Research Proposal:
The Implementation of the U.S. Airline Industry's Deregulation

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1. Introduction

Airline deregulation began in the United States in 1978, introducing dramatic changes that opened the door to competition, lowered fares, and reshaped the industry. It also created new problems such as less comfort while traveling, leaving major carriers in a precarious financial condition, increasing congestion in terminals and in the air, and leading to mergers that might eventually threaten the competition the original reforms were designed to encourage. Over time, new issues became relevant for the functioning of the air transportation and as a tool of competition, i.e., safety and security. After more than a quarter century, it is important to review what happened and delineate lessons from the experience.

The conceptual framework of this deregulation decision-making is in the context of the choices that Calabresi and Bobbit (1978) define as "tragic," in the sense that they deal with issues that are not fully transparent (e.g., safety of the airline industry) and that have a tragic impact on key values of society (e.g., people's lives). These tragic choices are normally taken as political first-order decisions and as economic second-order decisions that allocate the resources and postpone the second-order decisions of how the choices will be implemented and the resources will be allocated.

Deregulation, in general, can be regarded in the context of parallel views: that of the implementation of public policy, that of unintended consequences and complexity, and that of the U.S. airline industry. Normally, the process of implementation has to do with the introduction of a program or a policy that creates or establishes an institution or agency. The implementation of the 1978 airline deregulation is exactly the opposite: a new policy is introduced and an Agency (the U.S. Civil Aeronautics Board, CAB),) is eliminated. In the process of implementation over an extended period of time, a series of intended variables started to operate and a number of unintended consequences began to emerge. Some of them of were tragic nature, such as the issues of safety and security that have emerged after many years following the 1978 deregulation. Like an assembled jigsaw puzzle, this research project intends to show that the deregulation of airlines constitutes a "big bang" reform whose initial phase can be viewed as a "public sector project" that was transformed under the impact of a complex and dynamic market environment with a number of unexpected consequences. In this complex and dynamic environment, implementation is influenced and explained by typical variables and factors studied in the implementation and the unexpected consequences literatures, as well as specific factors arising from the airline experience.

The research proposed here focuses on the implementation of a policy designed to eliminate government intervention in the airline industry, i.e., deregulation, and to essentially phase out the pertinent regulating agency, the U.S. Civil Aeronautics Board (CAB), over a long period of time and identifies a set of variables that came from the implementation, unintended consequences, complexity,

and airline literature, i.e., testing to assess the significance of the factors/variables involved over a long period of time.

The basic research question is to identify the factors and variables that influence the implementation of the deregulation of airlines and the role of markets and government, and then spell out how these mechanisms work; the main lessons learned, the challenges ahead.

An important clarification: this research on implementation focus on how the deregulation has operated over a long period of time. Thus the focus is the output of the system and not the outcome, or impact, which the territory of evaluation, i.e., the research does not imply evaluation of the deregulation from an economic point of view. Various evaluations of the deregulation process have been undertaken (see chapter 3) and this research may prompt new evaluations and studies of the impact from a long term perspective also in line with the reassessment of deregulation policies following the financial crisis of 2008.

Among significant variables and factors, the proposed research intends to show that the functioning of viable markets and government institutions is crucial. That is, a preexisting competitive market setting and institutions are expected to be key factors in successful airline deregulation and permit market forces to operate that can effectively assign scarce resources. In this respect, the research on the U.S. experience also intends to show that deregulation does not mean that the government abandons the "pack." Instead, it means that following the decision to deregulate, in a dynamic context, the government remains present but in different forms, i.e., in social regulation such as safety and security, and different forms of intervention (e.g., antitrust) and regulation of competition, oversight.

Many other reform programs involving privatizations and deregulations around the world (e.g., in Latin America) have not functioned so well, creating a strong backlash and a revival of interventionist policies. A number of research studies have been undertaken of reforms in emerging market countries, and various causal relationships have been explored. The experience of U.S. airline deregulation could confirm the role that market institutions —such as a developed capital market— can play in the success of market-oriented reforms.

This research becomes also relevant at the present time that deregulation in financial markets is regarded as a main responsible for the financial crisis of 2008 and its re-regulation is actively considered. In this respect, the assertion of an eminent researcher (Levine 2006, 2007) that the airline industry would not be re-regulated can be tested against the crisis of "supercapitalism" (Reich 2009). This study can provide some contribution to further research whether efforts of re-regulation should be also directed to the airline industry.

The research will draw on a vast pool of knowledge that taps different but related areas relevant to understanding the dynamics of airline deregulation, as part of the deregulation and privatization that

swept the world in the 1990s (Reich,11 52). Information is synthesized from a variety of disciplines—from public policy formulation, adoption, and implementation to economics and the political economy of reform, to finance and the specific economics of the airline business, to regulation.

The research will rely on time-series data related to regulation, deregulation, and the airline industry. The methods used will be simultaneous equations.

This paper proceeds as follows. Section 2 deals with the phases of airline deregulation. Section 3 develops the literature review on relevant topics: (1) airline deregulation, i.e., theories and economics of regulation and political environment, and policy model; (2) implementation, i.e., the definition of implementation and implementation research, the choice of the dependent variable, new areas of public policy implementation, evaluation vs. implementation: the impact of airline deregulation (i.e., to explain the difference between economic evaluation), impact analysis, and implementation analysis, process and performance; (3) the definition of unexpected consequences; (4) complexity; (5) an analysis of the independent variables for the airline industry—looking at the literature and such variables as competitive environment, profitability, fares, revenue passenger miles, hubs, number of passengers, fuel, labor, safety, and labor strikes—and presenting pertinent considerations; and (6) the performance of the U.S. airline industry to identify the dependent variable, i.e., net profit margins, various measures of productivity, and load factor. Section 4 articulates the scope of the research and the framework of analysis. Section 5 spells out the research question, the hypotheses, and definition of terms. Section 6 develops a model for the deregulation of the U.S. airline industry. Section 7 presents a testable model. Section 8 elaborates on the public policy relevance and expected results. Section 9 speaks of the methodology, i.e., time-series, data availability, and simultaneous equations.

2. Phases of Airline Deregulation

At the outset, it seems very important to review the history of the airline deregulation of 1978 and how it unfolded in various phases. Airline deregulation is a very peculiar "program," in the sense that it undoes something rather than introduces a new scheme. This section analyzes the process of implementation. Market mechanisms have fundamentally driven the implementation of deregulation, which occurred in a very dynamic and changing environment of technological and organizational solutions that continuously affected the behavior of the various interest groups involved (e.g., airlines, customers, the labor force, regulatory and antitrust agencies, the courts). This environment bred continuous changes in the market structure and its functioning that pose ongoing challenges for public policy. Four phases of deregulatory implementation can be identified,[1] which are examined here from the points of view of technological and organizational changes, market structure, players and interest groups,

[1] The four phases considered here follow Butler and Poole (1999).

and public policy challenge including regulation. This review will help to identify the factors and variables that influence the process of the implementation of deregulation.

The First Phase

During the first phase of deregulation, extending from the mid-1970s to 1984, the CAB was eliminated and *innovative technological and organizational changes* occurred. The major airlines—the incumbents—started to dramatically shift their strategies, as they aimed to reduce costs, improve efficiency, and put up barriers to new entrants. These actions included increasing the scale and scope of their operations (from point-to-point to hub-and-spokes route systems), reducing labor costs, and building customer loyalty (e.g., through frequent flier programs). As Poole and Butler (1999) explain, "Following the example of pre-deregulation Delta Airlines, which pioneered the concept in Atlanta, the major trunk airlines built up major connecting hubs. 'Hubbing made possible huge increases in service for two categories of air traveler. First, [residents] of the hub-airport [metropolitan area] gained access to a [manifold] increase in the number of destinations and number of flights. Second, residents of small cities on the spokes of the hub, who may have lost some point-to-point service, gained—via the hub—access to potentially hundreds of destinations. These major gains in air service, along with a pronounced and ongoing decline over time in inflation-adjusted [airfares], have been well documented by the U.S. Department of Transportation (DOT). In addition to scheduling changes, airlines also reconfigured their fleets for hub-and-spokes service, shifting over time to smaller aircraft to provide more frequent service [and feed] hubs from a growing number of spokes. This included a general downsizing of long-haul aircraft."

With respect to the *market structure* and its functioning, the first years of deregulation witnessed increased competition and a dramatic decline of prices.

The various *players*—airlines, customers, the labor force, and regulatory agencies—were adjusting to the new realities. As already mentioned, the major airlines started the aggressive policy of hub-and-spokes service, but they also "began to invest heavily in electronic computer reservation systems to automate and manage the distribution of tickets by travel agents" (Balko 2003). Consumers were satisfied with the increased choices and lower prices, and also with the rewards of frequent flier programs. But airline workers started to feel the other face of competition (i.e., layoffs and greater pressure in the workplace). Regulators such as the CAB were disappearing, and the market performed some of their functions (e.g., setting prices), while other organizations become responsible for other important functions (e.g., DOT provides flight authorization; and the U.S. Federal Aviation Administration, or the FAA, determines landing fees and airport space allocations).

From the *public policy* side, the CAB's elimination left the airlines mostly reliant on market functioning. Antitrust oversight became more vigorous than in the past. In 1982, a telephone conversation was taped between Robert Crandall, president and CEO of American Airlines, and Robert Putman, president and chief executive of Braniff, two airlines that were competing intensely. The conversation clearly showed Crandall attempting to persuade Putnam to fix prices and avoid the competition that was damaging for both companies. That attempt seemed to violate the Sherman Anti-Trust Act, Section 1, and the Justice Department filed suit against the American Airlines president. Later, a judge ruled that the Sherman Act had not been violated since the president of Braniff had not agreed to fix prices. American Airlines promised the Justice Department never again to engage in an attempt at fixing prices.[2]

In addition, throughout the 1970s and early 1980s, the cost of fuel increased sharply for the airline industry so that in the early 1980s, fuel accounted for about 30 percent of the operating costs (versus 12.4 percent in the early 1970s). Following deregulation, airlines were not in a position to pass the additional cost on to customers, and they were facing very inelastic price elasticity for fuel—i.e., there is no substitute for fuel in the short run and more-efficient engines can become operational only in the long run.[3]

Other shortcomings from deregulation started to manifest, and would become more severe in later phases. Airlines were limited by the aviation infrastructure—airports and the air traffic control (ATC) system—which had not been updated to deal with the vastly increasing number of flights at hub airports resulting from deregulation. This huge increase put a great deal of stress on the ATC system, which is not "financed directly by fees charged to customers. Thus when traffic soared, the system's revenues did not. It still had to go to Congress every year to request funding for capital investments and for additional controllers. Its top-down, bureaucratic management style led to serious problems in developing and implementing technological modernization to cope with an airline system whose growth was now [burgeoning] in unpredicted ways" (Poole and Butler 1999).

In has also been hard for airports to adjust to new demand patterns. "Their capital expenditures are funded [partly by the issuance of] revenue bonds and partly by federal Airport Improvement Program grants. In exchange for these grants, airports must sign long-term (20-year) grant agreements, giving the FAA de facto economic regulatory control. One major consequence is that the FAA has made it virtually impossible for airports to respond to high airline demand by increasing the [prices] of their services (i.e., fees for landings and takeoffs). Hence, the only other way to cope with airport congestion has been rationing—arbitrary 'slot' allocations at four [particularly busy] airports and a nationwide flow-control system for all the others" (Poole and Butler 1999).

[2] See Pindyck and Rubinfeld (2001, 362–63).
[3] See Cigliano (1982, 32–36).

The Second Phase

The market opportunities opened by deregulation and the *technological and organizational changes* that appeared in the first phase increased the level of congestion at major hub airports between the late1980s and the mid-1990s.

An important change was that five major airlines introduced the ticket-selling Web site Orbitz, which also has "a working partnership with most of the [other airlines]. Orbitz developed a more extensive new search engine system built on Internet technology [and entered] the travel distribution market at a relatively low cost" (Balko 2003). Another dramatic change was the "low-fare, no-frills, point-to-point service" that was offered by so-called low-cost carriers. Because of deregulation, Southwest Airlines, which had started up before deregulation, could now offer what was then a unique type of short-haul, low-priced interstate service. It avoided congested airports and directly competing with the major airlines, and it was thus able to create a flourishing niche in the 1980s market by reviving point-to-point service. By the 1990s, Southwest had grown to become one of the United States' largest 10 airlines, and it began to serve the East Coast. Its policy of charging very low prices actually opened up the market quite a bit. Thus, in Providence in 1996, before Southwest began to serve that East Coast city, daily traffic was 1,471 people flying to 14 markets. But by 1997, with Southwest serving the city, the average fare had gone down from $291 to $137 and the daily number of passengers had gone up to 5,100. Southwest's appeal as a model encouraged many other start-up airlines to try to copy its success. As Poole and Butler (1999) observe, "Many have failed or have pursued other niche market strategies. Several of the major airlines—including Continental, Delta, United, and US Airways—created subsidiaries offering low-fare, low-frills, point-to-point service using a single type of aircraft and lower-paid crews."

From a *market-structure* point of view, in the late 1980s and early 1990s, the secondary effects of deregulation started to spread. Four airlines—Continental, Eastern, Pan American, and then TWA—had to file for Chapter 11 bankruptcy and—with the exception of Continental—had to declare bankruptcy, increasing the concentration of the airline market. In 1986–87, there were important new developments, including a wave of mergers that has rarely been matched in any other industry. The 15 carriers operating independently at the start of 1986 were reduced to 6 by the end of 1987.

The various *players*—airlines, customers, the labor force, and regulatory agencies—continued to adapt to the dynamics of competition. Consumers were still satisfied with their choices and lower prices, and also with the rewards of frequent flier programs, but they are starting to feel the discomfort of flying in packed airplanes. Airline workers continued to face layoffs and reduced salaries. After deregulation, any domestically owned airline that was classified as "fit, willing, and able" by DOT could fly on any domestic route. And as Kennedy and Purcell (2004), explain DOT's main regulatory role "changed from

approving whether an airline was operating in the public interest to deciding whether it was operating in accordance with safety standards and other procedures.

From a *public policy* point of view, the low-fare, point-to-point revolution [was beginning to face the] constraints of bureaucratic, nonmarket aviation infrastructure [capacity]. The very success of this type of service put stress on the airports it [served] and on the ATC system. Its continued growth [becomes critically dependent] on freeing up infrastructure capacity to meet increased future demand."

The Third Phase

In 1997, a new kind of small airplane, the regional jet (RJ), began to fly. The RJ's inception epitomizes the *technological and organizational changes* of the third phase of airline deregulation, which basically occurred in the late 1990s. Bombardier, the first company to enter the RJ market, manufactured 50-seat and 70-seat planes. At first, RJs were mainly flown by the regional airlines that feed passengers to the hub airports from which the major airlines like American, Delta, and United fly. These RJs have become very popular with air travelers, because they are more comfortable and faster than the small turboprop aircraft that they have often replaced. But passengers' preference for RJs is only one of their advantages. As Poole and Butler (1999) note, "Ultimately more important is [the RJ's] low seat-mile cost for medium-length routes capable of supporting only modest numbers of passengers. The RJ's direct operating cost (per seat mile) is lower than that of a comparably sized turboprop for routes longer than about 400 miles. The ability to serve such markets economically with jet airliners opens up the possibility of adding smaller cities and more frequent service to the spokes of hubs and the prospect of new [markets] for point-to-point service."

