How can governments effectively bail out faltering defense contractors? While the idea may seem politically distasteful, any defense ministry with domestic suppliers may view the problem as supplier management in extremis. Reviewing nine prominent bailouts of defense contractors from the past 50 years, the author draws two conclusions. Providing long-term demand is very likely necessary and sufficient to maintain industry structures. Providing short-term infusions of cash may be necessary to maintain programs, but it is not always sufficient. If legislators and defense officials wish to consider either approach for short-term or long-term objectives, they should also consider the historical lessons of the financial and information asymmetries between government and industry, and the general uncertainty over how technologies will evolve.

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James M. Hasik
Overview: Credible Commitment Not to Commit?

In September 2011, as American military spending tightened, Deputy Assistant Secretary of Defense Brett Lambert delivered a warning to the Common Defense industry conference in Washington, DC (Fryer-Biggs, 2011). There would be “no bailouts.” The Pentagon’s industrial policy chief was insisting that contractors “should not anticipate substantial Pentagon financial assistance” in the event of financial difficulty. Lambert was earnest, but he was also an official from an administration that had recently and massively bailed out automotive manufacturers and banks. Observers reasonably wondered whether the secretary didst protest too much. The Obama Administration would never really face the question with defense contractors, but the question remained. However, the recent massive increases in governmental debt worldwide, incurred as a macroeconomic response to the COVID-19 pandemic, may severely curtail future military spending, putting pressure on the business of many contractors. Level-headed thinking about bailouts today seems warranted.

The recent massive increases in governmental debt worldwide, incurred as a macroeconomic response to the COVID-19 pandemic, may severely curtail future military spending, putting pressure on the business of many contractors

The question, of course, is hardly new. In 1994, during the earlier post-Cold War downturn, the Air Force had been sufficiently concerned about solvency in its supply chain to commission a study from RAND on how to forecast bankruptcies among its contractors (Bower & Garber, 1994). That same year, the Department of Defense (DoD) established an office, now known as Industrial Policy, and statutorily mandated in 10 U.S.C. 2508, “to monitor production capabilities, stockpiles and supply chain flows and prospective bottlenecks of critical sub-tier defense items” (Nelson, 2016). Since passage of the 2011 National Defense Authorization Act, the Industrial Policy office has also managed the overall Manufacturing Technology (Mantech) program, which since 1956 has separately provided longer term investments in manufacturing processes, techniques, equipment, and workforce training. Statutory authority for loans and loan guarantees is contained in Title III of the Defense Production Act of 1950, section 108(b), codified as
50 U.S.C. 2061. Statutory authority for broader assistance, such as unilateral increases or advanced progress payments, is contained in Public Law 85–804, and codified in 50 U.S.C. 1431–1435 (Mullen, 2002).

Outside these bureaucratic channels, special appropriations have been made as well. In the wake of Hurricane Katrina in 2005, Congress eventually provided just under $100 million to repair Northrop Grumman’s shipyards in Louisiana and Mississippi (see discussion that follows). After various economic crises and natural disasters, companies do get bailed out. In the process, moral hazard naturally intercedes, for “it is essentially impossible for a bailout not to set a precedent for the future” (Poole, 2008). When special favors are granted, the negative-sum game of cronyism necessarily arises, for the losses by those tapped as payers substantially outweigh the gains of the favored payees (Henderson, 2012). Normal processes can thus be important for lending political legitimacy (Levitin, 2011). Painter (2009) cites a precedent for standards: Some bailouts, particularly those of “depository institutions insured by the Federal Government, are routine and usually proceed according to a prearranged script.”

Moreover, any defense ministry that relies on domestic industry for armaments may view the problem as supplier management *in extremis*. At some point, however distasteful a bailout might seem, safeguarding the public treasury will eventually prove more honored in the breech than the observance, as public money is essential to supporting the warfighter. The renaissance-era French proverb holds *point d’argent, point de suisses* (no money, no Swiss), but modern wars are not won without modern troops and their modern weapons. Unless the failing business is funded, the flow of armaments itself may fail, and the war effort as well. To guard against such disaster in advance, bailout policy should thus be more than ad hoc (Block, 1992).
Theory: Cash in the Short Run, Demand in the Long Run

In July 2017, the Trump Administration moved in towards more active management, announcing a comprehensive assessment of the entire defense industrial base. The Federal Government would more consciously develop an industrial policy calibrated towards reducing the risk of disruption; the assessment would particularly look for “supply chains with single points of failure or limited resiliency, especially at suppliers third-tier and lower” (Exec. Order No. 13,806, 2017). Thus, as in the past, the DoD would seek to save programs, preserve industrial structure, and avoid scandals—just with an expanded and perhaps more conscious plan.

