and are mainly interested in buying ‘off-the shelf’ armament.

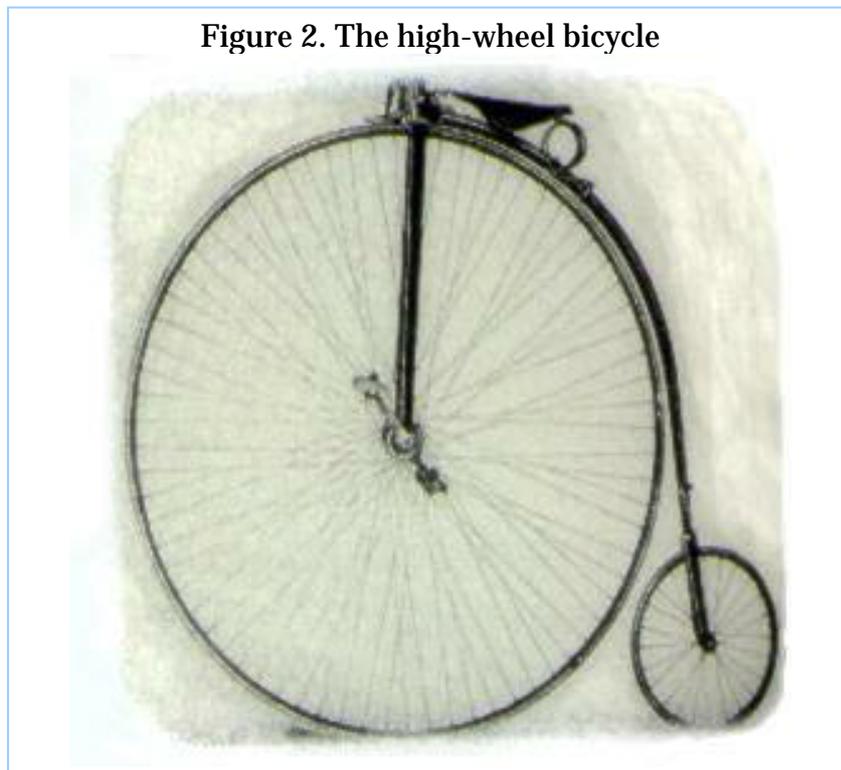
Consequently, the monocycles US/Europe market arrangement type does not seem viable in the medium/long term. From a US perspective, the need to invest in new promising but expensive technologies leads the US to seek an enlarged demand base. But also in the monocycle model, the Pentagon would increasingly be dependent

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<sup>1</sup> European Aeronautic, Defence and Space Company (EADS), formed of the French Aerospatiale-

upon a reduced number of US suppliers, a cause for concern. So many experts are in favour of opening the US defense markets to competition and think that the US will have to define military armament requirements together with their closest allies [Markusen & Costigan, 1999]. Equally, from a European perspective, the emergence of a unique European monocycle, even if it were possible to create - a sort of European champion- would still raise issues. Could it achieve the required minimum efficient scale ? What kinds of dependency might ensue from a reduction of competition ?

Therefore we sense the possibilities for another market arrangement type.



The high-wheel model builds around two basic facts.