Code sharing also began to appear, permitting a particular flight to be completed by more than one airline. This system constitutes the other main innovation introduced by airlines during this period. It has a commercial advantage, but it limits customer choice since the airline ticket shows only the detail and flight number of the airline selling the ticket and not whether the passenger will have to change to other airlines during the journey. This hides information from customers, who weigh which airline to fly based on safety records and standards of service. In many cases, customers will pay more to fly with the airline of their choice. Moreover, it is still difficult for a passenger to get information on the safety record of a particular airline. Consumer groups believe that airline tickets should show the full details of all airlines that will complete a journey.

From the perspective of *market structure*, the late 1990s witnessed a deterioration of the financial position of some airlines and more mergers and acquisitions, as well as the bankruptcies of established full-price airlines and the growing success of the low-cost carriers. These developments increased market concentration and challenged competition, also forcing a deterioration of the quality of flights.

Consequently, *new players*—such as the antitrust agency and the courts—began to play a prominent role in deciding proposed mergers and acquisitions.

From a *public policy* point of view, the issues became more complicated as deregulation began to come full circle, significantly changing market structures in ways that could threaten rather than heighten competition, as the original reforms had intended. In addition, social regulation (e.g., safety) became a crucial component of the airline business. Public policy and regulation in a broader perspective focus more on competition and new bodies of research and advocacy materialize (e.g., the American Antitrust Institute, AAI).

The Fourth Phase

The fourth phase of deregulation started with the terrorist attacks of September 11, 2001, which changed the equation in the airline industry by disrupting the airlines' business model and making security as important as safety. The events of September 11 and the issue of security have prompted dramatic *technological and organizational changes* that in turn have had a significant impact on causal relationships and constitute a new variable shaping the airline industry. Organizational and technological changes continue to characterize the market in its global dimensions.

From a *market structure* point of view, the already-weakening financial health of several airlines grew precarious, and despite the financial support of the U.S. government, the issues of bankruptcy, mergers, and concentration intensified. Furthermore, the playing field became more global, not only because of terrorism but also because foreign airlines became interested in entering the U.S. market and in acquiring ailing U.S. airlines. The situation was noted by Morgan Stanley, for example, which in its August 15, 2003, report on the airline industry in the United States said: "If an industry produces negative total returns on capital over its entire history, consolidation is inevitable." The looming question thus becomes: Is consolidation leading the United States toward two mega-airlines, which would mean a return to regulation?[4] Market structure is increasingly characterized by a dualism between those companies (the so-called legacy airlines) that are nearly bankrupt and those (the low-cost carriers) that are growing and gaining market share. In this respect, a process of concentration of airlines –what the 1978 deregulation intended to address – across the world starts to emerge.

Players are more numerous and articulated and new interests due to safety and security emerge (e.g., new agencies like the transportation security administration, TSA; consumer groups on issues of security and safety become more vocal). Some interest groups (e.g., labor) continue to lose power.

Table 1: The Phases of Deregulation of U.S. Airlines

[4] See Roberts (2003). American Airlines is burning cash at the rate of $1.1 million per day, Continental Airlines and Delta Airlines at the rate of $1.2 million per day, and Northwest Airlines at the rate of $2.3 million per day.

Table : The Stages of the Deregulation of Airlines							
	Technological and Organizational Changes			Market Structure	Various Players		
Period	Innovations	Service	Efficiency	Competition	Airlines, customers, labor force, and regulatory agencies	Regulation	Public Policy Challenges
1974 - 1984	Old regulators are disappearing	Air service increases (hub + small cities)	Lower prices	Increased competition - Antitrust more active	Adjusting to deregulation and its new realities.	1978 deregulation: economic regulation based on competition	Airport capacity
1985- 1997	Orbitz and Low Cost Carriers (LCCs)	Quality of service discomfort of flying - safety for USDOT	Lower prices	Continental, Eastern, Pan Am, and then TWA had to file for Chapter 11 bankruptcy	Consumers are still satisfied with their choices, lower prices and with the frequent flier programs; Airline workers continued to face layoffs and reduced salaries.	Economic regulation: finacial performance and stock market	Airport capacity; Anti-trust
1997-2001	Regional Jets; Code sharing	Deterioration of the quality of flights	Cost reduction	More mergers and acquisitions, as well as bankruptcies of established full-price airlines and the growing success of LCCs	Antitrust Division and the courts began to play a prominent role in proposed mergers and acquisitions	Social regulation:safety	Financial health of companies; bankarupcy; safety
2001-to date	Deregulation outside US- increased transparency	Deterioration of the quality of flights stabilize	Efficiency stabilize; Cost of security	Dualism between those companies (the so-called legacy airlines) that are nearly bankrupt and those (the LCCs) that are growing and gaining market share.	Bankruptcy, mergers, and concentration intensified and make Government entities more vigilant	Social regulation : safety and security. International Regulation	9/11/2006- Financial health of some companies worsen; Security

Table 1 synthesizes the four phases and shows the complexity of the sector following the 1978 deregulation. In fact, deregulation started to increase competition, but it has culminated in a series of challenges that were not fully anticipated when the great experiment began in 1978. Under these circumstances, policymakers have been facing an ever-changing, very complex, and dynamic situation.

From the *public policy* point of view, the process of consolidation and the issues become truly global as alliances are made between carriers of different countries.

3. Literature Review

This section covers the literature review on deregulation, implementation, unintended consequences, and complexity and on the U.S. airline industry.

a. Airline Deregulation: The Economics of Regulation and the Political Environment

This review looks at the economics of the deregulation of the U.S. airline industry in more detail. The analysis is undertaken on four tracks: the economics of regulation and deregulation, the political environment of deregulation, the evaluation of the impact of the 1978 U.S. deregulation,[5] and the policy conditions that lead to the enactment of deregulation.

Theories of Economic Regulation and Deregulation

Over time, a number of theories have been put forth to explain and justify regulation. Posner (1974, 1) tackles a "major challenge to social theory: to explain the pattern of government intervention in

[5] The AEI-Brookings Joint Center has produced much material on regulation. The Brookings Institution itself has published a series of papers and books on network deregulation and particularly on airlines; see, among others, Baily and Winston (1987).

the market—what [one] may call "economic regulation," [which] . . . refers to taxes and subsidies of all sorts as well as to explicit legislative and administrative controls over rates, entry, and other facets of economic activity.

There are two theories. One is the "public interest" theory, which holds that regulation is supplied in response to the demand of the public for the correction of inefficient or inequitable market practices. The second theory is the "capture" theory—a poor term, but one . . . espoused by an odd mixture of welfare state liberals, Marxists, and free market economists—[which] holds that regulation is supplied in response to the demands of interest groups struggling among themselves to maximize the incomes of their members. But there are crucial differences among the capture theorists. The economists' version of the capture theory is the most promising, even though there are significant weaknesses in both the theory and the empirical research that is alleged to support it."

Theory number one, the normative theory of government (Musgrave 1959, p.4) - i.e., regulation happens in response to market failure, with the objective of eliminating or lessening it - might be a good positive theory. One can think of this as a "good government" theory, i.e., the public interest theory.

Theory number two, the "capture theory," is associated with George Stigler (1971). It states that certain well-organized groups get protected, and that regulation serves producers' interests. Stigler's theory, which has the merit of unifying the economic and political aspects of regulation, concludes that regulation is in the interest of regulated companies and self-interested politicians and constituents, who exchange objects of utility—price, or entry certificates—for votes and money. This theory states that certain well-organized groups get protected, regulation serves producers' interest, and aggregate welfare does not matter—i.e., the regulator seeks a politically optimum distribution, and he or she will change prices. In a classic article, Peltzman (1976) modified this capture approach, also following Posner (1971) with his reference to the issue of cross-subsidization from one consumer group to another, and suggested that capture may be a special case.

Along these lines, one could see that there is theory number "three" that can be regarded as an expansion of the capture theory and argues that regulation generates political payoffs and creates deadweight losses. However, regulation will tend to reduce deadweight losses that reduce the total wealth available for distribution because wealth is the source of political payoffs. Becker's (1983) research lays the groundwork for this idea, and Winston (1993, 1998) and others have worked to test it.

Alesina and others (2003, 1) broaden the view to other countries. They make reference to the "commonly held view about the difference between continental European countries and other . . . economies [belonging to the Organization for Economic Cooperation and Development (OECD)], especially the United States is that the heavy regulation of Europe reduces its growth [rate]. Using newly assembled data on regulation in several sectors of many OECD countries, [they] provide substantial and

robust evidence that various measures of regulation in the product market, concerning in particular entry barriers, are negatively related to investment. The implications of [their] analysis are clear: regulatory reforms, especially those that liberalize entry, are very likely to spur investment. Specifically, they look at the effects of regulation on investment in transport (airlines, road freight, and railways) and communication (telecommunications)."

On the policy side, "beginning with the 1887 Interstate Commerce Act, which regulated the railroads, the U.S. federal government has used its legal power to control pricing, entry, and exit for industries in which competition allegedly was not workable because large-scale economies would cause firms to undercut each other's prices until they were either all bankrupt or the industry was monopolized. During the 1970s, the federal government began to deregulate large parts of the transportation, communications, energy, and financial [sectors] because it [had become] clear that economic regulation was, in fact, impeding competition that could benefit consumers. Today, federal price regulations are largely confined to agricultural commodities and international trade in selected products—neither of which is believed to invoke natural monopoly considerations" (Winston 2006, 22). These considerations permeate the economic debate over U.S. airline deregulation.

The Economics of Airline Deregulation

A theory of deregulation argues that governments remove selected business regulations to encourage competition and the efficient operation of markets. The hypothesis for deregulation presumes that markets work better without interference and that the government has no business regulating and intervening because doing so will reduce social welfare. This premise[6] assumes that fewer regulations will spur increased competition, which will lead to higher productivity and efficiency, lower prices overall, and a greater consumers' surplus.[7]

Extensive pre-deregulation research, which focused on price, entry, and industrial organization, was influential in formulating policy revisions and in the subsequent decision to deregulate (see, among others, Douglas and Miller 1974; Eads 1975; DeVany 1975; and Brown 1987). Following Emmons (2000), deregulation encompasses the easing or elimination of government restrictions in three major areas: freedom of entry, freedom of action, and profitability within the market system (see Van Overtveldt 207, pp.197-239) Therefore, the removal of regulation under economic theory leads to greater efficiency and produces societal welfare. In this sense, economic regulation is concerned with societal and economic impact and not necessarily with "performance" evaluation, which is the main interest and focus of

[6] For a formal presentation of the previous situation of the CAB providing "stability" to the industry by fixing a prices at a level above the market-clearing level, see Pindyck and Rubinfeld (2001, 298–99).
[7]Deregulation is different from liberalization because a liberalized market, allowing any number of players, can be regulated to protect consumer rights and prevent de facto or legal oligopolies.

implementation and would represent a step before impact—a nonultimate outcome. Reich (2008, pp.65-73) sees the push for deregulation as the mirror image of the shift toward regulation between the two Wars.

In the U.S. airline sector, after the Great Depression, as part of an overall attempt "to limit competition and protect firms from failing, commercial aviation was organized essentially as a government-supervised cartel. Under legislation enacted in 1938, the CAB decided which airlines could serve which cities and set the [one] price (not prices) that they could charge for each route. In most cases, only one or two airlines were allowed to serve a particular route (e.g., the Los Angeles–Honolulu and Miami–Los Angeles routes were monopolies for many years, and only two airlines were allowed to serve the New York–Miami route). Prices tended to be high, and to increase over time, because the CAB permitted increased costs to be passed along in higher fares," providing little incentive for airlines to seek ways to reduce expenses (Poole and Butler 1999, 1).

From the 1950s through the 1970s, U.S. airlines' marketing departments lobbied the CAB for additional airline routes, but few approvals were granted. In the days of regulation, the government had tried to ensure that no airline went out of business. In this climate, the heads of airlines tried to please regulators rather than customers, which impaired their efforts to keep consumers happy. And because airlines could pass on costs via CAB-approved fares, inefficient work rules and expensive management practices proliferated (Poole and Butler 1999, 1). Thus, at the coming of deregulation[8] (Vietor 2002, 19–57, provides an extensive review of airline deregulation), airlines had too many large airplanes (i.e., assets with a corresponding sizable debt burden needing to be repaid), too many routes that were unprofitable, and "work rules that would prove unsustainable in competitive markets" (Poole and Butler 1999, 1).

In the 1960s and early 1970s, economists had observed that in the few markets not controlled by the CAB—particularly California's north–south routes—healthy airline competition drove airfares way down compared with those on analogous regulated routes. Then, during Gerald Ford's administration, the government deregulated air cargo and began to allow discount fares. Finally, in Jimmy Carter's administration, the CAB chairman, Alfred Kahn, promoted more deregulation (Poole and Butler 1999).

The literature on the history of airline deregulation confirms that one of the most critical factors for market reform was the perception that interest groups (i.e., airlines and organized labor) had captured regulation by the CAB, creating inefficiencies, reducing competition, and leading to higher fares. As mentioned above, a crucial argument was the experience in the California markets—particularly Pacific Southwest Airlines' and Southwest Airlines' intrastate operations—in which competition forced down fares to roughly two-thirds the level in comparable markets under CAB regulation (see Eads 1975).

[8] Deregulation is a subset of regulatory reform and refers to the complete or partial elimination of regulation in a sector to improve economic performance; see OECD (1997).

Joskow (2004) describes how policymakers compared airfares in California and Texas, as unregulated "natural experiments," with airfares between CAB-regulated city pairs elsewhere to buttress their sophisticated economic analysis arguing that deregulation leads to lower prices. Additional support came from the U.S. General Accounting Office (GAO; recently renamed the Government Accountability Office), which produced an influential study (GAO 1976) "estimating that domestic airfares were anywhere from 22 to 52 percent higher because of regulation" (Costello 2008).

The notion of competition was a key factor in the debate about policy revision. Under the CAB regime, "the number of trunk airlines had decreased from 16 in 1938 to 10 in 1978. By then, the 5 largest airlines accounted for two out of every three dollars in domestic airline revenues" (Costello 2008). This level of concentration, driven by anticompetitive regulatory policies, was deemed unacceptable. Proponents of deregulation therefore unified around the economic theory of perfect market contestability, according to which entry and exit are absolutely costless. In this type of theoretical market, competitive pressures stemming from the perpetual threat of entry and actual current rivals can prevent monopolistic behavior (i.e., higher prices and restricted output) (see Coursey et al. 1984; Schwartz 1986). As Costello (2008) explains, the reasoning was that "airline assets may have been 'fixed' from an accounting standpoint, but they were movable in every other sense. Left unrestrained in an open marketplace, airline assets would be deployed and redeployed as market conditions demanded. This would produce both actual and potential competition that would reduce concentration and fares."

The specific objective of airline deregulation was very well aligned with the economic theory justifying deregulation; i.e., the removal of government intervention would lead to more competition (and less concentration), lower fares, and more opportunities for consumers to choose the airline to fly. The discussion emphasized economic deregulation—i.e., the control of prices, output, and the entry and exit of firms and what Reich calls Supercapitalism (Reich 2007, p.11). However, issues related to social regulation—e.g., involving behavior that threatens public health, safety, welfare, or well-being—were also marginally addressed.[9]

The enactment of airline regulatory reform in 1978 was not only guided by economic principles but also very much rooted in the political process and the political economy of deregulation (for definitions of economic and social regulation, see Salamon 1989, 198; Salamon 2002, chaps. 4 and 5).