In the long run, unsteady businesses need more than immediate cash. They need real demand that will sustain the delivery of more cash over time, to recapitalize their physical assets and sustain their balance sheets

The causes of failures of suppliers can be sorted into short- and long-term problems. In the long term, entire industries disappear without sustained demand. In armaments, that demand is often monopsonistic, so governments can find themselves entirely responsible for sustaining the business of firms that they hope they will not need to bail out. However, even with sustained demand, mismanagement within the firms can lead to liquidity problems in the short run. This may require immediate infusions of cash to save a business with otherwise strong, long-term prospects.

The consequences of failures of suppliers can also be sorted into short- and long-term effects. Almost immediately, programs may falter, and deliveries of products interrupted, as reconstituting corporate capabilities under another banner can take time, even if all the staff and supplier relationships can be preserved. For years to come, the industry producing the general type of product will be structurally altered, as one firm will be missing. Market entry may be possible, but perhaps with firms without lasting positive relationships with the government. Industrial evolution is not strictly to be feared, but the closeness of deeply embedded processes and shared goals partly explains the notable stability of defense industries, in the United States and around the world (Dombrowski & Gholz, 2006).
If the consequences can be sorted temporally, then perhaps remedies can be as well. In the short run, faltering businesses need cash. Income and assets are interesting, but cash pays the bills and thus maintains operations. In the long run, unsteady businesses need more than immediate cash. They need real demand that will sustain the delivery of more cash over time, to recapitalize their physical assets and sustain their balance sheets. Demand from enduring governmental customers signals to suppliers, potential joint venture or alliance partners, and other customers that the firm is a going concern. I thus argue that short-term infusions of cash can bail out contractors in the short run, and that sustained demand is necessary for that bailout to stick.

**Model and Hypotheses: Binary Observations on Cases**

To model these theories, I identify two dependent variables and two independent variables, all binaries. *Short-Term Cash Provided* takes the value YES if the government or its agents arranges for a short-term infusion of cash into the company (and otherwise NO). *Long-Term Product Demand* takes the value YES if the Federal Government or another buyer is continuing to purchase the company’s product or similar products in the future. *Short-Term Program Survival* takes the value YES if the government’s program to purchase that product continues for at least 1 year. *Long-Term Industry Structure Sustained* takes the value YES if the number of firms in the industry producing that product does not decrease between the attempted bailout and the Federal Government’s next effort to procure the product.
In reviewing cases, I identify six means by which the government attempted to bail out the companies in question: a price increase in the contract, a loan guarantee, a direct purchase of the product when the product is not strictly needed, advancing progress payments in the contract, other direct cash payments, and a long-term purchase agreement to increase investor confidence and secure financing. I map the first five to Short-Term Cash Provided, and long-term purchase agreements to Long-Term Product Demand, though I also admit other means by which long-term demand may be sustained, and perhaps by other customers. I then hypothesize, in keeping with my previous discussion, that the provision of short-term cash contributes to program survival, and that long-term product demand sustains industry structure:

H1: Short-Term Cash Provided → Short-Term Program Survival
H2: Long-Term Product Demand → Long-Term Industry Structure Sustained

Cases: Nine Examples of Defense Contractor Bailouts

To test the models, and understand what is possible, I review nine of the more prominent bailouts of defense contractors of the past 50 years: four from the middle of the Cold War, two at the end of the Cold War, and three since that time. I have selected the cases largely based on their historical prominence and the availability of a certain richness of information about the processes and outcomes of the bailouts. Two address firms making primary materials, and seven address original equipment manufacturers
(OEMs), though I do not draw inferences from this difference. Their activities span four North American Industry Classification System (NAICS) codes: 336411, Aircraft Manufacturing; 325180, Other Basic Inorganic Chemical Manufacturing; 325220, Artificial and Synthetic Fibers and Filaments Manufacturing; and 336611, Ship Building and Repairing. For the analysis of the effects on industry structure, I further refine these administratively determined industries, to better compare the individual companies to direct competitors with similar products. I segment 336411 into Airlifter Manufacturing, Airliner Manufacturing, and Combat Jet Aircraft Manufacturing, as companies in these segments do not necessarily compete across those segments. I further refine 325180 into NH₄ClO₄ Manufacturing; 325220 into Long-Fiber Rayon Manufacturing; and 336611 into Naval Ship Building, for similar reasons. With each case I observe variables and code accordingly.