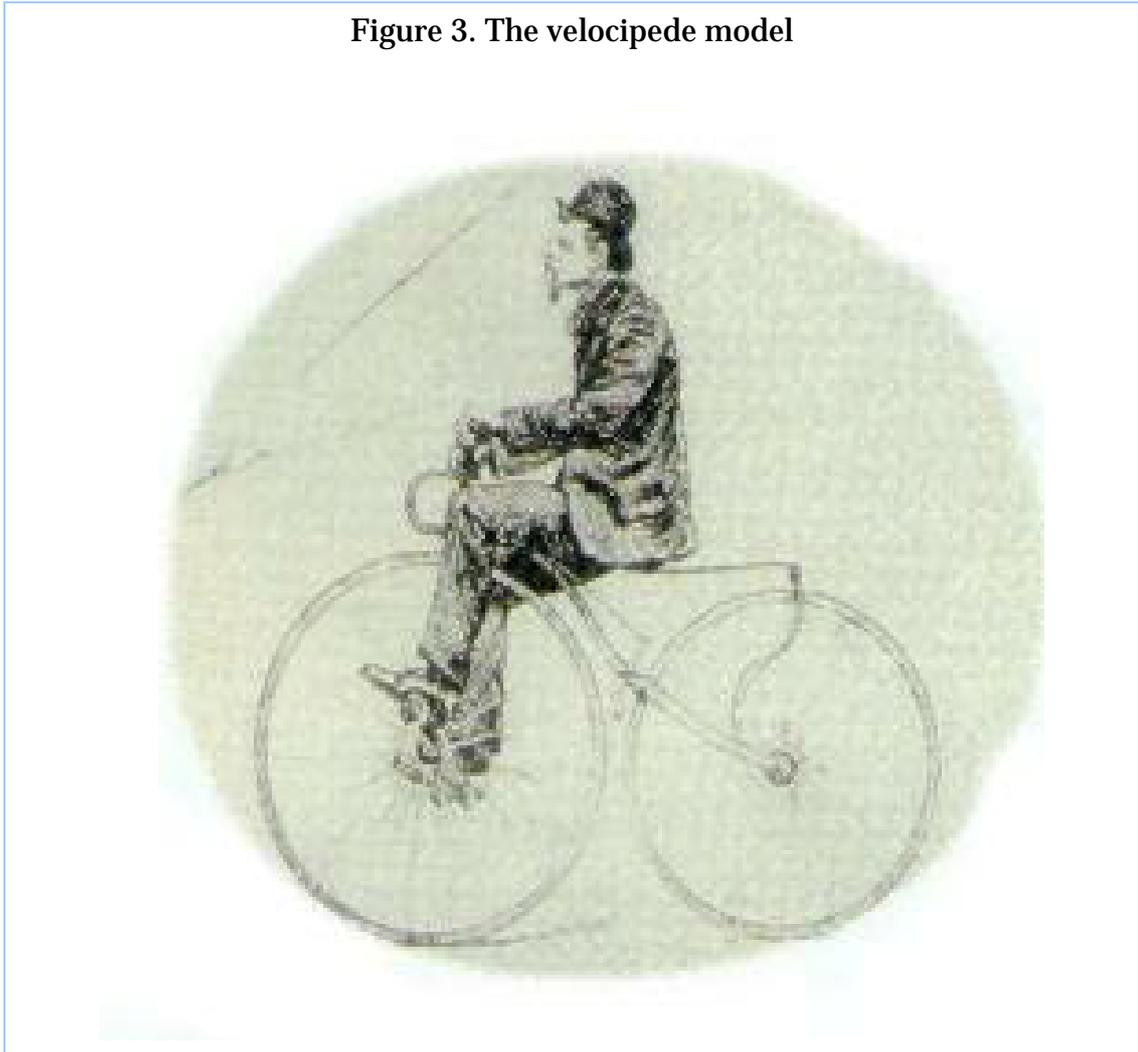
First, a considerable gap has developed between the US and Europe, particularly with regard to the scope for economies of scale. The US military budgets and R&D spending are roughly triple the European [Coffman, 2000 ; Schmitt, 2001]. By the

same token, the US defense industry has restructured and concentrated in the 1990s leading to larger firms than in Europe. In the '*Grand Bi*' drawing, the US leadership is illustrated by the fact that the pedal and gear system are located on the front wheel showing the US but also by the size of the front wheel in comparison with the rear wheel which illustrates Europe.

How is the European smaller wheel connected to a transatlantic relations framework and to the gear system ? Europe is attached to the US insofar as European member states are dependent upon US defense technologies. When they buy US products and technologies, they will require a proportion of sub-contracting to national European firms in design and manufacturing. The sub-contracting element in defense contracts has long been well understood by firms in the US as in Europe which anticipate forging transatlantic alliances and joint ventures to increase their prospects. For example, Lockheed-Martin has joined a Norwegian shipbuilder to get the Norwegian government naval fleet contract. The Norwegian government does not have the leading role in the dynamics of supply: the little wheel does not drive the bike. But the Norwegians required that the US firm would win the tender only if they subcontracted to a domestic firm. Thus the example illustrates that the transatlantic relations framework operates in a context where the US dominates and the Europeans mainly negotiate participation and compensation.