The Political Economy of Airline Deregulation: Advocates and Opponents

To look at the advocates and opponents of deregulation is to analyze the political economy of deregulation. Without the inclusion of the dimension of political economy, one would not be able to explain why it is so difficult to make an economy more competitive and why deregulation is so hard to

[9]Reich 2007

achieve, given that citizens stand to benefit from stiffer market competition for products and services. At the outset, I need to make a brief reference to the political and ideological environment of those years. The attack against the expansion of the state started with the United Kingdom's Margaret Thatcher in the world of the mid-1980s, which was still a nonglobalized world dealing with the Cold War. In the United States, Ronald Reagan followed suit, and the conservative ideology and movement have since then continued to gain steam, as Micklethwait and Wooldridge (2004) articulate. In a relatively short period of time, America had turned to the right, confirming that the United States is a much more conservative nation than Europe in many respects, regardless of the party that occupies the White House (Reich 2008, p.66).

Despite this "climate," the issue of regulation versus deregulation was also well known in academia. Following Lowi (1964), a regulated industry—as airlines were before 1978—is characterized by a situation in which those who bear the cost of the regulatory policy are concentrated (e.g., labor) and those who receive its benefits (e.g., travelers) are also somewhat concentrated. A lack of competition is typically the outcome of regulation, and regulations create economic "rents," i.e., the higher wages and profits determined by an uncompetitive market. However, the process leading to deregulation opens up the category of travelers to the broader group of consumers that regulation had penalized by restricting competition. Deregulation is expected to reduce rents and to redistribute them from "overprotected minorities" (e.g., airline companies and pilots) to the general public. However, the general public is less organized and less well informed about its interests than are the overprotected minorities, which obtain privileged access to politicians, making it harder to achieve deregulation. When a government attempts to liberalize an industry, labor unions and companies that have been antagonistic on other issues become allies. Deregulation threatens both camps, eliminating the rents of both labor and management (see Pindyck and Rubinfield 2001, 348).

The case of U.S. airline deregulation also shows how coalitions can form to overcome obstacles to change. Those advocating substantial deregulation were initially relatively small in number, and the economic literature played a very important advocacy role (Baltagi, James, and Daniel 1995, 246). The prominent U.S. academics and economists who were involved included James C. Miller III, who was first at DOT and then on the President's Council of Economic Advisers; several officials in the Ford administration; and many officials in the subsequent Carter administration, perhaps most notably, Alfred Kahn, who helped shape the attitude of the CAB toward playing a very constructive role—even advocating its own elimination—without employing what Kerwin (2003, 110) calls the "tactical delays and stalling tactics" bureaucracies often employ to defend their turf. Consumer groups, Barnum (1998) explains, "added their voices and political clout." And a large number of liberal Democrats—putting the interests of the consumer ahead of organized airline labor, which mostly was against deregulation—saw

the issue as a populist one. Conservative Republicans and Democrats, wanting to put the industry's decisions in management's hands, "embraced the opportunity to use the case to attack government regulation per se." Commuter airlines and local service carriers supported deregulation (Derthick and Quirk 1985). Gradually, some airline chief executives began to support deregulation, including Bob Six of Continental. Bill Sewall of the leading international carrier Pan American "became a convert because he saw the possibility of obtaining domestic routes. Don Nyrop at super-cost-conscious Northwest could [have gone] either way—Northwest's break-even load factor in those days was 16 percent below United's, 43 versus 59 percent" (Barnum 1998).

Still, almost all the airlines were on the other side, vehemently opposed to deregulation. Al Casey and later Robert Crandall at American Airlines and Edward Colodny at Allegheny Airlines (later to become US Air and then US Airways) were among the most articulate and vociferous opponents, along with Eastern Airlines' Frank Borman and economists at TWA and Delta. As Barnum (1998) explains, "Most airlines were largely comfortable with the status quo—cost-plus fare structures" meant that if the major carriers had to pay pilots more to avoid a strike, they could cover this cost by raising prices. They saw the new policy as bringing negative consequences. Opponents argued that the airlines "would not be able to finance new planes because their route certificates would lose their economic value (due to monopoly) if anyone could start up service on their routes." The labor unions feared pressure on their pay scales if fares were no longer cost-plus, and, even worse, the prospect that nonunion airlines could emerge." However, the unions were not strong enough to oppose deregulation and/or to ally with airlines that had mixed views and interests. Moreover, the Democratic Party did not appear to be leaning on the side of labor but rather on the side of the more general users and consumers of air travel.

"Similarly," Barnum (1998) notes, "many airports were afraid that they would no longer be able to sell revenue bonds if the soon-to-be destitute airlines lost their security blankets. Smaller cities feared a loss of trunk airline service. The financial community was nervous, both in its role as [financier] to carriers and as [investor]." However, the other side of Wall Street - experts in mergers and acquisitions and bankruptcy-regarded deregulation as an opportunity.

From the point of view of those focusing on the substantial issues, many of the potential problems of deregulation did not receive policy and political support (see Barnum 1998). There was a lack of strong and articulated arguments against deregulation and a comprehensive and convincing evaluation of the various probable trade-offs after regulation: cutthroat competition and declining prices, a diminishing quality of service, and the concentration of the industry through consolidation spurred by competition. In this respect, the possible reconcentration of the industry was anticipated at the time as a possible outcome of deregulation. For example, Secor Browne (a former CAB chairman) predicted that "strong carriers would ultimately push the weak ones off the cliff," and he warned of an "irresistible pressure toward

elimination of the smaller carrier as a competitor" (see Browne 1975; Rasenberger 1975). However, this outcome did not receive enough attention and support because of the argument that positive short-term market forces would negatively shape the long-term structure of the industry. As Roberts (2003) posits, "Under the deregulation regime, airline failure is a sign of success. It is taken to mean that "creative destruction" is working by forcing . . . high-cost providers [out of the market]." Once competition eliminates itself, however, "there will be monopoly and reregulation but not enough carriers to provide competition in service."

Price differentiation and discrimination was another issue that was not fully anticipated.[10] Specifically, concern was raised that deregulation would reduce the possibilities of airlines providing safety standards (Barnum 1998, 8). This very important consideration was not persuasive; i.e., about 10 years after the Deregulation Act was passed, Kahn (1988) indicated that there had been a decline in accident rates of approximately 35 percent.

"The best argument against deregulation," Costello (2008) points out, "was that the proper administration and/or reform of the existing law could cure any regulatory excesses—the classic don't-throw-out-the-baby-with-the-bathwater formulation.[11] Congress, acting on a largely bipartisan basis, chose to throw out the baby. That choice cannot be second-guessed because of our inability to predict what would have happened under a regulatory reform scenario."

All in all, the opposition to airline deregulation was not strong, while its advocates were gaining influence by marshalling powerful arguments that convinced key political actors—such as Senator Edward Kennedy—to tilt in favor of consumers rather than labor. When Kennedy "embraced the cause and held hearings highlighting the benefits of [competition], airline deregulation became a pro-consumer issue. The result was the historic Airline Deregulation Act of 1978, which [first] phased out CAB controls on routes and pricing, and eventually [phased out] the CAB itself" (Poole and Butler 1999, 1).[12]

Breyer (1982, 317–22) explains very well the evolution of the process of airline deregulation from proposal to enactment. He identifies three crucial ingredients for success: a detailed inquiry into the

[10] Price discrimination occurs when a seller has a degree of monopoly power and has the ability to price discriminate, i.e., to charge a different price to different customers. Joan Robinson, in the *Economics of Imperfect Competition* (1969, 1946) has specified this concept. Alfred Marshall then elaborated the idea of consumer surplus, which is affected by price discrimination, and Pigou articulated the notion of different types of price discrimination.
[11] In 1975, the D.C. Circuit Court held that the existing regulatory scheme did not have a per se presumption in favor of competition, "but when sufficient traffic exists to support competition, certification of competing carriers is mandated by the Act." *Continental Air Lines, Inc. v. Civil Aeronautics Board*, 519 F.2d 944, 954 (D.C. Cir., 1975), cert. denied, 424 U.S. 958 (1976).
[12] The regulatory reform act became Public Law No. 95-504, 92 Stat. 1705 (1978). The act phased in deregulation over a five-year period, but a proactive CAB largely finished the task, described as "scrambling the eggs," within two years. Meanwhile, the domestic air cargo industry actually had been deregulated in 1977 without major disruption (see Oster and McLean 1987).

industry that makes the case for reform; a practical reform proposal that allows the transition from the old to the new system; and a political coalition that supports and brings the reform to enactment.

The Policy Model

In line with Breyer (1982), the enactment of airline deregulation follows the Kingdon model. In his principal book, Kingdon (2002) indicates that airline deregulation is one of the enacted policies to which his model can be applied to explain the convergence of problem, policy, and politics.

With respect to the *problem*, in the late 1970s there was a widespread sense that the airlines were inefficient. As was mentioned above, the "driving force behind deregulation was the perception that the CAB" had been "captured" by special-interest groups (e.g., the airlines and their unions), resulting in reduced competition and higher fares, as Costello (2008) clarifies. Flights were taking off half empty, a visible measure of extensive inefficiency. This perception of capture was reinforced further by the CAB's actions in the first half of the 1970s, which included "(1) an unofficial moratorium on [awarding] additional domestic routes and certifying new airlines; (2) the approval of agreements among the trunk airlines that limited capacity in major domestic markets; (3) a massive investigation of the domestic fare structure, which produced, among other things, a mileage-based fare formula and detailed standards for everything from seating configurations to in-flight service; and (4) continued grants of antitrust immunity to an airline cartel that fixed prices in international markets" (ibid.).

From a *policy* point of view, as the previous sections have shown, during the 1960s and 1970s economists and policy analysts had undertaken substantial research and policy work on economic regulation and on developing the theoretical underpinnings for a fundamental assertion that government regulation impedes the proper working of markets and creates distortions. With respect to the deregulation of the airline sector during the 1970s, there was an unprecedented production of books, papers, and articles. This surge of literature confirms Kingdon's (2002) theory about the garbage can (Cohen, March, and Olsen 1972, 1–25, esp. 1–3, 9–13), which holds that the policy community and organizations have a tendency to come up with many "policy solutions" that are then discarded because they do not solve any appropriate problems. But there may, by and by, be problems whose solutions might be found in the garbage. Cohen, March, and Olsen (1972) originally developed the idea of the garbage can, which Kingdon then included in his model.

From a *political* point of view, the subsection just above illustrating the political economy of the airline industry shows that the political conditions for the change were rising. Another trend to that delineation of political and social forces was taking shape: the public mood was changing. By the mid-1970s, public opinion was moving noticeably away from the Great Society of Lyndon Johnson's administration, and an antigovernment mood had started to take root (e.g., with the property tax revolt in

California). As mentioned above, this was not only a U.S. phenomenon but also part of a global movement toward seeing the private sector unfettered by regulation as an engine of growth.

The Kingdon model accounts for the enactment of airline deregulation in 1978 as the irresistible convergence of problem, policy, and politics. But this model also suggests the need for a catalytic figure, an *entrepreneur*—a prominent figure in the political and policy arena who assumes leadership and shepherds the idea to enactment. In the case of airline deregulation, Kahn—a recognized regulation economist—was, as has been noted, the head of the CAB during the Carter administration and possessed the necessary expertise, connections, and persistence to effectively advocate deregulation. High (2002) underlines this point, stressing the role of "bureaucratic entrepreneurship" and citing airline deregulation as a particularly clear example of how an active and aggressive administrator makes the difference in reform. McCraw (1984, 223–89) analyzed Kahn's role in detail.

Another important aspect of the Kingdon model is also evident in airline deregulation. Eliminating the CAB was a revolutionary act affecting the entire industry, representing what can be called a "big bang"—i.e., the introduction of a completely new policy, a paradigm shift, rather than making an incremental change grafted onto the old structure. The experience of airline deregulation seems to prove the political economy argument that piecemeal deregulation is destined to fail because "overprotected groups" would have time to derail a slow reform process. Airline deregulation also fits the Baumgartner model (2005) of punctuated equilibrium, because before 1978 incremental and less-than-proportional policy changes were made, and this information and these changes accumulated over time, producing the lurch or policy punctuation of 1978.

Under these circumstances, deregulation won, and the "big bang" of 1978 almost entirely eliminated the economic regulation of the public-utility type of passenger airline. As Barnum (1998) puts it, "The freedom to raise and lower fares and to enter and leave markets met the objectives of pricing flexibility and ease of industry and market entry. The transfer of the few remaining CAB regulatory authorities to DOT met [the] objectives [of improving efficiency, minimizing] regulatory delays and [streamlining] authority to immunize against anticompetitive agreements. [Given] all the foregoing, it was inevitable that planes would be fuller, that interstate carriers would be on an equal footing" with other carriers, and that capacity problems would become very relevant. The full impact of deregulation would be felt over time[13].

b. Implementation

What Is Implementation? Implementation Research

[13] MacCain (2009) is suggesting a new and promising analysis of public policies with the use of cooperative game theory.

The verb "to implement" means, in its most basic sense, to carry out, to fulfill, or to accomplish a decision. In the U.S. public sector, a legislative or executive entity most often enacts this decision (e.g., Congress's legislation, a president's executive order, an agency's regulation), but the executive branch or the judiciary can also issue a directive or legal ruling. Implementation puts the objectives of policy adopters into action in an effort to accomplish the desired results. Implementation constitutes a typical public sector feature and is at the core of public sector activities. The foundations for implementation are broadly accepted:

1. Implementation is directly related to the organization and public administration.
2. Implementation is a process that explains—depending on the specific case—the output, the performance, or the nonultimate outcome.
3. Implementation is not evaluation, which is concerned with the impact of the program/policy.
4. Public policy implementation takes place in a complex and dynamic environment that goes beyond public administration and its organization.

Implementation can be also regarded as part of the analysis of organizations, and particularly of public administration (Goggin 1986, 335). Williams and others (1982, 2) also indicate that "if implementation researchers make their product more useful to policymakers, they are likely to extend our notions about organizations and management." Goggin (1986, 330) underlines that implementation involves "behaviors that have both administrative and political content." The implication is that the extent to which a program/policy succeeds or fails is related in large part to how people and organizations behave under administrative and political pressures.

Harold Lasswell (1936) suggests that policy implementation is one of several needed steps or stages in the policymaking process. Early in the history of the field of policy analysis, analysts began to consider how to implement public policies. Implementation occurs in the middle of the policy process. It results from the stages that precede it, policy formulation and adoption, and it affects the subsequent stages, evaluation and redesign. When applied to public policy, implementation is the process of putting into effect or carrying out an authoritative decision of government. It normally follows a strategy that the department or agency involved in the policy would issue to guide its actions. Implementation may be one of the thorniest problems, but it is nevertheless still a key aspect of public policy. As Lester and Goggin (1998, 1) remind us, "Public policy implementation continues to hold much practical interest for policymakers [both] because it is a major stumbling block in the policy process [and] . . . one of the most heavily utilized areas of policy analysis."

Goggin and others (1990) emphasize that implementation is a "process" and must be distinguished from the results of that process; studies of implementation remain distinct from those of evaluation, the latter being focused on the impact of the policy/program and the former on the process.