**Lockheed and the C-5**

In 1971, Lockheed extracted a $500 million unilateral price increase from the U.S. Air Force to finish its work developing the C-5 Galaxy cargo aircraft. The company had beaten Boeing's offer of a military cargo version of the 747 by agreeing to a fixed-price development and delivery program. The contract was originally awarded under Defense Secretary Robert McNamara’s Total Package Procurement concept, which would be excoriated by the FitzHugh Commission in 1969 (Boyne, 1998; Fitzgerald, 1972). Lockheed's second lot contract contained a complex pricing formula that would have made up its mounting losses, but the cash flow problems were so extreme that the company could not wait that long. The affair has been cited as evidence that defense contractors can shake down governments by citing the risk of their own financial leverage. Indeed, from the 1950s through the 1990s, U.S. contractors generally carried twice the debt load of comparably sized non-defense U.S. firms. This commitment to future debt service limited room for renegotiating procurement contracts, which paradoxically increased the value of the firms by increasing the ex ante costs of bankruptcy, and transferring those to the government (Spiegel, 1996). Regardless, Lockheed (now Lockheed Martin) remains in the airlifter manufacturing business today, continuing to produce the C-130 series of aircraft.

**Coded Observations**

Short-Term Cash Provided: YES  
Long-Term Product Demand Sustained: YES  
Short-Term Program Survival: YES  
Long-Term Industry Structure Sustained: YES
Lockheed and the L-1011
Concurrent with the C-5 development, Lockheed was also urgently petitioning the government for $250 million in loan guarantees to launch its L-1011 Tri Star airliner. The company assured the U.S. Congress that the project would break even at sales of 195 to 205 aircraft, but that given its financial distress, the money could not be obtained from commercial sources. The project was a wholly commercial affair, but the company was a valued military contractor in financial distress. The affair has since become a case study of informational asymmetries in industrial subsidy: Lockheed knew more about the project than the government, and was able to color its estimates quite effectively. A more critical analysis, which included the company’s cost of capital, predicted break-even at roughly twice that number (Reinhardt, 1973). Indeed, by 1981, when the company decided to terminate production, Lockheed had amassed cumulative orders of 244 aircraft, but expected to lose roughly $2.9 billion on the project overall (Ropelewski, 1981). Lockheed then exited the business of manufacturing commercial airliners.

Coded Observations
Short-Term Cash Provided: YES
Long-Term Product Demand Sustained: NO
Short-Term Program Survival: YES
Long-Term Industry Structure Sustained: NO

Grumman and the F-14
In March 1971, Grumman Aircraft notified the Navy Department that it wanted to renegotiate its fixed price development and production program for F-14 fighter jets. Grumman claimed to have lost $1 million on each of the first 86 aircraft and was refusing to deliver any more without a price increase. A budget decision by Deputy Defense Secretary David Packard cut the program roughly in half, though at a much higher unit price. Grumman's rescue was facilitated not merely by the government of the United States, but also by that of Iran and a consortium of banks. The Shah ordered 80 F-14s, which improved the economics of the overall program, and seven U.S. banks and Melli Bank of Iran loaned the company $250 million to maintain positive cash flow (Zumwalt, 1976). Some 40 years on, those “Persian Cats” continue to serve in the Islamic Republic of Iran Air Force, with lasting political consequence (Cenciotti, 2015). The F-14, however, was the last combat jet that Grumman would build for any customer. Its successor company, Northrop Grumman, today builds the RQ-4 Triton jet drone, and is designing the B-21 Raider jet stealth bomber. The corporate capabilities
for those efforts, however, came from the predecessor companies Teledyne Ryan and Northrop, respectively. More to the point, the 1994 merger of the Northrop and Grumman reduced the number of combat jet aircraft manufacturers in the United States by one.

