

Environmental dynamics and collaboration: Case studies of U.S.–Russian aerospace joint ventures

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Abstract

This work addresses two United States–Russian joint ventures in the expendable space launch vehicle sector of the aerospace industry. The paper first overviews evolving political and economic conditions affecting industry operations in both the United States and Russia as well as their influence on cooperation between companies from the two countries. The paper then describes the participants in the two joint ventures along with their motivations for and contributions to the cross national collaborations. Finally, the paper addresses the structures of the joint ventures, their progress to date, and the methods the companies have used to protect against technology appropriation by their partners.

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1. Introduction

Theorists conclude that the external environment is important in setting the parameters and decision alternatives through which an organization can operate effectively (Dean, Brown, & Bamford, 1998; Watkins, 2003). This external environment may be social or physical and is usually treated as an exogenous variable (Williamson, 1985). However, North (1991) treats the external environment as an endogenous variable because players (organizations) influence the “rules of the game,” which he calls institutions. These institutions are affected by the relative strength (bargaining power) of different stakeholders and the degree they push for change. Such an external environment is dynamic, and an organization’s resources, capabilities, and attitudes constrain its ability to either adapt or to change the rules of the game.

Governmental policy, especially through regulations and payments, has been among the most important factors in firms’ external environment. In the space vehicle (commercial launch) sector of the aerospace industry, which is the focus of this paper, this policy has been pervasive in changing the volume, location, and composition of international

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business. In effect, it is an industry whose players participate actively to affect institutions because players both owe their existence to and are constrained by governmental policies.

These governmental policies have been dynamic because of such factors as the existence and termination of the Cold War, shifts in U.S. and Russian emphasis between military and economic objectives, Russia's economic problems during its economic and political transition, and the rise of competition from other countries in the commercial launch sector. Changing external environments, especially governmental policies, have led companies in the United States and Russia to increase their emphasis on commercial markets, and they have influenced and enabled them to increase their international collaboration.

This paper uses North's framework to examine the experience of two joint ventures in the United States between U.S. and Russian companies in the space vehicle sector of the aerospace industry. The space vehicles industry includes establishments engaged in manufacturing and research and development on space vehicles, propulsion units, and parts. Typical products include ballistic missiles, space rockets (launch vehicles), propulsion units and engines for rockets, space vehicles, and airframe assemblies. This is an important industry to study because, debatably, no other industrial sector has brought more pride to either the United States or Russia over the last half century. The aerospace industry, of which space vehicles are a sub-set, has been important for U.S. and Russian economic, military, and prestige objectives. For the United States, it is one of the few industries that enjoy a net export position. Further, it has global recognition for superior quality, reliability, and state of the art technology. Space vehicles account for between 15% and 25% of the value of aerospace shipments.

The paper first overviews the industry and looks at the changing environments influencing the creation of these joint ventures. Next, it examines the joint ventures themselves, with emphasis on their rationale, the contributions of each partner, the structures of their management, and the technology protection safeguards by both the partners and the U.S. government. The information we used in the study comes from one of the author's direct knowledge of the ventures as well as documented articles, companies' websites, and 10 K reports ([Lockheed Martin Corporation, 2003](#); [United Technologies Corporation, 2004](#)).

2. Industry overview: two periods

The political schism and its dissolution between the Communist and non-Communist countries is arguably the most important governmental influence on international business in recent memory. For nearly half a century after World War II, business between the two blocs of countries was minimal. However, international business now flourishes between these countries as a result of the transformation of political and economic policies in the former Soviet Union, most of Eastern Europe, China, and Vietnam. Concomitantly, probably no other industry has been more affected by these political dynamics as the aerospace industry, especially in the United States and Russia. Almost all U.S. companies participating significantly in this industry, both during and after the Cold War, also produce other aerospace products and components for both governmental and civilian markets. Thus the study of the space vehicle sector must be put into the context of the entire aerospace industry ([Lockheed Martin Corporation, 2003](#); [United Technologies Corporation, 2004](#)).

3. Cold War period

The industry developed during the Cold War period when both the United States and the Soviet Union were engaged not only in competition for military supremacy, but also in a prestige competition so that unaligned countries would emulate and follow them. During the early Cold War period, U.S. aerospace companies were highly successful at lobbying for high government budgets and protection from imports in the defense-related segment of their industry. When the Soviet Union launched Sputnik I in 1957, much of the competition for prestige shifted to space programs. In this environment, the interests of the aerospace players became more aligned with their external stakeholders' priorities in the space vehicle segment of the industry. The governments in both the United States and the Soviet Union paid for research and development and were the customers for the end products in a fast-growing market. The high priority that both governments gave to space programs assured the industry's growth and technical development in both countries. For many years, these two countries were practically the only space program players. The United States depended on private suppliers; whereas, the Soviet Union had a monolithic state-owned enterprise. In both countries, the governments guarded their technologies closely. They feared not only that technology transfer would endanger the prestige from leadership, but also that space technology could have military applications ([Hughes, 2000](#)). Nevertheless, even in this tense and cautious

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