Evaluation explains what happened; implementation explains why it happened. Chen (2004) indirectly reinforces the point of the process by clarifying that evaluation deals with the assessment of whether the goal of a program or policy is achieved and how it is achieved; e.g., is the result of the program/policy linked to the program/policy, or was it influenced by the external environment or a combination of the two? In Chen's definition of evaluation, the implementation process links the program/policy to the final outcome.

According to DeLeon and DeLeon (2002), "policy implementation has too often been practiced as a governing-elite phenomenon," emphasizing the fact that it essentially relies on a "command" or top-down orientation, and "its study and practice would be much better served if its practitioners [adopted] a more participatory, directly democratic orientation." They further explain that a framework "stressing a more democratic (i.e., bottom-up) approach would be a more fruitful line of inquiry. Implementation theory should more carefully [address] the kinds of democratic processes, [complexities, and dynamism] that are called forth by varying specific conditions."

Many studies of how policy is implemented have been undertaken since the path breaking work of Pressman and Wildavsky (1984). In these studies, implementation has sometimes been characterized "as leading to an intellectual dead end because of its problematic relationship with a generalized theory of policy implementation" (DeLeon and DeLeon 2002). At times, "policy implementation as a field of scholarly inquiry and practical recognition has come and gone like an elusive spirit" (ibid.). This background justifies that implementation has also been regarded as the "missing link" (Hargrove 1975, 18). Bardach (1977) calls it "the implementation problem." Vedung (1977, 226) argues that there is "a major group of determinants that might condition results occur during implementation." Sometimes, when it has seemed as if the field of policy implementation might almost disappear, it has instead only been absorbed for a time by a similar topic like public management (Lynn 1996), or has in effect been hidden within research on particular functions like welfare policy studies. Moreover, the field is sufficiently established to have created a number of "generations of implementation studies—Goggin and his colleagues (1990) count three such periods, all within a time span of less than 20 years" (DeLeon and DeLeon 2002).

In particular, Lester and Goggin (1998), according to DeLeon and DeLeon (2002), have recommended that instead of concentrating on "developing general theoretical insights, the generic study of policy implementation has been transformed into the study of specific [government] programs. Lin's (2000) study of how five different prisons [implemented] penal policies (e.g., rehabilitation) is but one example." Conversely, "O'Toole (2000) has argued that there is a world of viable theoretic constructs (e.g., principal-agent, rational choice, and game theories) upon which implementation can draw."

The analysis of the implementation process examines the six traditional factors that Mazmanian and Sabatier (1989, 41)—the front-runners in studies of implementation—have identified as milestones: (1) enabling legislation and a legal directive that mandate clear and consistent policy objectives and provide criteria for resolving conflicts among goals; (2) the identification of principal factors and causal linkages (i.e., the causal theory behind the policy); (3) the roles of agencies and supporters; (4) the leaders promoting change; (5) how interest groups affect the program; and (6) unexpected and intervening factors and the consequent changes in causal relationships. It is against this background that this paper develops a framework for analysis. The peculiarities of implementation in this research is that it will look into the removal of a policy (i.e., deregulation), and the research deals with a long period of time (e.g., 25 years) rather than the shorter period more traditional for implementation studies.

The expansion of public sector intervention in the 1960s and 1970s prompted a large research effort pointing at the implementation issue and how to improve its effectiveness—and ultimately that of public policies and programs. Research on implementation proliferated, particularly in the 1970s and 1980s, when the increased role of the state and the extended use of public sector resources prompted an increased interest in the evaluation of policies and programs.

Over time, as Saetren (2005) maintains, the "volume of publications on policy implementation has not declined. On the contrary, it has continued to grow [throughout] the 1990s and into the [2000s]. Even more surprising is that [the topics of] a large number of publications are outside the core fields. Hence, the literature [has grown] substantially larger and become more multidisciplinary than most commentators realize. Although positive in many ways, the predominantly multidisciplinary character of implementation research still poses serious problems with respect to theory development." Therefore, Williams and others (1982, 1) argue that "there is no guarantee of seminal theoretical breakthroughs in implementation"; Nutt (1986) indicates that research has mostly reported implementation failures; and Rothstein (1998, 78) reviews a number of studies on implementation and describes implementation research as "misery research" aiming at investigating the most problematic cases.

From a methodological point of view, the research on implementation has been fighting to disentangle the complexity and the dynamics of the policy issues (Goggin et al. 1990, 29–36)—finding the autonomy from other fields, which elaborate different purposes for the role of implementation. These circumstances have favored the use of case studies, which limit the use of control variables and generalizations.

In the case of quantitative analysis, the problems to tackle are the reliability of data from time series or surveys, the issue of the "duration" of the implementation, and the question of a "change" in policy compared with the original intent. In this respect, Sabatier (1991) raises an interesting point about the studies of implementation policies over a long time frame—using time series. He argues that over

many years the changes could be so dramatic and radical that they may not be comparable to the initial intent of the decision. To the point of Sabatier, I add that the characteristics of the implementation of public policies—particularly deregulation—are complexity, dynamism, and interaction, and that all these features become even more evident over a long period of time. It may very well be that these dynamic components come into play over time, and therefore it is valid to determine whether the initial policy decision or program has been implemented correctly in the short and long runs.

The quantitative methods for studies of implementation face the dilemma of "too many variables and too few cases" (i.e., overestimation; see Goggin 1986),[14] which also reduces the ability to generalize from the findings. Goggin and others (1990) divide studies of implementation into three generations, with the third, current stage being characterized by a scientific approach. The cumulative findings of two generations of implementation research have contributed significantly to our understanding of what implementation is and how and why it varies. Yet because they rely on relatively few observations of a complex and dynamic process, these studies have had little to say about the variety of implementation outcomes, the causal patterns related to these outcomes, their frequency, their relative importance, and their singular effects on different aspects of implementation.

Given the "too few cases / too many variables" problem, Goggin (1986) and Goggin and others (1990) suggest a research agenda for a third generation of implementation researchers, and they outline several research designs, including the combined use of small-*N* comparative studies (i.e., case studies) and large-*N* statistical correlation studies, along with the use of experiments and quasi-experiments, to minimize this cases/variables problem. The combination of small and large *N*s intends to move implementation from qualitative analysis—which Pressman and Wildavsky (1984) use—to a more quantitative approach, while still benefiting from the advantages of case studies. To that end, they intend to explain the behavior over time of entities involved by specifying causal paths. On the basis of these considerations, Goggin and others (1990) deduce that implementation research should be based on a specific theory—mostly related to the policy being examined—that the scholar must develop and test. They suggest a "Communication Model of Inter-Governmental Policy Implementation" that involves the federal and state governments and is able to predict the state-level implementation process, output, and outcomes (pp. 30–33).

A related challenge is to "operationalize" the concepts identified as important for the understanding of implementation in an often complex and dynamic environment. The need to operationalize the factors and variables that explain a successful implementation process boils down to the choice of the dependent variable and of the independent variables.

[14] Mead (2005) addresses the same point of "small *N*" because the unit of analysis is a program and a cross-sectional state-based study would have at a maximum of 51 observations. In the case of a time series, the number of observations would be also limited.

The Choice of the Dependent Variable in Implementation Studies

The main focus of this subsection is to review the models used for implementation and particularly the type of dependent variable that is more appropriate for the study. The choice of the dependent variable is made on the basis of various factors, including policy characteristics and policy formation. The availability of data should not influence the conceptual definition of the dependent variable, which is related to the discovery of the intention of the policy/program (e.g., legislation). In other words, the choice of the dependent variable does not simply entail the selection of a variable; it is also intimately connected to the function of policy implementation. A complicating issue is that the formal objective of the program can be modified in the phase of implementation, or there can be an "implicit" objective.

In this respect, Werner (2004, 1–2) argues that implementation research focuses on the question "What is happening . . . in the design, implementation, administration, operation, services, and outcomes of programs?" He also contrasts implementation studies with impact studies, which are typical of evaluation studies. However, he argues that implementation studies go beyond simply describing program experiences, because these studies also assess and explain—the "core mission of implementation research is to describe, assess, and explain what is happening and why."

Basically, two different views stand apart for the dependent variable; one claims that the dependent variable of implementation should be the outcome or impact, and the other argues that the dependent variable should be more of a performance indicator, such as output.

Goggin (1990) shows that implementation results are categorical, as either output or outcomes with measures peculiar to each policy.

The selection of the dependent variable is made on the basis of the type of study and the stance of the researcher. In reviewing the literature on implementation for the 1990s, Hill and Hupe (2006, 120–25) find that of 88 articles reviewed, 53 worked with an explicit dependent variable and 21 worked with an implicit dependent variable and indicated that there could be more than one dependent variable. According to Hill and Hupe, the studies examined have not used ultimate outcome variables. In this respect, the choice of the dependent variable is not only made on the basis of the stance of the research but also stems from the fact that implementation studies are expected to assess the process of implementing the policy program and not the final outcome, which belongs to the territory of evaluation.

In a study of child support legislation, Keiser and Meier (1996) use successful enforcement (i.e., an output) as the dependent variable. The dependent variable is further defined in terms of total impact (dollars collected per head), effectiveness (dollars collected per case), and efficiency (dollars collected relative to dollars spent by the administration) (Hill and Hupe 2006, 21).

Moreover, the selection of certain outcome variables—such as employment levels, child employment pollution levels, crime levels, and road accidents—is difficult not only because this belongs to the evaluation but also because the ultimate outcome can only be determined by factors and variables that are beyond the application and implementation of the policy. In those cases, outcome is the dependent variable, but the study becomes more an evaluation analysis than an implementation analysis. In any event, the analysis needs to control for various external variables and factors that have a bearing on the outcome (for a discussion of the clear distinction between output and outcomes, see Vedung 1997, 4–6). And Hogwood and Gunn (1984, 10) argue that the "desired outputs . . . [are] the focus of implementation, monitoring and control."

Mead (2005, 106–43) has written a very valuable essay in which he stresses the differences between evaluation and implementation, the former focusing on assessing whether the program has met its goals and the latter on assessing whether the process of the program/policy has worked.[15] He articulates that the unit of analysis of implementation studies is the program. He favors implementation research as a quantitative performance analysis—in contrast to the impact analysis typical of evaluation studies. In this vein, depending on the circumstances, performance indicators, such as nonultimate outcome or output variables—for instance, administrative decisions and actions in regulatory policy, or determinations for the application for particular benefits—seem more appropriate as dependent variables for implementation studies. Hill and Hupe (2006, 155) conclude their analysis of the outcome/output distinction by arguing that "a readily quantifiable dependent variable, which is perhaps part output and part outcome, remind[s] us of the importance of considering the available alternatives in this respect."

Winter (1999) states that the process needs to be explained by its outputs. Lester and Goggin (1998, 5) argue that policy implementation is a process. The "essential characteristic of the implementation process," according to Hill and Hupe (2006, 149), "is the timely and satisfactory performance of certain necessary tasks related to carrying out the intent of the law." In some particular cases, indices of administrative activities and policy, such as administrative reorganization or privatization, could be appropriate. In the case of a multiplicity of goals—following O'Toole (1989)—it could also be wise to include a combination of goals, e.g., efficiency and innovations.

Referring to welfare state programs, Werner (2004, 140) argues in favor of implementation as performance analysis because the "statistical modeling of program outcomes as functions of administrative variables and other causal factors goes further than other explanatory approaches to link the subject matter of implementation research with quantitative methods." He also clarifies that performance analysis does not pretend to estimate the overall impact of the program or set of policies (p. 141). These considerations are similar to those of Mazmanian and Sabatier (1989) that stress the support

[15] The work of Mead refers mainly to employment and welfare programs.

that over time reforms receive from the legislative (e.g., Congress), executive (e.g., presidential administration), and administrative branches (e.g., agencies).

To conclude this sub section, I would argue that the literature on implementation converges, in that the dependent variable of the implementation process should be the output or operational goal, and possibly a nonultimate outcome,[16] which is related to the final impact (e.g., one step removed from the impact). The operational goals, or nonultimate outcome, which represent the dependent variable, need to be clear, feasible, easy for all concerned to understand, and reflect the original intention of the policy and/or program. Moreover, agencies' missions must be very clearly stated, and they need to set and keep schedules and deadlines. The goal can presumably be translated into indices in a time-frame context. However, as Werner (2004) explains,[17] programs (and policies) do not exist in a vacuum; instead, they operate in a social and economic environment and should take into account these "variables."

New Areas for Public Policy Implementation

In the 1970s and 1980s, the category of traditional policy regulation expanded in two directions: more social regulation, which includes safety and security; and less economic regulation. In the latter respect, deregulation took place and was widespread in the United States as well as in other countries. In other words, in a dynamic and complex environment, the government started to remove interventions and dismantle programs. At the same time, government regulation expanded into new areas, such as safety and security.

A specific interest in the literature is assessing the implementation of regulatory or deregulatory policies. Using four categories, Lowi (1964) identified regulation as a field in which public administration is involved and active. The assumption in the area of regulation is that the government or the appropriate agency does something—e.g., issues safety regulations—that companies should respect. An important aspect of the implementation of policies and programs has to do with implementation in the area of regulation and the role that those affected by the policies have on the implementation process and on the overall success of the policy and program. In the case of regulation, significant interests are at stake, and very strong players have the capacity to affect the output and the outcome. In this respect, the issue of regulatory capture (Stigler 1971) is particularly relevant.

There have been significant efforts to research regulatory policy implementation (Wilson 1982; Bardach and Kagan 1982). These efforts confirm that implementation in the regulatory environment requires negotiation rather than a bottom-up approach, whereby polices are dictated, according to Durant

[16] The nonultimate outcome could be regarded as a sort of "impact" on the performance measure of the program, which does not fully capture the overall impact of the program that can be measured in economic terms as the improvement (or not) of societal welfare.

[17] The contribution of Werner is very valuable for implementation research, even if its focus and examples come exclusively from social programs.

(1984, 310), who works with interesting case studies (e.g., of the U.S. Environmental Protection Agency and Tennessee Valley Authority, and on pollution control)—that may, however, present obvious limitations in terms of being able to generalize the results and the role of noncompliance. In this regard, for instance, a U.S. government program guide explains that the effective implementation of regulatory programs requires "assess[ing] the implementation issues and the importance of implementing effective compliance programs; . . . [i.e.,] emphasis is placed upon designing effective compliance programs and on implementing a results-oriented focus" (FDA 2008).

Ripley and Franklin (1986, 123) analyze the implementation of the competitive regulations of the CAB for the period 1938–74, and they argue that "implementation was relatively easy for 36 years. The decision rules governed most cases, the privileged competitors remain privileged and the newcomers remained genuine competitors in name only." They also recognize that deregulation is part of government activity: "Deregulation is no more neutral in intent and implementation than regulation" (p. 134). As the regulatory system has been relaxed, there have been substantial gains in productivity, and the public has benefited from lower fares and more choices due to competition. This process can be regarded as an implementation process in which the dependent variable is represented by output or nonultimate outcome, i.e., performance indicators. In turn, these performance indicators can be affected by a series of independent variables of the type that Mazmanian and Sabatier (1989) identified.