**Coded Observations**

- Short-Term Cash Provided: YES
- Long-Term Product Demand Sustained: NO
- Short-Term Program Survival: YES
- Long-Term Industry Structure Sustained: NO

**McDonnell Douglas and the KC-10**

Between 1982 and 1990, the U.S. Air Force (USAF) purchased 60 KC-10 Extender aircraft from McDonnell Douglas. The aircraft were nearly off-the-shelf purchases, differing from their DC-10 airliner cousins only in the loading system, the size of the cargo door, the strength of the cargo floor, and (naturally) the boom and hoses (Werrell, 2003). The purchase was publicly justified as an insurance policy against unexpectedly severe wing corrosion in the KC-135 Stratotankers—an issue used 25 years later to justify the USAF’s later faltering tanker-leasing deal with Boeing (see discussion that follows). One of the government’s unspoken motivations, however, may have been saving the company’s airliner production from closure before its MD-11 would be ready in 1990 (Arnold & Porter, 1991). The Air Force was committed to buying large cargo aircraft from U.S. sources, and Lockheed had just exited the market. The DC-10 was admittedly only a modest commercial success, with 446 eventually built (Martin & Hartley, 1995). However, the order did help the company sustain production, as the Air Force’s procurements stretched over 8 years. While the USAF would not buy another commercial-derivative aircraft from McDonnell, it would eventually buy its C-17 (see discussion that follows). For its part, McDonnell Douglas would indeed go on to design and build the MD-11 airliner as the next installment in its product line.
Coded Observations
Short-Term Cash Provided: YES
Long-Term Product Demand Sustained: YES
Short-Term Program Survival: YES
Long-Term Industry Structure Sustained: YES

PEPCON and $NH_4ClO_4$

On May 4, 1988, an ammonium perchlorate ($NH_4ClO_4$) plant in Henderson, Nevada, exploded, killing two people and injuring several hundred. While the toxic cloud avoided nearby Las Vegas, the blast eliminated 20 million pounds of annual capacity for producing solid rocket fuel oxidizer—roughly half of that available in the United States. The plant was owned by Pacific Engineering and Production Company of Nevada (PEPCON), a unit of American Pacific Corporation. The other 20 million pounds of capacity was only two miles away at Kerr McGee’s $H_4ClO_4$ plant. As the cause of the blast was undetermined, the latter company promptly shut down for safety inspections, at least temporarily halting U.S. production.

A new plant would cost $50 to 60 million, and insurance coverage was incomplete. PEPCON immediately requested funding from the Federal Emergency Management Agency (FEMA) to assist with rebuilding. This was quickly denied. Under the Federal Disaster Relief Act, FEMA could only supply funds if state and local resources were likely to be exhausted (Disaster Relief Act, 1974). However, the State of Nevada, Clark County, and the City of Henderson all considered rebuilding to be PEPCON’s problem. Failure to insure adequately was also not considered a governmental problem, particularly when the insurers were suing PEPCON over its safety practices (Linke, 1996).

All the same, this was a problem for the Federal Government, because 90% of U.S. perchlorate purchases were for the military and NASA. Solid rocket fuel demand was decreasing with the winding down of the Cold War, but the space agency was planning a robust return to Space Shuttle flights, after the...
loss of the Challenger 2 years before. Each Space Shuttle stack equaled the propellant of about 273,000 Hellfire missiles (Butler, 2011). Demand was forecast to eventually fluctuate somewhere over 50 million pounds annually. The loss of the plant, however, was not universally alarming: on May 18, 1988, the National Security Council rejected the NASA Administrator’s plea that the president declare a national emergency.

Instead, Robert Costello, the Under Secretary of Defense for Acquisition, chaired an Ammonium Perchlorate Advisory Group. Kerr McGee offered to build another NH₄CIO₄ plant far from Henderson, under the condition that the Federal Government provide a 4-year supply contract for the entirety of the output. PEPCON wanted a piece of this action as well, but with its own supply contract and a loan guarantee to facilitate private financing. Given the government’s projections of its long-term demand, Costello’s group chose to extend long-term purchase agreements to both companies, with PEPCON building a new plant in Utah and Kerr McGee remaining in Nevada.