By and large, the *high-wheel* market arrangement type pervades the mindset of the US and Nato allies. But there is no difference in this respect between US Europe relations and US relations with others. South Korea, Turkey, and Taiwan have all agreed to buy the US F-16 fighter on the condition that it would be assembled in their home country. The Netherlands are known to be particularly effective in negotiating compensation with US firms. The Dutch have initiated the creation of an organisation with 21 countries, to negotiate compensation. The organisation works as a forum where countries exchange information in order to be better equipped when negotiating compensation with the US [Markusen, 2001]. The idea of compensation is not restricted to defense technology but can involve other products, all in a model where the little wheel of Europe is not the driver.

Figure 3. The velocipede model



The *velocipede* market model assumes that European fragmentation has been reduced and the European supply side has been restructured by mergers, concentration resulting in similar defense firms of a size to the US. European firms would then have to look for equal alliances with their US counterparts. The process is already underway [BAe together with Lockheed Martin takes part in the US future fighter project, the Joint Strike Fighter ; Raytheon and Thales have forged an alliance in military Air Traffic Control].

The velocipede model is one in which a truly European supply side has emerged faster than a European demand side which still remains fragmented with national member states defense budgets and R&D spending. Therefore, in spite of industry

restructuring, the US demand continues to be the engine of transatlantic relations, tenders being submitted to competing US and European firms of comparable size or joint US/Europe alliances. For example the MEADS programme and the Joint Strike Fighter are Pentagon initiatives but it associates European firms [Hébert & Nardon, 1999b : 122]. In the *velocipede* perspective, the European member states have to align themselves with products and technologies which will emerge from a competitive process driven by the US Department of Defense. They would be left either to choose or not the US option with little room for manoeuvre.

Figure 4. The bicycle model



This model is the Atlantic Alliance with military integration. It would be what economists refer to as a pure monopsony, in other words a market dominated by a single buyer organising competition among suppliers. The buyer would be NATO or a closely related entity which would include the US and the most significant European member states. The drive here is the recognition of the need for interoperability, harmonisation in armaments particularly as common military actions emerge in

different fields of operations. It would mean that transatlantic relations will be governed by the search for common armaments, even with some diversity at the edges. The end result will be to significantly drive down costs and to select the most efficient supplier, as the national preference principle disappears in favor of a truly competitive process.

Figure 5. The tandem model



The tandem corresponds to a model advocated by researchers who fear a concentration of demand coupled with a dominant purchasing power arrangement [Sapolsky, 2000]. In particular, these researchers doubt that innovation can be stimulated by a single buyer. These analysts are concerned that co-operation among the different parts of the US military to get costs reductions has gone too far, and that competition is needed for more innovation. They also contend that to get a proper and effective army, each force shall compete to carry out missions and have a certain leeway in choosing the armament it thinks the best appropriate. Thus during the Vietnam war, it turned out that the airfighter choice of the US Air Force [in particular F-111] proved less effective than the choice of the Navy [Phantom]. Another example is innovation in nuclear deterrence, which was spurred by the US Navy which was looking for restoring a sort of balance of power with the US Air Force. The Navy conceived submarine nuclear deterrence by coming up with Polaris missiles that could be launched from submarines.