For Vedung (1997, 227) implementation—particularly in the regulatory area—requires that the agency or department involved *comprehends* the intervention, *is capable* of undertaking the intervention, and *is willing* to intervene. The challenge is to include the deregulation policies as part of implementation and apply an appropriate methodology to explain how factors and variables come into play in the case of deregulation. In this respect, the frameworks of Matland (1995) and Hill and Hupe (2006)—as shown in Exhibits 1 and 2 below—are very useful and would lead to the consideration that a type of policy such as deregulation fits the political implementation dimension (i.e., quadrant 4 of Exhibit 1 and type 4 of Exhibit 2, where multiple actors come into play). These frameworks encapsulate the complexity and interactions between players, which are included in the independent variables (e.g., see Hill and Hupe 2006, 134–35).

Evaluation versus Implementation: The Impact of Airline Deregulation

The process of discovering the complete effects of a particular change **is known as *impact analysis*. In his book *Impact Analysis for Program Evaluation*, Mohr (1995) focuses on the impact of policies and programs:** "**The word impact in the title of this book is readily seen to be a form of casual language." As** MindTools (2009), **an organization that specializes in this type of analysis, expresses it, "**When things change, . . . do you ever wish that someone would think things through a little better to avoid the confusion and disruption that often follows? Or have you ever been involved in a project where, with hindsight, a great deal of pain could have been avoided with a little more up-front preparation and planning? Hindsight is a wonderful thing—but so, too, is impact analysis. This technique is a useful and severely [underused] brainstorming technique that helps you think through the full [effects] of a proposed change. As such, it is an essential part of the evaluation process for major decisions. More than this, it gives you the ability to spot problems before they arise, so that you can develop contingency plans to handle issues smoothly. This can make the difference between well-controlled and seemingly effortless project management, and an implementation that is seen by your boss, team, clients and peers as a shambles."

As mentioned in the previous section, the economic impact of deregulation must be intended—in a cost/benefit analysis framework—as the increase or decrease of the welfare brought about by deregulation. The main objective of deregulation is to produce a *welfare gain, which constitute the impact of deregulation.* The economic impact of deregulation is different from the output or performance that we have examined as the dependent variable of the process of implementation. There have been a number of studies and economic valuations of the impact of the deregulation of U.S. airlines, and the large majority has shown the positive *economic* effects of deregulation[18]. Impact, the welfare gain, is the dependent variable of many studies (e.g., Trapani and Olson 1982; Graham, Kaplan, and Sibley 1983; Morrison and Winston 1986; Rose 1990; Pindyck and Rubinfeld 2001, 313–14). Major economists (Kahn 1988; Good, Roller, and Sickles 1993; Morrison and Winston 1995; Baltagi, James, and Daniel 1995; Button 2004) agree on the economic gains from U.S. airline deregulation in terms of consumers' surplus after deregulation, which Peltzman and Winston (2000) have quantified as exceeding $20 billion.

Morrison (1990) suggests that "airline deregulation was a bold experiment that has worked. More passengers are now flying for lower fares than ever before." Peltzman and Winston (2000) argue that "economists tend to think that a public policy has been successful if its benefits exceed its costs. By that standard, no one can argue with Washington's decision in 1978 to allow airlines to set their own fares and decide which markets to serve." The consumers' surplus has increased since deregulation.

A GAO report clearly states that the "reregulation of airline industry and fares would likely reverse much of the benefits that consumers have gained" (GAO 2006, 5).

[18] See Skousen, 2008, pp. 182-183.

Although much of the literature considers airline deregulation a public policy success, Dempsey and Goetz (1992) find that it did not achieve any main objective—improved service, increased competition, or reduced prices. Goetz and Sutton (1997) argue that the core markets (i.e., domestic and international hubs) have benefited from deregulation much more than other cities. Reich (2008, pp.52, 65, 85) argues that deregulation benefitted consumers and investors, but at great costs for workers who had to accept salary cuts and layoffs.

It is agreed that deregulation has brought about positive effects on service in the sense "that travelers have gained substantially from the increase in flight frequency facilitated by the acceleration of [airlines'] hub-and-spokes operations. Because deregulation freed airlines to serve all markets, travelers have also gained from having to make fewer connections that require changing airlines. These gains have been partially offset by more crowded flights, travel restrictions that are inconvenient for business travelers (especially the required Saturday night stay), a few more connections, and slightly longer flight times because of congestion" (Morrison 2001, 18). A few observations, in the words of Alfred Kahn (1993), are pertinent to indicate that the overall welfare gains came with some associated costs: "Prices per mile are usually much higher on thinly traveled than on densely traveled routes; . . . [prices] are also higher for the [few] travelers who have to pay full coach fares because they are [disinclined] to meet the typical conditions for discounts (advance purchase, nonrefundability, and staying over a [Saturday night]). These differentials are not necessarily discriminatory. [Yet it] costs more per passenger to provide service on [less-traveled] routes, largely because a seat-mile on small planes costs much more than on large planes. [Likewise,] short flights [are costlier] per mile than long ones. [However,] full fares on routes served by only one or two airlines—particularly on flights originating or terminating at a . . . hub city [under the control of a single airline]—reflect some substantial amount of monopoly power."

The U.S. deregulation effort has had another impact: it has made a decisive contribution in prompting a movement toward more market-oriented policies in the rest of the world (e.g., in Asia and in Europe), shaking up the still-uncompetitive global airline market. One significant impact of U.S. airline deregulation has been to open up the Pandora's box of deregulation in other countries and to prompt what Noll (1997, 321) calls a "healthy development that is likely to improve the efficiency of regulation while removing trade distortions that arise from inefficient regulation." The liberalization of international air traffic is becoming the next frontier where welfare gains can be achieved. Fares can be further reduced and also allow more competitive possibilities for the U.S. full-service airlines. As Good, Roller, and Sickles (1993), Oum and Yu (1995), and Ng and Seabright (2001) point out in their analyses of efficiency indicators, the room for improvement—particularly in Europe—is vast and is mostly created by political and social forces.

However, as other countries move toward the elimination of inefficient air carriers and the removal of subsidies and state intervention, the competitive and economic issues acquire a global rather than a domestic dimension. Thus the tendency toward deregulation and market-based solutions for the airline industry is becoming widespread. Other countries have discovered the benefits of reducing regulation and state intervention in terms of consumer welfare and the allocation of resources. Oum and Yu (1995) indicate that Asian carriers—except Japan Airlines and ANA—have achieved the lowest costs, and Ng and Seabright (2001) show the potential benefits for European carriers. These "predictions" are occurring and, for instance, E.U. low-cost carriers (e.g., Ryanair) are exploding. Looking at Europe—the latecomer to this race, and in its initial phases of deregulation—we see that despite the slow pace, in 1998 at least 90 percent of passengers were paying lower real fares than in 1993, that controls on international flights between European Union countries have been partially relaxed, and that more routes are being flown within the E.U., thus boosting competition and enabling European low-cost carriers to become players along with the established European airlines.

Following Breyer (1982) and the Kingdon model, it seems clear that airline deregulation's ultimate objective, which aligns the various interests, was to benefit consumers. In this sense, the prediction of Lowi (1964) did not materialize as the rents of a minority were removed with the objective of benefiting the general public. This outcome fits the argument of Levine (2006), who indicates that airlines were deregulated and had not been reregulated in the presence of a collapse of the "slack." With this word, Levine intends to indicate that the costs of information and monitoring are high and shield the regulator from observation from the general public, which otherwise would not accept that regulation is maintained against the general interest. When the "slack" disappears, the regulator has no other choice but to remove regulations that are against the general interest.

The objective of this paper is not to argue about the economic analysis and benefits of airline deregulation and whether these benefits have been distributed uniformly among travelers, due to the differences in competition from one market to another. The objective here is to identify what happened and what factors allowed the implementation of U.S. airline deregulation. During the 30 years since deregulation, the industry has been characterized by the interaction of a series of dynamic, interrelated forces mostly associated with the competition among companies. These forces—both economic and noneconomic—that have a bearing on public policy can be identified with the competition in and concentration of the industry that occurred as part of economic regulation (e.g., antitrust), the working of the market (e.g., bankruptcies and the emergence of new companies); the financial situation of the industry and of individual companies; safety and security as part of social regulation; and the global scale of operations. All these interlinked issues compound the challenges for policymakers. In this respect, the deregulation of 1978 has operated as an endogenous intervening factor and put in motion a much more

dynamic and changing environment. As an analogy, the removal of the CAB has created supply and demand—see Stigler (1971)—and regulation is the product that comes out of this complex interaction.

c. Unexpected Consequences

What Are Unexpected Consequences?

According to *the law of unintended or unexpected consequences*—also called the *law of unforeseen consequences*—any action produces unexpected or unintended consequences (see Merton 1936), which are outcomes that the actor did not intend. These unintended results may or may not have been foreseen by the actor, but they should still be logical or likely outcomes of the action. For example, if a bypass—a road built to take traffic off another congested road—attracts new buildings and activities and thus more traffic, the outcome is two congested streets, not one. Thus, each cause has multiple effects, which can entail one or more unforeseen side effects, which could be more consequential than any intended effect.

The analysis of unintended effects of public policy and social action is a classic theme in all the social sciences and can be applied to deregulation and to airlines. A range of disciplines, from engineering to anthropology, are involved in cases of public policy initiatives and reforms that determine "unintended consequences" and raise a series of general analytic themes—e.g., the unintended effects of policies to increase competition in government information technology contracting, or the unintended effects of state-sponsored games and celebrations.

Unintended consequences can be roughly classified in three types:

- a positive but unexpected benefit, usually called a windfall
- a negative (or perverse) effect, which could be contrary to the actor's intentions
- a source of possible problems.

Discussions of unintended consequences usually focus on the situation of negative effects and possible problems, which often occurs when a policy has set perverse incentives and leads to actions that are not desired.

The idea of unintended consequences dates back at least to Adam Smith (1776). But the concept was made popular by the sociologist Robert K. Merton (1936) in the twentieth century. Merton applies a systematic analysis to the problem of "unanticipated consequences" of "purposive social action." Merton listed five possible causes of unanticipated consequences:[19]

1. *Ignorance* (it is impossible to anticipate everything, thereby leading to incomplete analysis)

[19] Merton (1996).

2. *Error* (incorrect analysis of the problem or following habits that worked in the past but may not apply to the current situation)
3. *Immediate interest*, which may override long-term interests
4. *Basic values* may require or prohibit certain actions even if the long-term result might be unfavorable (these long-term consequences may eventually cause changes in basic values)
5. *Self-defeating prophecy* (fear of some consequence drives people to find solutions before the problem occurs, thus the non-occurrence of the problem is unanticipated)."

Merton's first two causes—and the most pervasive—are the obvious ignorance and error. The third cause needs more explanation—Merton specifically labeled it "imperious immediacy of interest," meaning a situation when someone so strongly desires the intended consequence that he intentionally ignores any unintended effects. "A nation, for example, might ban abortion on moral grounds even though children born as a result of the policy may be unwanted and likely to be more dependent on the state. The unwanted children are an unintended consequence of banning abortions, but not an unforeseen one" (Norton 2008). As for Merton's fourth cause, "basic values," he used the example of the Protestant ethic of hard work and asceticism, which, he wrote, "paradoxically leads to its own decline through the accumulation of wealth and possessions." As Norton (2008) recounts, Merton's "final case was the 'self-defeating prediction.' Here he was referring to the instances when the public prediction of a social development proves false precisely because the prediction changes the course of history. For example, the warnings in the twentieth century that population growth would lead to mass starvation helped spur scientific breakthroughs in agricultural productivity that have since made it unlikely that the gloomy prophecy will come true."

According to William Swelbar (2009), a research engineer at the Massachusetts Institute of Technology's International Center for Air Transportation, "possible causes of unintended consequences include the world's inherent complexity (parts of a system responding to changes in the environment), perverse incentives, human stupidity, self -deception, or other cognitive or emotional biases.

Examples of unexpected consequences include *unexpected benefits*, *perverse results*, and *purposeful gaming to achieve unintended consequences*. Examples of these include the following:

Unexpected benefits: The policy in the Middle Ages of establishing large hunting reserves for the nobility today means that these reserves have been preserved as parks and other green space in Britain and throughout Europe.

Perverse results: In the United States, the so-called war on drugs, though intended to curb the trade in illegal drugs, has also tightened organized drug cartels' control over this illegal industry; rent control can result, in the long term, to shortages of and lower-quality housing.

Purposeful "gaming" to produce unintended consequences: In this case, a more restrictive type of unintended consequence results if an actor devises a method to make a mechanism intended to produce one result instead produce a different—often contrary—outcome. Thus, this actor has gamed the system to gain advantages by exploiting rules that were intended for another purpose.

Two particularly important aspects of unintended consequences also need to be considered: historical contingencies versus unintended consequences, and adaptations versus effects. With respect to historical contingencies, it is hard to differentiate the unintended consequences of installing a mechanism in the world and in history in general, such as the existence of Scholastic Aptitude Test coaching services as an unintended consequence of the creation of this test in the United States.

The adaptation versus effects distinguishes the historical from the unintended consequences, i.e., if what happens is due to a triggering event, we have an historical contingency. If what happens is the product of an adaptation to a triggering event, then we can talk of an unintended consequence.

Also Wilson (2004) discusses adaptation from an evolutionary perspective not necessarily referring to the actions or reasoning of an individual. It underlines that at the end of a process some behavior changes, becomes more effective and is accepted and replicated. In a way, unintended consequences lead to a modification that in turn makes that the resources are produced in a new and different way (other changes may not be viewed as unintended consequences).

Following Merton (1936), various researchers have tackled the issues of unexpected outcomes in various sectors. For instance, Browner (2005, 1) states that, "historically, sexual and reproductive health programs in Mexico and the United States all but ignored male partners. The past decade's significant shift to accord greater attention to men, however, may paradoxically subordinate women's interests, goals, and needs."

Singer and Litan (2007) stress that "U.S. policymakers are in the midst of an active debate over how best to accelerate the build-out of next-generation broadband networks" and that all consequences intended and unintended should be evaluated. They also note that "in the broadband Internet access market, . . . advocates of proposed network neutrality regulation would restrict those who are planning to build out next-generation broadband networks from having these freedoms and thus prompting a series of unexpected effects."

Ioannis (2008) "offers a critical evaluation of the interrelation of law and economics in the context of development." He describes "the current promotion of law reform by international institutions like the World Bank as the product of neoliberal economic theory, concluding that the use of law reform to impose what neoliberalism considers "rational" solutions undermines the legitimacy of democratic institutions in developing and transitional countries" and as unintended consequences create the conditions against the reform agenda.

Padilla and Kreptul (2004) attempt "to explain the phenomenon of omnipotent management by establishing a causal relationship between property rights, incentives, and government regulation. It is argued that separation of ownership and control and managerial omnipotence must be distinguished and do not necessarily go hand in hand. [They] argue that, while the separation of ownership and management can be explained as a result of the search for efficient capital formation, managerial omnipotence can be understood as the unintended result of government regulations originally designed to protect shareholders' property rights from management opportunistic behaviors."

Curran (2002, 1) indicates that "a variety of perspectives on opening borders have been offered by a range of scholars. . . . Some suggest that relaxation of border control is a good idea; others suggest that it is impossibility in climate where the nation-state is sovereign and preeminent. . . . Environmental concerns are central to antiglobalization advocates, but these concerns do not appear to be central to those for or against open borders, despite some obvious overlaps with regards to labor and social welfare concerns." Curran "briefly outlines the potential positive and negative environmental externalities associated with opening borders, remembering that it is often hard to anticipate the unexpected consequences of any policy and the ability of people to create or modify social institutions in response."