In 2004, after a long history of environmental complaints (perchlorate in drinking water is thought to cause thyroid problems), Kerr McGee closed its plant and sold its remaining activities to American Pacific, which remains the sole American producer (Brean, 2004). The substance would not be formally regulated for some years thereafter, but the industrial question was settled (Vastag, 2011). For purposes of analysis, however, I conclude that the long-term purchasing agreement had a comparatively lasting effect: Kerr McGee did remain in the business for a further 16 years, during which NASA and the DoD purchased a great deal of NH₄CIO₄ from a duopoly, not a monopoly.

**Coded Observations**

- Short-Term Cash Provided: YES
- Long-Term Product Demand Sustained: YES
- Short-Term Program Survival: YES
- Long-Term Industry Structure Sustained: YES
Avtex Fibers and Long-Fiber Rayon

In early November 1988, Avtex Fibers of Front Royal, Virginia, ceased production. The company had been the sole domestic source of long-fiber rayon, a fourth-tier ingredient for the carbon-phenolic blankets in liquid-fired rocket nozzles. The Commonwealth had cited huge safety and environmental deficiencies at the plant, and the company lacked the estimated $38 million to remedy the problems. This time, the National Security Council got involved quickly, and both NASA and the DoD extended long-term purchase agreements to Avtex to finance its cleanup and restart production. While the company was back in business in 3 months, it shut down permanently in early 1990 for the same reason. While the plant has been substantially remediated, it was for a time Virginia's largest Superfund site. Because the bailout proved unsuccessful within about a year-and-a-half, I conservatively code the short-term survival of the purchasing programs of the DoD’s suppliers as NO. This case thus provides disconfirming evidence for the theory.

Today, however, rayon is the dominant precursor in only 1% of composite production. By early 2002, eight different U.S. firms were producing other composites suitable for rocket nozzles (DoD, 2002). Moreover, the rapid expansion of the industry for inputs into everything from aircraft wings to bicycles meant that defense contractors had a wide range of suppliers from which to choose. By 2006, the problem was not monopoly, but short-term shortage as producers were struggling to build enough capacity to chase commercial demand (Glader, 2006).

Coded Observations
Short-Term Cash Provided: YES
Long-Term Product Demand Sustained: NO
Short-Term Program Survival: NO
Long-Term Industry Structure Sustained: NO
McDonnell Douglas and the C-17

The early stages of the C-17 Globemaster III program featured frequent recriminations between the program office and the prime contractor, McDonnell Douglas. By September 1990, the relationship had grown so bad that the company and the government were exchanging alternative threats about stopping work or canceling the program. In response, Maj Gen Michael Butchko, the C-17 program director, met with senior management and arrived at an understanding. Against the advice of his accountants, the general ordered progress payments accelerated—an action clearly intended “to put some money into Douglas Aircraft Company because they have a financial problem” (Department of Defense Inspector General [DoD IG], 1993). Letters from outraged procurement officials eventually led to an investigation by the DoD IG. In January 1993, the IG recommended disciplinary action against five officials, including Butchko (Morrocco, 1993). In April of that year, Defense Secretary Les Aspin fired Butchko, and ordered that three of the remaining four be banned from again working in government procurement (Aspin, 1993). In a rebuttal to the secretary, the Air Force Inspector General insisted their actions lay “clearly within a range of acceptable managerial discretion”—they were merely aiming for a bailout (Heil, 1994; Kaczor, 1993, p. B2). For his part, Butchko went on to a long second career managing space launch operations. The Air Force, however, still has not purchased another new airlifter since the C-17, whose production ended in 2015. McDonnell Douglas was finally purchased by Boeing in 1997, so the number of potential domestic manufacturers of airlifters (and indeed airliners) decreased by one.

Coded Observations

Short-Term Cash Provided: YES
Long-Term Product Demand Sustained: NO
Short-Term Program Survival: YES
Long-Term Industry Structure Sustained: NO