Therefore, the *'tandem'* arrangement type has several different gear systems to promote an efficient dynamics. US and Europe may place orders either independently or jointly under NATO military roof or a transatlantic organisation. Each army force would benefit from some freedom, as they would compete in the choice of defense products. Armament programmes and contracts would be simultaneously put out to tender to European, US, Joint Venture firms. The underlying concept would be to make the best of competition among restructured suppliers while guaranteeing enough diversity not to end up with lower performance because of over-harmonisation. For example, the French Rafale fighter was planned so as to satisfy simultaneously the requirements of the French Air Force and the French Navy. In the process, the plane has lost part of its airfighting capabilities because it had to be at the same time a bomber and a jet interceptor. Joint tendering risks not only reducing performance but also increasing the length of production schedules as it involves additional rounds of negotiation and arbitrage. Joint procurement often translates into poor workability as the project seeks to accommodate divergent requirements stemming from different army needs. The end result is frequently an unworkable gigantic project developing into a streamlined offer which falls short of convincing the interested parties. By contrast to avoid the pitfalls of imposed joint tendering, the *'tandem'* market alternative proposes competing demand drivers across the Atlantic, in Europe and in the US backed by a restructured transatlantic defense industry. Under the circumstances, each service would benefit from innovation through open competition among European and US suppliers and be allowed to challenge each other with regard to missions and armament purchasing.

The alternative solutions to the bicycle problem have been used to illustrate how the transatlantic relations could fit in with market arrangements types. The first type, the loosely attached *'monocycles'*, appears out of date. Even the US, with huge defense budgets find it hard to unilaterally manage demand and supply. Cost and innovation efficiencies are foregone. The *High wheel* type pertains to a US restructuring and demand leadership with an increasing gap with Europe because member states monocycles are unable to merge and the states lack a common defense political impulse. This second model type exists already, a significant number of European member

states being primarily buyers of armaments 'off the shelf' in the US and Europe, leaving the most important European countries trying to develop a monocycle type of their own. The foreseeable outcome would be a European supply restructuring that proceeds more rapidly than the emergence of a European rationalised demand. It means that firms will adapt faster than States and governments. In other words, the European supply side is likely to restructure before an effective European political demand side will surface. The EADS consortium is a starting point. Industry restructuring generally follows a mimetic path. Mergers and concentration occurs in tidal waves, as in the 1990s in the US. Concentration was ignited by Bernard Schwartz, the then Chairman of Loral, which had built up a conglomerate of small and middle size companies. Later, in 1993, the Defense Secretary, William Perry, claimed that only a reduced number of suppliers would survive the next five years and that the restructuring process of supply was regarded as desirable by the Pentagon. Within a few years, the number of suppliers went from 15, each with roughly one billion dollars turnover with the Pentagon, to 5 amounting to fifty six billion dollars US defense products [Hébert & Nardon, 1999a ; Markusen & Costigan, 1999 ; Dumez & Jeunemaitre, 1999]. The bicycle arrangement type assumes a transatlantic military integration, one main purchaser, together with transatlantic supply alliances competing for tenders. The tandem model type goes a step further, as it stresses organising competition simultaneously at the supply and demand sides.

What lessons can be drawn about the future of transatlantic relations and US-Europe defense markets ? The market arrangement types and the bicycle metaphor lead to stress on three key points, namely exports, competition and industry dynamics.

### **3. Exports as a lost illusion game**

At a glance, exports seem to serve the interests of all parties. However, using and seeking to promote exports to lower costs is counter-productive.

Countries, the US as well as the European Member States, assume that a proper independent defense policy requires keeping a sufficiently large national defense industry base. The national industry can only survive if volume orders are big

enough. As the cost of new technology increases, the minimum volume to break even rises. To get the desired production volume governments relax exports constraints and regulations.

Prime contractors have a vested interest in exports. The initial research and development costs are investments mostly paid for and written off by the administration. Consequently export margins can set lower prices than if governments were not subsidising exports [see for example the French exports – Dussauge & Cornu, 1998 : 101].

Third party countries know that the larger buyers and producers of armaments need exports to ensure adequate profitability. In buying arms they can impose prerequisites. The prerequisites are twofold : the access to the most recent technology ; the benefits from compensations, particularly with regard to national industry support.

The losers in that policy are the second and third rank contractors in the exporting country. They lose turnover and market share as importing country suppliers replace them by virtue of the compensation policy. Moreover the exporting country taxpayers subsidize exports. They heavily finance the investment costs to acquire advanced military technology at a high price even as the export markets later get it at a lower price. The beneficiaries of the export game are few and powerful and the losers are more scattered and negligible.