Harris and Ogbonna (2002, 1) stress that the topic of managing culture has been central to organizational culture research for the last two decades. They note that "although critical theorists argue that culture management efforts are prone to unintended consequences, few empirical studies have explicitly explored this issue." Their study is designed to redress this imbalance in the literature by focusing on the exploration and description of the unintended consequences of culture management interventions.

Directly related to unexpected consequences is the application of game theory to public policy (McCain 2009).

Regulation and Unexpected Consequences

The United Kingdom's Better Regulation Task Force has established five *principles of good regulation*. These principles are a useful tool kit for assessing and improving the quality of regulation and how regulation or deregulation prompts a series of consequences that are also unexpected. The principles are as follows: "*Proportionality*: Policy solutions should be appropriate for the perceived problem or risk; you do not need a hammer to crack a nut. *Accountability*: Regulators / policy officials must be able to justify the decisions they make and should expect to be open to public scrutiny. *Consistency*: Government rules and standards must be joined up and implemented fairly and consistently. *Transparency*: Regulations should be open, simple, and user friendly. Policy objectives, including the need for regulation, should be clearly identified and effectively communicated to all stakeholders. *Targeting*:

regulation should be focused on the problem. You should aim to minimize side effects and ensure that no unintended consequences will result from the regulation being implemented" (quoted by Hargrave et al. 2006, 10).

It is also important to *consider alternatives to regulation*—for instance, "*no intervention*: Is it really necessary or feasible to intervene? *Information and education*: It may be more cost effective to provide users with information, for example through advertising or media campaigns. *Self-regulation*: Will introducing voluntary codes of practice be as—or more—effective than implementing compulsory regulation? *Incentive-based structures*: Can you introduce targets, financial or trading incentives to achieve better standards instead of introducing regulation?" (ibid.).

As classic regulation or deregulation must be implemented, one must also consider how to prevent unintended consequences (see above) and limit burdens. For this purpose, mechanisms such as voluntary opt-out or sunset clauses can be used.

Christensen and Laegreid (2006) focus on regulatory reforms, autonomization and "agencification" of public sector organizations in Europe, Canada, New Zealand, and Australia. Their central argument is that regulation and "agencification" occur together. They also discuss the challenges of fragmentation, coordination, "joined-up" government, and other government initiatives stemming from the New Public Management movement, with its emphasis on agencification. Finally, they analyze how the complexity of deregulation/reregulation, new emergent forms of regulation, control, and auditing all lead to unintended consequences, which in turn require an involvement of the center.

Ariely (2009) argues that regulation is necessary in an imperfect and not completely rational world and it implies a trade-off between restraining from self destructive behavior and personal freedom (p. 118).

In brief, this limited review of the literature of unintended consequences shows how rich and complex are the relationships and the interactions among a large number of institutions as the policy process and its implementation take shape and how variables cannot be easily captured and measured.

d. Complexity

The article of Cohen and Axelrod (1984) provides the theoretical background of the issue of complexity, its links with uncertainty, unintended consequences that a decision maker faces. Increased complexity of issues lay the ground for the materialization of unintended consequences that play a significant role in public policy and social reforms (see also Rosser 2009 for a complete overview of the research on the various fields that are part of complexity).

Morales-Gómez (1999) underlines that "social policies are undergoing radical reform. The agendas leading to these changes show similar characteristics across sectors, countries, and regions. At the same time, the experiences to date show considerable differences in the implementation and effects of these changes. Reform efforts include the privatization of education, health, and social security services; market-oriented provision of social services; decentralization and deconcentration of services, relying on local governments and communities for their delivery; establishment of fee-for-service schemes; targeting of social provision to specific populations; and bottom-up participation in policy design and implementation. The inspiration for these changes no longer rests with the welfare state model of the 1940s and 1950s. Quite the contrary, the drive to reform public policies in the social sectors has its source in a philosophy of economic liberalism." "Today," Morales-Gómez (1999) continues, "the reform of public policies in general, and of social policies in particular, is only one expression of what some argue is the rise of a new development paradigm that is redefining the role of the nation-state in an increased complex and dynamic environment. One of the main expressions of this neoliberalism is the implementation of programs for economic reform based on the liberalization of prices, deregulation of markets, elimination of subsidies, elimination of trade barriers, privatization of state operations, and opening up of competition at all levels.".

Globalization and transnational influences are also very important causes of complexity. "What today is labeled globalization is the expression of a complex net of power relations between nation-states, perhaps only with broader and deeper ramifications than in the past," according to Morales-Gómez (1999). All this increases complexity and in turn the probability that unexpected consequences occur is greater. Harrison (2006) underlines that international and global political events (e.g., collapse of communism in Europe, the 1997 Asian financial crisis, 9/11) demonstrated the inadequacy of current models of researchers and practitioners who present oversimplifying reality.

"One of the public policy challenges emerging from complexity," Morales-Gómez (1999) points out, "is thus to make the state more effective and efficient in its role as mediator of transnational forces and still effectively promote social and human development. Another no less critical challenge is to make private interest into a positive force in social change."

Complexity and Public Administration

Public policy issues most of the time are extraordinarily complex, with many actors, issues, interests, and politics. "As a result," note Burgess, Burgess, and Maiese (2004), "it is almost impossible for one person or even one group of people to intervene and, in a relatively short period of time, help the parties find a solution. Solutions need to be developed slowly over a long period, with many people working independently and in concert, to find effective solutions."

One implication of this situation is the emergence of an incremental approach with marginal improvement (Ring and Perry 1985). Under these circumstances, a strategy of incrementalism, known as *muddling through* (Lindblom 1969), is preferred, "in contrast to the ideal of the rational-comprehensive model of policy planning. The rational model—[to which the private sector leans]—assumes a great deal of information, clarity of goals and criteria, and the ability to define and analyze all possible alternatives, rendering a single clear solution. The real world is not so obliging" (Burgess, Burgess, and Maiese 2004). In the public sector, incrementalism is also favored because both the leadership of public entities and their management are much more volatile and dependent on the political cycle (Berry 1994) than are those of the private sector.

For public sector entities, Chun (2003) finds that there is a direct link between the limited clarity of goals (in the various forms that he defines) and what he calls "financial publicness," i.e., the percentage of financial resources from government sources. He also shows that the complexity of problems related to the multiplicity of goals is an intermediary variable correlated to a lack of clarity of goals. On the basis of this reasoning, the next logical step is that the complexity of problems and lack of clarity of goals are real impediments to the formulation of programs and policies and their implementation. Chun and Rainey (2005) review the "relations between the goal ambiguity dimensions and indicators of organizational performance based on responses to the 2000 National Partnership for Reinventing Government Survey of federal employees. The performance variables [used] included managerial effectiveness, customer service orientation, productivity, and work quality. [With the use of] regression analyses with numerous control variables, [the findings were] that directive, evaluative, and priority goal ambiguity [were] related negatively to managerial effectiveness. All four performance indicators showed significant negative relationships with evaluative goal ambiguity and directive goal ambiguity. [These] results provide further evidence of the viability of the new measures of goal ambiguity, support theory-based but previously untested hypotheses (i.e., that government organizations have high levels of organizational goal ambiguity that exert major influences on their performance), and further indicate the feasibility and value of analyzing goal ambiguity of government organizations." Therefore, the findings of Chun (2003) and Chun and Rainey (2005) confirm that public sector entities by their nature are badly placed to articulate and carry out meaningful strategies and implement policies and programs. In turn, this does not help to define performance measures and develop work motivation, widely recognized as the main drivers of performance (Wright 2003; Bryson 2004, chap. 9; De Lancer and Holzer 2001; Hill and Jones 2006, chaps. 12 and 13; Behn 2003a, 2003b).

The Role of Networks

The complexity and dynamics of the public policy process have introduced the concepts of interagency or interorganizational relationships and that of networks (Hill, and Jones 2006, 163), as well as the interactions among the various players (Rothstein 1998, 95). In many cases, these are complementary and occur (or do not occur), at the same time increasing the complexity and the dynamics.

From an operational point of view, O'Toole (1997a, 45–46) maintains that "the question is how well equipped are today's public administrators to face the challenges they confront from the involvement of businesses, not-for-profits, other units of government, and even clients in complex patterns of program operations. . . . Public administration increasingly takes place in settings of networked actors [that] necessarily rely on each other and cannot compel compliance on the part of the rest. . . . Networks are structures of interdependence involving multiple organizations or parts thereof, where one unit is not merely the formal subordinate of the others in some larger hierarchical arrangement. Networks exhibit some structural stability but extend beyond formally established linkages and policy-legitimated ties. The notion of [a] network excludes mere formal hierarchies and perfect markets, but it includes a very wide range of structures in between. The institutional glue congealing networked ties may include authority bonds, exchange relations, and coalitions based on common interest, all within a single multiunit structure."

Contracting Out and Performance

The drive to contract out functions and activities to the private sector "raises familiar threats to coherent program implementation, and adds those of control and incentives. Contracting [out] fragments program responsibility among multiple contractors, and separates policy agencies from service delivery contractors. It raises questions about political control and accountability, and the prospect of gaps between intention and outcome," explain Davis and Chalmers (2001). This movement is part of the doctrine of public–private partnership (PPP). In this context, contracting out gives implementation a different perspective; i.e., it simplifies the process because implementation is delegated to the private sector, which is supposed to deliver products and services in a more efficient fashion. Public–private partnership makes us to go back to the dichotomy of Weber and the top-down approach to implementation where the private sector plays the role of independent and rational implementer. Theoretically, the construct of the public sector focused on management and the private sector on execution and implementation should eliminate the complexities that represent an intrinsic and endogenous component of the implementation of the public administration. This new model might apply to simple administrative programs, i.e. the delivery of services (e.g., snow removal), and also for some social services; but it fails in case of more complicated policies and programs "if the challenges of

implementation are not addressed explicitly, since service delivery through the private sector can falter for exactly the same reasons as traditional public bureaucracies" (Davis and Chalmers 2001).

Knauer (1997) focuses on a subset of public–private partnerships—those that involve relationships between the public sector and charitable organizations, specifically "government created charitable organizations"—and see how they increase complexity.

However, the implications of the models of contracting out and performance would not be valid in the case of multiple actors and agencies that need to interact and cooperate (e.g., regulations and deregulations). In that case, the complexity of the implementation remains untouched and unchanged.

Rizzo and Whitman (2002, 1) "provide a general theory for understanding and evaluating slippery slope arguments and their associated slippery slope events. The central feature of the theory is a structure of discussion within which all arguments take place. The structure is multilayered, consisting of decisions, rules, theories, and research programs. Each layer influences and shapes the layer beneath; rules influence decisions, theories influence the choice of rules, and research programs influence the choice of theories. In this structure, slippery slope arguments take the form of meta-arguments, as they purport to predict the future development of arguments in this structure. Evaluating such arguments requires having knowledge of the specific content of the structure of discussion itself."

Interest Groups

Baumgartner and Leech (1998) focus on interest groups, which used to be as the key aspect of the U.S. political system. Political scientists now tend to view these groups as crucial relative to the branches of the federal government and their work. According to Baumgartner and Leech, scholars have gone from one theory to the other because of changing fashions in political science. They argue that scholars need to develop a more coherent set of research questions, emphasize large-scale studies, and consider the context of group behavior. However, it is arguable that the role of interest groups can be regarded as a sort of subcategory of complexity.

By bringing together theory, original research, and earlier research on organized interest groups, Browne (1998) creates a useful synthesis of various views and analyzes these groups' impact on public policy. He explains how these groups seek to affect not only the public and policymakers but also other similar groups, and how they form "policy niches" to survive. Epstein and Nitzan (2007) examine endogenous policy determination, particularly interest groups' efforts to lobby those involved in forming public policy. Their methodology centers on strategic contest theory, which they use in delineating the main parameters for the behavior of both the government and interest groups in contending for the "prizes" offered in connection with public policy.

Lindstädt and Staton (2008) report "popular accounts of politics, . . . [focusing on] commonly relate[d] stories of candidates, elected officials, and bureaucrats appearing to undersell their competence. Insofar as individuals typically construct images of high quality, it is puzzling when people report an expected performance level below what they think is possible. [They] call this behavior the downward management of expectations. The standard explanation [of the practice] is that people try to hedge against the negative consequences of unanticipated failures and take advantage of unexpected successes. Taken to its logical extreme, the argument suggests that individuals should always manage expectations downward."

Casey and Kevin (2006, 1) argue that "political competitiveness—which many interpret as the degree of democracy—can be modeled as a monopolistic competition [among interest groups]. All regimes are constrained by the threat of entry, and thereby seek some combination of popular support and political entry barriers. [A] simple model [can show] that many public policies are unrelated to political competitiveness. . . . Economic sanctions, odious debt repudiation, and other policies designed to punish dictators can have the unintended consequences of increasing oppression and discouraging competition. [Because] entry barriers are a form of increasing returns, democratic countries (defined according to low entry barriers) are more likely to subdivide, and nondemocratic countries are more likely to merge. These and other predictions are consistent with previous empirical findings on comparative public finance, election contests, international conflict, and the size of nations. As in the private sector, the number of competitors is not necessarily a good indicator of public sector competitiveness."

Persson and Tabellini (2007) "estimate the effect of political regime transitions on growth with semi-parametric methods, combining difference in differences with matching that have not been used in macroeconomic settings. [These] semi-parametric estimates suggest that previous parametric estimates may have seriously underestimated the growth effects of democracy. In particular, [the findings indicated that] an average negative effect on growth of leaving democracy on the order of –2 percentage points, implying effects on income per capita as large as 45 percent [during] the 1960–2000 period. Heterogeneous characteristics of reforming and nonreforming countries appear to play an important role in driving these results."

The Contribution of Complexity to Methodology

Some of the most relevant contributions on the issues related to complexity are those of Rosser, a mathematical economist who developed nonlinear economic dynamics, including the economics of catastrophe theory, chaos, and complexity (Rosser 1983, 1990, 1991, 1999, 2001, 2004) as well as the concept of the new traditional economy (Rosser and Rosser 2004). He also developed other relevant concepts, such as chaotic bubbles (Rosser 1991, 291), and the relationship between income inequality and

the size of an underground economy in a nation (Rosser, Rosser, and Ahmed 2000). The contribution of Rosser to the theory and practice of complexity is very relevant and is linked to the activity of public policy and public administration.

The discovery of the increase in complexity and consequent unintended consequences has prompted efforts to articulate a methodology to capture the articulated reality. Solarzano and Colander (2007) extend the complexity approach to economics. Rather than finding a completely new way to do economics, they seek to integrate new analytical and computational techniques. Thus, they are able to develop alternative pattern generators to supplement traditional scientific approaches.

Elliott and Kiel (2000) indicate that the complex interactions of human groups and of individuals in society lead to uncertainties – not quantifiable and unknown- that overcome any efforts to find consistent, transportable, and enduring ways to either change or maintain these interactions. Ringland (2002) portrays the eventful development of the discipline the history of scenario planning. In today's complex, fast-changing world, in the wake of the information revolution, when planning may appear to be based more on luck than foresight, the scenario-planning techniques that Ringland describes can help other researchers think about uncertainty in a structured way.

Dennard, Richardson, and Morcol (2008) recognize that public policies are inherently complex and the implications of complexity for policy analysis have not been studied. They offer new perspectives: should complexity be considered a "new science," opposed to the mainstream rational policy analysis? Does complexity provides the tools to asses and solve public policy problems? And other topics such as the need of a framework to put complexity: the role of ethics in complexity and the review of the model based on agents; the qualitative (case study) or quantitative roles on complexity.

Eve, Horsfall, and Lee (1997) look at complexity from the perspective of chaos theory. They explain how chaos theory has become a standard consideration for in many of the physical sciences (e.g., geology and fluid dynamics), and they place this revolutionary theory in the context of sociology and as the other social sciences.

e. The Airline Industry: Analysis of the Independent Variables

Findings from the Literature

There have been various studies of the airline industry, its deregulation, and the relevant variables. This section reviews the issues of the airline market -e.g., ownership, productivity, performance, demand, market contestability, social regulation such as safety and security, economic issues related to regulation and in particular competition, mergers and acquisitions- and the behavior of the variables over the last three decades. The analysis is instrumental to the definition of a model for the research.

The Issues

This section on the issues reviews the literature on the various issues that are relevant for the airline industry and provides the background for a construction of research question and of a theory that will be tested.

As Antoniou (1992, 503) notes, the "deregulation of the U.S. domestic airline market in 1978 and its apparent relative success continue to attract a great deal of interest among American and other economists. This uniquely U.S. experience has shown that [many] factors"—such as ownership, performance and productivity, time, market contestability, demand, costs, mergers and acquisitions, labor disputes and strikes, and regulation, as well as legal structure and macroeconomic performance (e.g., gross domestic product, or GDP, and GDP per capita), the structure of networks, and airport presence —"all play a crucial role in the survival and, ultimately, in the profitability of relatively free and unregulated airlines."

On *Ownership*, the large majority of writings (see Dempsey and Goetz 1992; Button 1991; Joskow 2004) argue that, as Shleifer (1998, 133) puts it, "private ownership should generally be preferred to public ownership when the incentives to innovate and to contain costs must be strong. In essence, this is the case for capitalism over socialism, explaining the dynamic vitality of free enterprise. The great economists of the 1930s and 1940s failed to see the dangers of socialism, in part because they focused on the role of prices under socialism and capitalism and ignored the enormous importance of ownership as the source of capitalist incentives to innovate. Moreover, many of the concerns [about how] private firms fail to [consider] social goals can be addressed through government contacting and regulation without resort to government ownership. The case for private provision only becomes stronger when competition between suppliers, reputational mechanisms, and the possibility of provision by private nonprofit firms, as well as political patronage and corruption, are brought into play." All these aspects are relevant for airlines.

Tornell (1999, 1) argues that "three reforms must be implemented if privatization is to increase efficiency. [The first is to establish] unitary control rights within the firm. [The second is to make] privatized firms face hard budget constraints. [And the third is to establish] a noncorruptible judicial system and transparent bankruptcy procedures. The question arises as to what course of action should be undertaken when these reforms have not been undertaken and privatizers have only a small window of opportunity. Either they privatize hastily today, or not at all. Should they go ahead with privatization and hope that the newly privatized firms will create the demand for good laws? In the case of behemoths, the answer is not clear-cut. Privatization without prior implementation of the three reforms mentioned above will simply replace government bureaucrats with private mafias (i.e., private groups with the power to extract fiscal

transfers). These private mafias might behave more voraciously than the bureaucrats they are replacing, reducing aggregate efficiency and further hindering the growth of the competitive private sector."

For a closer look at the specific case of airlines, Ehrlich and others (1994, 1006) "focus on the effect of state versus private ownership on the rates of firm-specific productivity growth and cost decline, [using] a model of endogenous, firm-specific productivity growth and testing its implications against panel data on 23 international airlines of varying levels of state ownership over the period 1973–83. The model and empirical results show that state ownership can lower the long-run annual rate of productivity growth or cost decline but not necessarily their levels in the short run. . . . These results appear to be independent of whether the firms operate under apparently more or less competitive or regulated markets and whether they differ in production scales."

In terms of *productivity*, Gordon (1993, 1) presents "a comprehensive study of measurement and substantive issues that arise in determining the rate of multifactor productivity (MFP) growth in the transportation industry over the postwar period, 1948–87." He shows that the effect of deregulation and particularly government expenditures on air traffic control and highway control has been mixed, i.e., does not appreciably change the pattern of postwar MFP growth in transportation. "MFP growth accelerated markedly for railroads when 1978–87 is compared with the pre-1978 period, but it slowed sharply for airlines and trucking." New results show that output quality is an important element of the performance of airlines, especially during the deregulation period.

On the *performance* of airlines, Antoniou (1992, 503) shows that "most international airlines still operate in a heavily regulated environment. While the tendency is clearly toward liberalization, the question remains: What can these airlines do to improve their profitability within this framework?" Antoniou's results "indicate that profitable airlines have high passenger load factors, a relatively low proportion of *capacity-related costs*, and younger and more efficient fleets, and that they supplement their passenger loads with freight." This finding reinforces the choice of the load factor as the dependent variable. Mueller (2000) proposes a multifactor structural model of corporate bond prices. Bonds are valued in an arbitrage-free setting. The term "structure of credit spreads" is a function of a set of observable variables, including the issuer's leverage ratio, the risk-free interest rate, and other stochastic factors that proxy for the issuer's likelihood of default. The set of factors may include both systematic and idiosyncratic components. Factors included in this empirical analysis that are significant are the *growth rate of GDP and GDP per capita* and the volatility of financial markets. According to Gordon (1996, 1), "Not only has U.S. productivity been poor by international standards, but it is also highly heterogeneous at the disaggregated industry level. Manufacturing has continued to do well, while nonmanufacturing has done poorly, especially services. Within services, apparel retailing has done well, while food retailing has done badly; railroad productivity has accelerated, while airline productivity has decelerated. This

dispersion of performance argues against a single overarching explanation of the slowdown." Gordon emphasizes that "some industries (e.g., electric utilities and airlines) reached a technological frontier at which the sources of earlier rapid productivity growth were exhausted."

Liedtka (2002) extends the literature on *nonfinancial performance measures* (NFPMs) by assessing (1) the information content of a broader set of NFPMs and (2) whether NFPMs provide information not provided by financial performance measures (FPMs) from all previously identified FPM categories, rather than just earnings and book value.

Good, Nadiri, and Sickles (1991, 1) "construct a short-run model of the firm describing the behavior of 13 U.S. airlines during the difficult transition to deregulation. Several modeling scenarios are developed to assess three common assumptions in cost studies: *the use of time as a proxy for technological change* as opposed to a more thorough description of changes in the production technique, the assumption of cost-minimizing behavior as opposed to permitting allocative inefficiency in input selection, and the assumption exogeneity of output and capital and their characteristics as opposed to endogenous decisions regarding these variables. . . . The most dramatic finding is that input concavity cost is reduced by 80 percent by relaxing the assumption of cost minimization. Demand and substitution elasticities are nearly twice as large under the most flexible compared with the least-flexible scenarios. Measured returns to scale are substantively much higher when a more complete description of the production technique is included in the model, and when this production technique is permitted to be modeled endogenously. Similarly, cost complementarity is quite sensitive to the assumption of endogeneity."

Gronau's (1970) book is a classic on the *demand for air travel*. In passenger transportation, the consumer desires the greatest possible speed and comfort, as well as other factors, at the lowest possible price, and the history of the industry is one of continuous improvements in these relationships. Gronau's research is dated, but his findings are still valid. He considers consumer preferences influenced by speed/time and price. The social benefit of innovations as well as their profitability partly depends on the value placed on time saving. For Gronau, the utility a traveler derives from a trip is directly related to the amount of traveling time involved, and the discomfort, which increases with traveling time. Time is a scarce resources and its value increases with income. Therefore, the superiority of the air mode of transportation is related to distance and the rise of income. Therefore in the cost of travel, one has to consider the cost of time, different for each individual. Given that the train is faster than the bus and private car, and air is faster than both, the shift of travelers from bus to train to air is related to the rise of income. Therefore, the air carrier is superior and that advantage increases with distance and becomes the dominant mode of transportation particularly for long-range trips.

From the price of time, one can derive the demand function for air travel and also estimate the income elasticity, i.e., an increase in income leads to a greater proportionate expansion in air travel, since income elasticity is significantly greater than one. A major problem is whether a fare cut would result in an increase or a decrease in air carriers' revenues, i.e., a greater or a smaller proportional increase in air travel. Vasigh, Fleming, and Tacker (2008) define the price of the trip as a combination of both money and time costs and argue that a price reduction would lead to some small proportional increase of personal and business travels. This means that any cut in fares leads to a smaller proportional reduction of the total price. Thus, a reduction of fares would be accompanied by a fall in air carriers' revenues.

From these considerations it follows that *yield* represents a measure of the demand for air travel (see the section on the demand for air travel). After all, the deregulation of 1978 and the advances in technology do prove the insights of Gronau.

In terms of *market contestability*, Goolsbee and Syverson (2005, 1) examine "how incumbents respond to the threat of entry of competitors, as distinguished from their response to competitors' actual entry, [using] a case study from the passenger airline industry—specifically, the evolution of Southwest Airlines' route network—to identify particular routes where the probability of future entry rises abruptly. When Southwest begins operating in airports on both sides of a route but not the route itself, this dramatically raises the chance [that it] will start flying that route in the near future." They also "examine the pricing of the incumbents on threatened routes in the period surrounding such events, [finding] that incumbents cut fares significantly when threatened by Southwest's entry into their routes. This is true even after controlling in several ways for airport-specific operating costs. Incumbents do experience short-run increases in their passenger loads concurrent with these fare cuts. This is consistent with theories implying that incumbents will try to generate some longer-term loyalty among current customers before the entry of a new competitor."

As part of the competitive environment, Gayle (2007, 781) indicates that "code-share alliances have become a prominent feature in the competitive landscape of the airline industry. However, policymakers are extremely hesitant to approve proposed code-share alliances when the potential partners' route networks have significant overlap. The main concern is that [an] alliance may facilitate price collusion on partners' overlapping routes." Gayle shows how policymakers can use a structural econometric framework "to quantify the competitive effects of proposed code-share alliances, where potential alliance partners compete on overlapping routes in the pre-alliance industry. As an example, the econometric model [is applied] to the Delta–Continental–Northwest alliance. This proposed alliance was initially greeted with skepticism by the DOT owing to the potential partners' unprecedented level of route network overlap. For the markets considered in [the] analyses, it appears as though the ultimate approval of the alliance by policymakers was justified."

Recently, attention has been directed at the *various aspects of social regulation and, most important, safety and security*. The question of the commercial airline industry's safety has attracted much public attention and debate since the economic deregulation of the industry in 1978. These concerns have energized economic research on three aspects of airline safety. First, has the level of airline safety declined since deregulation? Research on this topic investigates whether increased public concerns about air safety derive from proven increases in accident risks. Second, what accounts for differences in safety performance across carriers? This literature analyzes the heterogeneity of carriers' safety records in order to study factors that influence safety performance. Third, what is the response of markets to airline accidents? (is safety also a competitive concern?) Rose (1991) explores the effectiveness of market incentives in constraining the safety provision of firms and articulates answers for the three points. Noronha and Singal (2004, 1) "examine the relationship between financial health and product safety in the airline industry. Theoretical models predict that agency problems are exacerbated when a firm is in or near financial distress and lead to increased risk-taking behavior by such firms, [and these researchers' results] support this prediction, [on the basis of an] empirical model, which uses mishaps to proxy for airline safety and lagged bond ratings to proxy for financial well-being, shows a significant correlation between the two measures, Airlines with highly rated bonds are less likely to be involved in accidents. [On average, the findings indicate] that a whole higher letter grade for the bond rating is associated with a 10 percent lower probability of an accident. [The] results remain robust in the presence of other variables that could affect the number of airline mishaps."

Customer service is of significant concern to an airline passenger. The on-time performance of an airline is one of the important indicators of customer service. Bhat (1995) analyzes whether there is any relationship between *airline flight delays* and the financial situation of an airline. He uses logistic regression and identifies an association between the probability of delay and financial factors for an airline, showing that airline size and operating revenue per employee increase the likelihood of a flight being delayed.

"Since the September 11, 2001, terrorist attacks," Rupp, Holmes, and Desimone (2003, 1) explain, "repeated airport closures due to potential *security breaches* have imposed substantial costs on travelers, airlines, and government agencies in terms of flight delays and cancellations. Using data from the year following September 11th, [our study examined] how airlines recover flight schedules upon the reopening of airports that have been closed for security reasons. As such, this is the first study to examine service quality during irregular operations. [The] results indicate that while outcomes of flights scheduled during airport closures are difficult to explain a variety of factors—including potential revenue per flight and logistical variables such as flight distance, seating capacity, and shutdown severity—significantly predict outcomes of flights scheduled after airports reopen."

Because, as Lapre (2006, 1) points out, "service failures are inevitable, firms must be prepared to recover" and learn from them. In fact, the majority of customers are not happy with the way firms resolve their complaints and to cut service failures and improve customer satisfaction, firms must learn from experience and mistakes. Research shows that organizational learning curves for customer dissatisfaction (1) follow a U-shaped function of operating experience and (2) are heterogeneous across firms." Lapre "teases out where the U-shaped learning-curve effect and learning-curve heterogeneity originate: service failure or customers' propensity to complain given the occurrence of a service failure. Using quarterly data for nine major U.S. airlines over 11 years, [it can be shown] that the U-shaped learning-curve effect as well as the learning-curve heterogeneity originates in the propensity to complain. In the long term, reductions in service failure did not translate into sustainable reductions in customer dissatisfaction. Customers' propensity to complain eventually increased. Managing the propensity to complain provides more opportunity for a firm to distinguish itself from competitors."

Haunschild and Sullivan (2002, 609), "using data on *accidents and incidents* experienced by U.S. commercial airlines from 1983 to 1997, investigated variation in firm learning by examining whether firms learn more from errors with heterogeneous or homogeneous causes. [The research] measured learning by a reduction in airline accident and incident rates, controlling for factors related to accidents and incidents. [The] results show that heterogeneity is generally better for learning, because prior heterogeneity in the causes of errors decreases subsequent accident rates, producing an intense search for causality than simple explanations like 'blame the pilot.' The benefits of heterogeneity, however, apply

mainly to specialist airlines. Generalist airlines learn, instead, from outside factors, such as the experience of others and general improvements in technology. These results suggest a theory of learning across organizational forms: complex forms benefit from simple information, and simple forms benefit from complex information." These researchers also discuss the implications of their study for learning theories and work on organizational errors.

The deregulation of airlines has revealed a key issue: *labor relationships*. Hirsch (2007, 1) shows the evolution of labor relations in the airline business: "During the 1930s and 1940s, collective bargaining emerged as the workplace governance norm in much of the U.S. industrial sector. Following its peak in the 1950s, union density in the U.S. private sector fell steadily, to only 7.4 percent in 2006. Governance shifted from a formalized union norm to one of constrained managerial discretion. In competitive and dynamic economic environments, a union tax on company earnings and a slow response to economic shocks combine to produce poor performance by union companies. Two industries— automotive and airlines—are used to illustrate these points. If worker-based institutions are to flourish, they must add value and permit companies to perform at levels similar to those obtained under evolving nonunion governance norms." Hoffer, Von Nordenflycht, and Kochan (2003, 1) "examine competing theoretical arguments regarding whether union representation, shared governance, wage levels, and two features of the quality of labor relations—workplace culture and conflict in negotiations—lead to better or worse outcomes for airlines, and [they test these factors using] a mix of historical and quantitative data from major U.S. airlines. Both the qualitative and quantitative results suggest that relational factors—conflict and workplace culture—are more important determinants of performance than the structural factors of unionization, shared governance, and wages. [These researchers] conclude that efforts to recover from the current crisis in the airline industry that depend primarily on reductions in wages or union power will at best bring only short-term relief from immediate financial pressures. Sustained improvement in service quality and financial performance will require more fundamental improvements in the quality of labor relations." Card (1996, 1) "uses a variety of data sources to study the effect of deregulation on the structure of wages in the airline industry. Microdata from the 1980 and 1990 censuses show a 10 percent decline in the relative earnings of airline workers after deregulation, with roughly similar declines for industry-specific occupations (pilots and flight attendants) and general occupations (managers and secretaries). Union contract data for pilots, flight attendants, and mechanics at the major firms show similar trends in the levels of earnings, along with a rise in interfirm wage inequality—especially for pilots. Finally, data from the displaced worker surveys reveal that airline workers experienced similar wage losses to job losers from other industries during the 1980s. Taken as a whole, the evidence suggests that the rent premiums earned by airline workers in the regulatory era were relatively modest, and comparable to the wage premiums earned in many other sectors." A significant part of the power of labor

lays in the right to strike. Mordkoff (2007, 1) "chronicles the demise of [organized] labor's ability to strike in the commercial aviation industry in the United States. The analysis starts with the airmail strikes of the early twentieth century and progresses to the present day, where the Northwest Airlines flight attendants' attempt to strike was enjoined by the District Court (a decision that was upheld by the 2nd Circuit). The first part of the paper is historical. The second part focuses on the [Northwest Airlines] case, analyzing the District Court's decision. The paper concludes with a legislative proposal for amending the Railway Labor Act to make it easier for unions to strike a formerly bankrupt carrier, once the carrier leaves bankruptcy protection."

There have been several studies on the economic aspects of *regulation* –not limited to the US- in general and its application to the airline industry. Numerous studies refer to the impact of regulation and deregulation on the industry and identify key variables.

On the general aspects of regulation, Guasch and Hahn (1997) examine the "economic impact of regulation in industrial and developing countries. [They argue] that economic analysis can play an important role in restructuring regulated industries and developing more effective regulations, and in reducing politically driven regulation and capture. The past two decades have seen an unparalleled rise in new health, safety, and environmental regulations in industrial countries. At the same time, in some countries there has been substantial economic deregulation of several industries (including airlines, railroads, trucking, energy, telecommunications, and financial markets). Developing countries are engaged in deregulating some sectors of the economy and devising new regulatory frameworks for others." They "find that it is possible to explore systematically the costs and benefits of regulatory activities using standard economic analysis, [concluding] that regulation—especially when aimed at controlling prices and entry into markets that would otherwise be workably competitive—can limit growth and significantly reduce economic welfare. Although unnecessary process regulation can hurt the economy, social regulations may significantly benefit the average consumer. But some regulations do not meet goals effectively and may sometimes reduce living standards. . . . Regulation is not generally undesirable, but it often has undesirable economic consequences, which result in part from political forces to redistribute wealth, [which] can be mitigated by more sharply evaluating the consequences and trade-offs of proposed regulations."

Borenstein and Rose (2007, 1), "following a brief review of the U.S. domestic airline industry under regulation (1938–78), study the changes that have occurred in pricing, service, and competition in the 28 years since deregulation. [They] then examine some of the major public policy issues facing the industry: (1) the sustainability of competition and volatility of airline profits, (2) [the] possible market power of dominant airlines, and (3) congestion and investment shortfalls in airport and air traffic infrastructures."

Semenick-Alam and Sickles (2000, 203) demonstrate that as "airline markets worldwide become less regulated, it becomes increasingly possible and timely to establish the presence of an empirical relationship between technical efficiency and market forces compelling agents to economize. [They take] an innovative approach to test the hypothesis that competitive pressure enhances efficiency, [and they construct] a methodology to examine time series of technical efficiency indices for cointegration and convergence. A panel of U.S. airlines, observed quarterly between 1970 and 1990, is used as a case study. Cointegration results are suggestive of long-run relationships between carriers; furthermore, convergence tests document less dispersion in firm performance over time."

Kole and Lehn (1997) indicate that "deregulation provides a natural experiment for examining how governance adapts to structural change in the business environment. [They] investigate the evolution of governance structure—ownership concentration, compensation policy, and board composition—in the U.S. airline industry during a 22-year period, [centering on] the Airline Deregulation Act of 1978. Consistent with theory, they find that, after deregulation, (1) equity ownership is more concentrated; (2) CEO pays increases; (3) stock option grants to CEOs increase; and (4) board size decreases. Airline governance structures gravitate toward the system of governance mechanisms used by unregulated firms. The adaptation process is gradual, however, suggesting that it is costly to alter organizational capital."

Levine (2006, 1) argues that the conditions for reregulation of the sector are not available. The "economic theory of regulation posits that regulation is a service offered by self-regarding government officials to well-organized interests at the expense of the general public. Airline regulation has often been cited as a classic example, in which a naturally competitive industry was subjected to price and entry regulation, raising fares and suppressing service to the benefit of firms, labor unions, and suppliers but at the expense of the traveling public. The history of its genesis is consistent with this view, since the major firms in the industry themselves benefited from informal government intervention and then lobbied for the regulatory framework enacted in 1938. But price and entry protections were lifted in 1978 as the result of a legislative process that the industry bitterly opposed, and 25 years of competition has damaged the interests of airlines, labor unions, and suppliers while benefiting greatly the unorganized traveling public. Why didn't the industry, its suppliers, and the labor unions lobby for and receive protection once the impact of deregulation on organized interests became clear? Does their failure to do so undermine the economic theory of regulation? The explanation appears to lie in the fact that comprehensive regulation tended to make firms alike and to align their political interests, and deregulation allowed many different players and strategies to emerge, benefiting some and harming others. Accordingly, the industry was unable to achieve the level of cohesion necessary to undo a popular legislative program." Along the lines of previous work, Levine (2007, 1) stresses that "since airlines were deregulated, shareholders, management, and workers, already well organized, have suffered severe, sometimes catastrophic losses,

while the benefits have been spread among unorganized consumers and the investors and managers of new entrant airlines, which themselves have had a high failure rate. While the gains greatly outweigh the losses, their incidence violates traditional versions of the economic theory of regulation. Organized subgroups should be able to protect their rents against less-organized subgroups, especially when the organized subgroups experience concentrated effects while the impact on the less-organized subgroups is much more dispersed. Under the circumstances, it is reasonable to ask why the airlines were not reregulated once the incidence of deregulation became clear. [Levine hypothesizes] that there are two principal reasons, one requiring a refinement of the theory. The first is that, under regulation, the incentives of both regulators and their regulated population face incentives to make the firms and the interests connected with them more alike and that deregulation very rapidly allows the development of firms and other organized interests with different incentives. . . . The second reason and theory refinement is that rent creation and wealth transfer through regulation require both political unity and "slack," i.e., protection from public scrutiny. . . . Deregulation often occurs when a dramatic event or an issue entrepreneur manages to get the regulatory arrangement on the public agenda. Then slackness disappears, leaving the rent-creation and wealth transfer mechanism transparent to the general public."

Gagnepain and Marin (2004, 1) aim to "evaluate simultaneously market power and the incentives faced by carriers to improve efficiency, taking into account the regulatory changes that have affected the European airline industry. [They] construct and estimate a model that includes demand, capacity, and cost equations. The [last] accounts for inefficiency and cost-reducing effort. Using a no nested test and observations of the largest European airlines between 1985 and 1999, [they] show the importance of following such an approach. [They] also find that the introduction of the last E.U. package of deregulatory measures has affected air carriers' behavior in a significant manner."

Wachter, Hirsch, and Gillula (2001, 1) show that "most regulated industries undergoing deregulation are capital intensive. In the existing cost-of-service regulatory framework, the primary concern is that, guaranteed a competitive return on capital, the regulated firm has insufficient incentive to be cost-efficient. In deregulating firms within such industries, the return on capital is permitted to vary directly with the firm's performance. Firms that restrain costs and increase revenue can earn higher profits; for those that do not do so, profits fall below levels assured under the prior regulatory regime. The assumptions in deregulating such industries are that the affected firm can control the bulk of its costs, can make decisions with little remaining governmental oversight, and can use high-powered performance pay incentive systems to encourage profit maximization. In addition, it is assumed that regulatory barriers will eventually disappear, allowing for open markets and free competition."

Gonenc and Nicoletti (2000) use a database "on regulation, market structure, and performance in the air passenger transportation industry to analyse the links among liberalisation, private ownership,

competition, efficiency, and airfares at the national and route levels. Covering the 1996–97 travel season, 21 aggregate indicators were developed for 27 OECD countries, along with 23 micro indicators for 102 air routes connecting 14 major international airports. These data, summarised by means of factor analysis, show that (1) regulations affecting the air industry vary heavily across countries and routes; (2) in most markets, air services are still provided by a few carriers, generally dominated by an incumbent flag-carrier or by an airline alliance between incumbents; (3) only in a few cases do new entrant airlines play a significant role; (4) in a large number of airports, a single airline controls more than half the available slots; (5) as a result, few international routes are truly open to competition; and (6) regional aviation markets and open sky agreements constitute an important but limited step toward liberalisation."

By "controlling for market size, network length, and other technological and economic differences, and combining national and route-level characteristics, [Gonenc and Nicoletti's] cross-country and cross-route regressions show that (1) productive efficiency increases and fares decline when regulations and market structures become friendly to competition; (2) productive efficiency is sensitive to actual competitive pressures, as proxied by low market concentration; (3) fares react to liberalisation independently from market structure, but in liberal environments their decline is amplified by actual competition between carriers; (4) business and economy fares tend to decline when they are liberalised and market concentration is reduced, but tend to increase when markets are dominated by airline alliances on the route; (5) discount fares are affected by the overall market environment at route ends, by charter regulations, and by the actual presence of challenger airlines on the route; and (6) airport congestion and dominance tend to increase fares in time-sensitive market segments."

Regulation, deregulation, and competition, as well as the working of institutions that have oversight on *antimarket behavior* (e.g., antitrust practices, mergers and acquisitions), are crucial aspects of the functioning of markets. Farmer (2008) stresses that the "past several decades have witnessed a trend away from regulation and toward market competition in a wide variety of economic sectors—including, for example, telecommunications, transportation, financial services, health-care, transportation, and energy markets. The antitrust laws have assumed an enhanced role in a post regulatory environment, particularly in the area of mergers. The European experience offers a useful contrast to American deregulation in a number of market sectors." In America, the courts as well as competition and antitrust agencies as well as consumer protection agencies become very active, for instance there are several interventions of consumers' advocates (see AAI, http://www.antitrustinstitute.org/.) Instead, "the European project of deregulation and market liberalization is proceeding primarily in a highly regulatory, top-down fashion directed by the executive and administrative bodies of the European Union, both enforcing European statutory law and jawboning member state governments to bring competition to

previously regulated industries and eliminate subsidies that benefit national champion industries. In key sectors of the economy, including such important industries as gas and electric utilities and banking, the goals of competition, on the one hand, and national protectionism, on the other, continue to clash despite the best hopes of the original architects and modern leaders. By comparison, the market for airline transportation has become increasingly competitive since deregulation, as reflected in increasingly substantive reviews and the ultimate approvals of a series of mergers in the industry." Carlton and Picker (2007, 1) explain that "since the passage of the Interstate Commerce Act (1897) and the Sherman Anti-Trust Act (1890), regulation and antitrust [in the United States] have operated as competing mechanisms to control competition. Regulation produced cross-subsidies and favors to special interests, but specified prices and rules of mandatory dealing. Antitrust [laws] promoted competition without favoring special interests but could not formulate rules for particular industries. The deregulation movement reflected the relative competencies of antitrust laws and regulation. Antitrust [laws] and regulation can also be viewed as [complementary, in that] regulation and antitrust [laws] assign control of competition to courts and regulatory agencies based on their relative strengths. Antitrust laws also can act as a constraint on what regulators can do. [Carlton and Picker] uses the game-theoretic framework of political bargaining and the historical record of antitrust [laws] and regulation to establish and illustrate these points."

The role of *mergers and acquisitions* and also that of antitrust laws have attracted great attention in the literature and also some attention in the case of airlines. Kaplow and Shapiro (2007) survey the "economic principles that underlie antitrust law and how those principles relate to competition policy. [They] address four core subject areas: market power, collusion, mergers between competitors, and monopolization. In each area, [they] select the most relevant portions of current economic knowledge, and [they] use that knowledge to critically assess the central features of antitrust policy. [Their] objective is to foster the improvement of legal regimes and also to identify topics where further analytical and empirical exploration would be useful." On the topic of mergers in airline business, Cook (2008) shows that over the years since airline deregulation, five of the remaining U.S. legacy carriers have lost money on mergers that cost them a total of $29.6 billion. The combined market cap of these carriers at the end of 2007 was $15.5 billion. In other words, their return on merger investments was –48 percent. Two very different answers emerge from the study: first, the airline industry is an attractive busineness that investors cannot resist it; second, the bigger a legacy air carrier gets, the more it is exposed to the downward-pricing pressure by low-cost carriers. Bilotkach (2007, 1) offers "an analysis of [the] price effects of airline consolidation on a sample of transatlantic markets. While joining airlines' networks through code-sharing decreases interline fares by up to 22.5 percent relative to those of nonconsolidated carriers, and alliance membership also produces cost savings that decrease fares by up to 10 percent, antitrust immunity has no significant price effect for interline trips. The evidence that antitrust immunity

increases fares on nonstop routes where it decreases competition is not robust. [Though the] total effect of airline consolidation on interline fares is about the same as indicated by previous studies, [Bilotkach suggests] different sources of this effect. [His work] is the first one presenting empirical evidence of no significant price effects of antitrust immunity." Peters (2003) "uses merger simulations to predict post merger prices for six major airline mergers from the 1980s and compares these predictions with actual post merger prices. Simulations that incorporate varying degrees of post merger information allow us to decompose the actual price changes into their component effects. The results suggest that standard simulation methods, which measure the effect of the ownership transfer on pricing incentives, can account for a large component of the post merger price change but should not be expected to account for all of it. Changes in marginal cost or firm conduct generally account for most of the remainder, while post merger entry and changes in observed and unobserved demand-side variables typically have a relatively small effect. A comparison of two alternative demand models indicates that cross-price elasticities, and hence simulated prices, are quite sensitive to the demand specification." Healy, Palepu, and Rubak (1990) "examine the post acquisition operating performance of merged firms using a sample of the 50 largest mergers between U.S. public industrial firms completed in the period 1979–83. Their results indicate that merged firms show significant improvement in asset productivity relative to their industries after the merger, leading to higher post merger operating cash flow returns. Sample firms maintain their capital expenditure and [research-and-development] rates relative to their industries after the merger, indicating that merged firms do not reduce their long-term investments. There is a strong positive relation between post merger increases in operating cash flows and abnormal stock returns at merger announcements, indicating that expectations of economic improvement underlie the equity revaluations of the merging firms." