

## **Report Executive Summary**

The main aims of the research were

- To undertake a set of tightly linked theoretical and empirical investigations into the relationship between military expenditure, investment behaviour and economic growth in OECD, small industrialising and developing economies.
- To investigate how the global defence industry has been restructured and the implications of these changes for procurement

The project began in September 2001 and finished in December 2003 and has produced 23 papers, 5 of which are either published or accepted for publication. A total of 21 conference presentations were made of material presented in this report.

A series of papers, Dunne, Smith and Willenbockel (2004), Dunne and Smith (2004), Dunne, Nikolaidou and Smith (2002) and Dunne, Freeman and Soydan (2004a, 2004b), provide a contribution to the debate on the effect of military expenditure on growth and on government debt. Overall these studies suggest that military expenditure has a small negative impact on economic growth and on public finances. Four other papers, Dunne and Perlo Freeman (2003a, 2003b), Dunne, Nikolaidou and Mylonidis (2003) and Batchelor, Dunne and Lamb, (2002) study the determinants of military expenditure. A general conclusion from these studies is that changes in military spending are influenced mainly by strategic factors.

Research into the restructuring of the global defence industry and how this has affected the procurement process was pursued in both theoretical and empirical studies. In Dunne, Garcia-Alonso, Levine and Smith, henceforth DGLS, (2004a) a theoretical model of market structure in the global arms industry is constructed linking concentration, military procurement, international trade and regional conflict. We show how concentration depends on R&D costs as a proportion of the firm's output, the willingness of producers to import for their military needs and on the relative size of the external market of non-producers. Also we show that there can be substantial gains to producers from cooperation in the procurement process, but also small gains to non-producers involved in regional arms races. Arms export controls that limit the level of technology that can be exported to non-producers distributes these cooperative gains to non-producers.

DGLS (2004b) provides an empirical analysis of the restructuring of the international industry, using the SIPRI company data. It finds that concentration increased in the defence industry, by more than would be expected from the fall in military expenditure, but this discrepancy can be accounted for by the other determinants of concentration found in our theoretical model. We also find that the industry is not as concentrated as other similar high technology industries, a result again explained by our theoretical model. This paper also reports an empirical analysis of the dynamics of the change in the size distribution of firms in the industry companies. We find that Gibrat's law holds, i.e., the growth in the size of firms is random. From this result we conclude that the evolution of the market must be by features that are particular to the market rather than to features that are particular to individual firms.

Two theoretical papers cover different sources of *asymmetric information* that can arise among the main players in the arms trade and conflict situations. In Garcia-Alonso and Levine (2003), the tools of the strategic trade literature are applied to the international trade in arms. We examine the effect of arms controls, in the form of licensing delays, on the incentives to subsidize arms exports and conversely the effect of the WTO arms trade exemption on the incentives to break arms control agreements. Our main result is that arms controls and free trade commitments re-enforce each other. Licensing delays reduce the incentive to subsidize and free trade without subsidies reduces the benefits of a unilateral abrogation of arms controls. Transparency actually *worsens* the Nash inefficiencies at play in that incomplete information leads to lower subsidies and lower arms exports.

In Garcia-Alonso, Levine and Morga (2003) we study the impact of Export Credit Agencies (ECAs) which provide guarantees, insurance and reinsurance against loss due to failed exports contracts or payment default. Contract frustration can arise for two reasons: political default owing to a change in the priorities of the importer government or commercial default owing to the importer country being unhappy with the quality of the product, once this is delivered. In deciding whether to import or not a product, a government must assess the incentives that the firm has to produce a high quality good. We prove that the existence of asymmetric information between exporter firm, exporter government and importing government with respect to the quality of the exported product of project can lead to the frustration of trade. Furthermore, we prove that export credit guarantees can improve the scope for trade by encouraging risk adverse firms to trade with countries, which might engage in political default, but it may also reduce the scope for trade by increasing the incentive of firms to export low quality. This suggests that an excessive level of coverage will have a negative impact on trade.

In places our research has taken us beyond the remit of the project. In Garcia-Alonso and Levine (2004) we generalize the model of market structure in the global arms industry reported in DGLS (2004a) to any industry in which governments use procurement to influence market structure. Brauer and Dunne (2004a, 2004b) and Dunne and Lamb (2004) make general contributions to the arms offsets literature. In response to September 11<sup>th</sup>, DGLS (2004c) presents a simple model that captures some of the issues involved in managing asymmetric conflict.

This project built on one of the outstanding strengths of a previous ESRC-financed project on the arms trade by developing the *network of researchers* interested in this area. This project drew on valuable inputs from colleagues in this network. Ron Smith continued his very successful research collaboration, while colleagues and ex-colleagues of Paul Dunne and a colleague of Maria Garcia-Alonso were involved in productive collaboration. The *annual conferences* organised and supported by the project provided important opportunities for the network members to meet and discuss their work.