Therefore, the export game is perverse in three ways [Markusen & Costigan, 1999] :

First it creates a welfare loss in the exporting countries. Competition between exporting countries, Europe and the US, is fierce and drives down prices. For this reason they no longer ask importer countries to pay for research and development in the export price [see for the US, Markusen & Costigan, 1999 ; for France, Dussauge & Cornu, 1998]. In other words, the largest defense industry firms sell nearly at marginal cost in export markets and make profit as exporting countries subsidise the private profits with public finance. Financial compensations cost exporter countries

dearly [7 to 10% of the sales –US bureau of Export Administration, 1999] and in addition they are detrimental to national employment and maintaining business capabilities.

Secondly, in recent years, subsidised export policies have had the effect of delaying industry restructuring and the re-orientation of defense budgets towards military needs more in line with the new geo-political threats emerging after the end of the cold war. For example, during the US Presidential election campaign, George Bush Senior announced in a visit to a McDonnell Douglas plant in Saint-Louis that he would authorise F-16 exports to Taiwan. This would enable the F-16 production lines in the US to continue in spite of the financial compensation given to Taiwan. But does the US Air Force need to maintain F-16 production lines ? Many analysts have been sceptical.

The third consideration is probably the most worrisome. The arms race was long fed by the cold war. With the fall of communism and the disintegration of the USSR, the urgency of accumulating armaments has largely disappeared. To avoid too harsh and painful restructuring, Europe and the US have relaxed exports constraints. In turn, this has meant fiercer competition in export markets and hard selling of sophisticated weapons to third countries, which have not always been the most politically stable [Markusen, 2001 ; Wilson, 2001]. Moreover, when arms were sold to a priori reliable countries, re-exports to questionable countries have occurred : Israel has been said to have sold sensitive arms to China ; Brazil has sold US technologies to Iraq enabling the latter to improve the precision of its Scud missiles, etc.

Hence aggressive countries are more and more on equal footing with NATO countries and have partly the business capabilities of production. Hence, the only path for Europe and the US to preserve their technological advance is to carry on massively investing in more sophisticated weapons. For instance, the US airfigthers manufacturers have used the argument of F-16 sales to third countries to prompt the US administration to speed up the F-22 project. But the higher the cost of investing in new technologies, the more the incentive to export. By means of supporting

exports, Europe and the US have substituted the race for accumulating armaments for a vicious circle race to higher performance weapons.

Therefore, exports to third countries are at the core of the transatlantic defense market dilemma : can we define a market arrangement type so that it would minimise the shortcomings of the export game ? Would better co-ordination between Europe and the US with regard to buying strategies create larger sales in a Europe/OTAN consolidated market, allow for sufficient cost savings and reduce the incentive to subsidise exports ?

According to the previously discussed arrangement types, is it conceivable to diminish the number of pedal and gear systems, co-ordinate them, and by so doing to re-enforce the Europe-US alliance ? Should we move to a bicycle model, if that were politically feasible ? The answer is not straightforward due to competitive issues.

#### **4. Competition**

In defense markets, competition is often in the first place analysed from a supply side perspective –i.e. competition among firms. In that respect, the past years have raised two concerns and two issues.

The concerns are on one hand the rising R&D costs together with increased concentration and on the other hand, the restructuring path of supply.

First, after the merger restructuring tide of the early 90s, only four large US defense industry prime contractors remained to supply the Pentagon. The next significant merger move, the acquisition of Northrop-Grumman by Lockheed-Martin, was blocked. The antitrust authorities signalled that concentration had reached an apex. They made it clear that they did not want the US administration to be dependent upon a single source of supply. They consider competition essential.

As for foreign entry as a means of fostering the competition, and in particular the entry of European firms into the US markets, the US antitrust authorities have been

less clear. On the one hand, foreign entry is perceived as valuable as it stimulates competition and innovation while driving costs and military budgets down. On the other hand, it deprives the American military of the total control over the technology. It is therefore regarded as a loss of technological advance. Hence, the general principle is not to use foreign entry on a systematic basis. Thus, both the direct entry of European firms through procurements and the acquisition of US defense firms by Europeans are strictly regulated –even if there is some flexibility : the acquisition of LTV by Thomson was blocked by the Bush Senior administration but in 1998 GEC was allowed to take over Tracor. The European governments and administrations are in that respect in a symmetrical situation. Subsequently, direct entry and acquisitions being restricted, strategic alliances between European and US firms have grown in number without clear industry rationale. But a common approach has not emerged.