Boeing and the KC-767

In 2002, the Air Force again raised an alarm about unexpectedly severe wing and engine pylon corrosion in the Service’s fleet of KC-135 aerial tankers. The Service considered several options, including an intensive program to rebuild the aircraft (which are very similar to 707 airliners), and the purchase of new A330 Multi-Role Tanker Transports (MRTTs) from Airbus. By early 2003, the USAF had rejected these options and settled on the acquisition of new 767 aerial tankers from Boeing. With additional controversy, the
Air Force decided to lease the tankers, with options to buy, in what would have been by far the largest lease of military equipment in history. It also would have constituted a non-competitive award in a competitive market. Governmental transparency in the deal was particularly lacking. The USAF planned to lease the tankers from a special purpose entity (SPE), essentially a holding company that would be established to sell bonds backed by the value of the aircraft. The SPE would then procure those aircraft from Boeing and lease the aircraft to the USAF. Since the SPE (to be known as the KC-767 USAF Tanker Statutory Trust 2003–1) was to be wholly controlled by the USAF, the Air Force would be “leasing” the tankers to itself. Although the U.S. Federal Government does not consider itself subject to generally accepted accounting principles, this arrangement egregiously violated them. It was also a particularly bad financial deal, as the higher borrowing costs of the SPE would have cost the government a net penalty of roughly $280 million.

What was transparent was the intent—saving the 767 production line (Crock et al., 2003). At the time, Boeing claimed to be in some commercial trouble, and the company was certainly falling behind rival Airbus in orders for new jets. The 767 in particular had won very few orders in preceding years and seemed outmatched in competitions against faster selling and more modern Airbus offerings. In August 2003, Boeing had a backlog of only 31 767s, while Airbus had a backlog of over 150 A330s (Bolkom, 2003). That October, Boeing announced that its 757 production line would close in late 2004, well before production would start on the replacement 7E7, later named the 787 Dreamliner (Boeing, 2003). Still, the company had determined that it could build 767s on its 747 production line at economic rates as low as one per month (Wallace, 2002).

At the time, this meant that the USAF could probably wait until at least early 2006 to decide whether to maintain the option to acquire 767s. Boeing could have chosen early, as it did with the 707 in 1991, to close the line against the USAF’s wishes, but the credibility of Airbus’s commitment then to a factory
in the United States made this an unlikely gambit. After some scandal, the government chose not to lease the tankers. After another failed procurement effort in 2007 and 2008, the Air Force tried a third time, with a second competition that stretched from 2009 into 2011. This final time, the government awarded the contract to Boeing for an updated tanker design, but one still based on the 767. In the meantime, several other air forces had purchased refueling tankers from Airbus, indicating long-term demand for that type of military aircraft. Boeing, of course, remains in the airliner and specifically the aerial tanker business today.

**Coded Observations**
- Short-Term Cash Provided: NO
- Long-Term Product Demand Sustained: YES
- Short-Term Program Survival: NO
- Long-Term Industry Structure Sustained: YES

**Northrop Grumman Shipbuilding After Hurricane Katrina**

In August 2005, Hurricane Katrina inflicted roughly $1 billion in damage on Northrop Grumman’s shipyards in New Orleans, Louisiana (Avondale) and Pascagoula, Mississippi (Ingalls). For its cooperation with state agencies in the aftermath of the storm, Mississippi Governor Haley Barbour called the company “another great corporate citizen” (Barbour, 2015). Much of the losses were to ships under construction, but for which responsibility had already been legally transferred to the Navy Department. The company also believed that its facilities were adequately insured, and so initially disclaimed interest in a federal bailout (Pae, 2005). But disagreements with its primary carrier, Factory Mutual Insurance Company, led to alternating lawsuits that were not fully resolved until 2013 (Anderson et al., 2010; Duroni, 2013).

Thus, early in 2006, Senator Trent Lott of Mississippi sponsored a narrowly approved amendment to pay Northrop to repair its own yards. The legislative language justified the eventual transfer of $98 million for improving “the ability of shipbuilding facilities on the Gulf Coast to withstand damage from potential hurricanes or other natural disasters.” Northrop was happy to take the money, even if it did not arrive quickly; contracts were not awarded until July 2007 (DID, 2007; Scully, 2006). Even so, there was never any serious financial distress. In 2005, Northrop Grumman’s net income was $1.4 billion, with cash flows from operations of $2.6 billion. Of that, $1.2 billion was used to repurchase the company’s own shares—effectively returning the cash to its investors. The next year, net income was $1.5 billion, and cash flows from operations were $1.7 billion (Northrop Grumman, 2005,
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Note. OEM = Original Equipment Manufacturer
The shipyards were probably not earning their keep on the capital invested, but they were not hemorrhaging cash (Arnold et al., 2008). In short, Northrop got the bailout, but certainly did not need it to stay in business. For this reason, I code Long-Term Industry Structure Sustained as YES, but with an asterisk, commenting further below.

**Coded Observations**

Short-Term Cash Provided: YES  
Long-Term Product Demand Sustained: YES  
Short-Term Program Survival: YES*  
Long-Term Industry Structure Sustained: YES

**Observations: Cash Is King, Unless It Isn’t**

The table that follows summarizes the findings. The nine cases together provide strong evidence for the second hypothesis—that long-term governmental demand leads to sustained structures in defense industries. With a single disconfirming observation, they provide evidence of somewhat lesser strength for the first hypothesis—that short-term infusions of cash enable programs to survive.

From these findings, I draw two conclusions. Providing short-term infusions of cash may be necessary to maintain programs, but it is not always sufficient. Programs—like those of the C-5A, the F-14, and the C-17—generally can be saved with influxes of cash, through price increases or accelerated progress payments. However, if the company in question is truly nonfunctional—as was the environmental disaster of Avtex—even large transfers of cash may be insufficient, and even in the short run. Industrial structure sometimes can be preserved when the government sustains its demand, at least long enough for other buyers to return to the market. The difficulty is that long-term agreements and long-term demand are not the same thing. Most monies are appropriated and authorized only annually, so many...
governments cannot fully commit to enduring deals. Firms with better commercial prospects, or just owners with alternative uses of capital, sometimes cannot be paid to stay in declining military markets.

Long-term agreements and long-term demand are not the same thing. Most monies are appropriated and authorized only annually, so many governments cannot fully commit to enduring deals.

It is also important to note that in two cases—those of the C-17 and the KC-767—creative government financing of contractors’ production programs led to lengthy investigations. The C-17 program did get back on track, and a decade on, the 767 did become the basis of the USAF’s KC-46 tanker. Taking note of the Air Force IG’s response to Secretary Aspin, there remains some difference of opinion about the ethics of all this. Whatever the case, large scandals may be warded off by keeping payouts small (perhaps under $100 million), so as not to trigger congressional fire alarms (McCubbins & Schwartz, 1984). And as with Northrop’s hurricane deal, when the Congress leads in appropriating the money, all is legally and finally forgiven.

Recommendations: Match the Duration of the Remedy to that of the Desired Effects

Bureaucrats and politicians often share an interest in preserving their programs, in both the short run and the long run. In some cases, long-range procurement or war plans may depend on preserving the structures of existing industries. Industrialists generally prefer to keep their firms running within those industries. Within this Iron Triangle of interests, all prefer keeping their jobs and avoiding scandal. So, what guidance can be gleaned from these cases? If legislators and defense officials wish to consider bailouts, they should also consider the embedded historical lessons of the financial and informational asymmetries between government and industry, and the general uncertainty over how technologies will evolve. Three general cautions should govern official reviews of requests for bailouts:
1. Do not allow the deal to become a shakedown. As in the Lockheed cases from the early 1970s, consider the financial asymmetries. Contractors may be flush with cash today, but should spending turn down, they may not always be. If the company has strong cash flows from other activities and contractual commitments to uphold, its poor planning may actually not be your problem.

2. As in those cases and others, consider the informational asymmetries. Contractors will always know more about their businesses than will the government. An independent audit of the situation may not uncover everything, but a contractor truly in extremis has no grounds to refuse. Is the whole company really failing, or is its management just failing its shareholders?

3. Question the assumption of essentiality. Map the military supply chain around the firm in question, and seek to understand firmly where the threatened business sits and how it functions. Estimate how long the gaps in production can be managed with stockpiles or just input inventories. Consult competitors and technology forecasters about the possibility of substitute products, foreign sources, and forthcoming developments. As in the Avtex case, that which is critical today could prove superfluous tomorrow. Yesterday’s McDonnell Douglas factory in Long Beach may be supplanted by tomorrow’s Airbus factory in Mobile. Betting on the uninvented is a precarious business, but industry is constantly searching and innovating.

If the company has strong cash flows from other activities and contractual commitments to uphold, its poor planning may actually not be your problem.

These cautions arguably should be incorporated in bailout guidance issued to bureaucrats in the Pentagon’s Office of Industrial Policy and similar offices in other defense ministries. They may merit a separate chapter in the Pentagon’s “5000” series of instructions because bailouts should be treated as exceptional and emergent events outside the normal flow of the business of defense. In such emergencies, level-headed thinking is easier with the guidance of a playbook.
References


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