How best to govern the supply side restructuring process is the second concern. Restructuring in the US and Europe have occurred independently. The European EADS merger is at the same time an opportunity and a threat. It is an opportunity for Europe, as it creates a credible rival to the US firms. It is a threat insofar as it leaves a single gigantic European producer facing dispersed European administrations who are presumed to apply European preference. Hence this creates a real imbalance that is hard to deal with. More important, how can you have competition between two separate blocks –pedal-gear system and wheels- without a common frame ? How can one imagine Europe buying US and reciprocally without common principles and framework ?

There are other key issues. The first relates to dual technologies. Putting the stress on technologies that have simultaneous civil and military uses can have a doubly positive effect on competition. If firms are no longer specialised into military or civil production, the competitive market enlarges and competition increases. Moreover, competing firms are less dependent upon military budgets and competition on military products has less impact on their survival. For example, if only two existing military specialised firms bid for a fighterplane of the future and one is not selected, then the unsuccessful firm will have to wait for the next generation of fighters to win a new military bid. Assessing risk and costs, the unsuccessful firm could decide to

withdraw from the market, thus shrinking the base of industrial competencies. Under such circumstances, the result is monopoly unless the final contract succeeds in combining the two firms in carrying out the project. But if it is planned that the result of the competitive process will be a sort of combination of the two bidders, will competition still hold? Therefore, on paper, dual technologies allow for organising a sounder competitive process and increase competition stability in the longer run. They also enable transfers between the more dynamic civil industries –electronic, computer technology, etc.- and the military. But this raises the issue of proliferation. Under a dual technology perspective, sensitive technologies are much less subject to control and technological advance has a shorter life. Basically the dual technology scenario has already been bypassed. In the US and Europe, the supply restructuring process has already chiefly produced increased specialisation, either civil or military. Even within dual firms, the managerial structure is split into two. They nonetheless still hope for spin-offs.

As for the second issue, cost reduction is an incentive to globalise military demand. Obviously, the fragmented European demand is a source of important waste and efficiency losses. It makes no economic sense for each European country to produce its own tank, fighter or ship. It also creates interoperability issues in joint force operations. By comparison, in the US, the shrinkage of military budgets has pushed towards joint tendering between the different forces under the Joint Requirement Oversight Council procedure. Likely, joint purchasing and tendering could generalise to NATO. If so, a dominating purchasing power would be created. It would make transatlantic defense industry alliances compete. The scenario would then refer to the bicycle market arrangement type. But it will not replicate the US perspective which gives emphasis to the importance of competition in the dynamics of innovation and which insists on the dangers of monopoly. Beyond a particular threshold, the globalisation of demand increases costs. For example, it would be farfetched to think that the US Navy, the European Navy forces, the US and European Air Forces would be able to come up with an ideal profile of a fighterplane. Globalising demand to a too large extent would mean a long and painful negotiation process with little expectation of workability and satisfaction, the likely outcome being a weapon with minimum requirements for all, and with no great interest for any. Even more, the negotiation

process would probably be risk averse, that is choosing the most mature and robust technology, and becoming the prisoner of 'path dependency' as the most promising but uncertain technologies would be the first to be disregarded without having been subject to thorough examination. Therefore, just as concentration on the supply side should not exceed a certain level if countries wish not to be dependent upon a powerful oligopoly, the globalisation of demand should not go beyond an acceptable threshold if competition and innovation among military equipment and weapons is to be enhanced.

## **5. Defining the military threats and the related technological dynamics**

From the start, it was clear that the fall of the Berlin wall meant a change in military prospects. Defense budgets have dramatically decreased. But there has been no real reassessment of military needs, and neither demand and supply have changed much. The dynamics of defense markets just seems to be moving along the old tracks.

From a demand perspective, it was essential for the US and Europe to question how to define military requirements in a world without declared enemies [Sapolsky, 2001]. Some believe that the US has tried to substitute China for the old USSR communist block. But until recently, the US has maintained the double presence doctrine, that is to be able to engage in warfare simultaneously in two parts of the world.

As regards supply, the appraisal of industry restructuring has been disappointing both in the US and Europe. Surprisingly, restructuring was sometimes more drastic during the cold war period than after. During the cold war, under the Reagan administration while the US military budgets were soaring, the DoD forced firms such as Vought, Fairchild, Republic, to exit the market. Today, with the US as the undisputed world super-power, all old lines of production -eight lines of fighters and five lines of helicopters production, six military shipyards- are still in operation although ownership has changed and the lines are running at low utilization rates. The US Air Force wants to replace its F-15 with F-22 fighters but still buys some F-15s each year to keep the production line alive. The Navy has wanted to delegate the design and manufacturing of its nuclear submarines to Electric Boat but it has been opposed with success by Virginia Congressmen. The new generation of nuclear

submarines will be called USS Virginia and jointly produced by Electric Boat and Newport News. Of course, military bases have been shut down, soldiers reduced by 750,000 and staffing by 350,000 to 400,000, but industry suppliers have increased their workforce by an equal number of 400,000. Mergers appear to have mainly resulted in political power concentration of firms with no innovative restructuring and re-allocation of assets. France shows a similar pattern [Markusen & Serfatti, 2000].

On the whole, the military appears to have shown little imagination in thinking through the impact of the end of the cold war and has faced strong 'supply-side resistance' from firms [Markusen & Costigan, 1999]. Thus, most of the US military budget has been allocated to outdated projects, inherited from the cold war, for example the B-2 bomber.

Analysts argue that restructuring should have been more substantial, incorporating bolder re-orientation of research budgets which should have targeted an enlarged category of weapons better suited to new unforeseeable threats. The recommendation was a focus on financing prototypes rather than production lines and on supporting competition on prototype design rather than products, as illustrated by the case of missiles [Flamm, 1999]. What has been lacking is a solid independent expertise on the defense industry to properly assess the situation. The defense industry antitrust cases have already revealed the lack of such expertise [DoD-Defense Science Board, 1994 ; Dumez & Jeunemaitre, 1999].

## **6. Concluding comments**

Six main points have been made about appraising defense markets in the light of transatlantic relations.

- a. The dynamics of defense markets rest on an equilibrium between state demand –i.e. public spending on military research budgets-, and private supply –i.e. the defense industry. The dynamics is governed by relationships between states, between states and firms, and between firms themselves.
- b. Transatlantic relations lie at the heart of the defense market dynamics. The possible types of market arrangement are far greater in number than any simplistic representation of relations as fortress US versus fortress Europe or, at the other end of the spectrum, as total transatlantic integration. The models hinge on the level of demand globalisation, of supply restructuring and subsequently of organising competition.
- c. Three factors play a key role in the dynamics of defense markets : exports to third countries, the definition of military threats, and the correlative technological innovation developments.
- d. Without questioning the politically workable, the paper argues that from an economic perspective, the most efficient outcome would be a combination of sufficient competition both at the demand and supply levels and that the transatlantic framework can serve that purpose. In other words, it proposes the globalisation of US and Europe military demands together with globalised demand competition between the different types of army forces. It also argues in favour of relaxing export regulation between Europe and the US, and of supply restructuring governed by antitrust concerns on monopolisation.
- e. The U-turns in US policy [blocking mergers, agreeing to concentration by means of disorderly acquisitions] appear to indicate that the defense authorities [DoD, Pentagon] lack the economic expertise to identify the most desirable restructuring

outcome [low price, high innovation] as pointed out by Kenneth Flamm and Ann Markusen [Markusen, 2000]. What is true for the US is even more relevant for Europe, where industry restructuring is driven by firms facing re-active rather than pro-active governments. Therefore, the military authorities need to develop their own economic expertise to manage the industry relationships. This would help governments to decide upon the most beneficial market arrangement type.

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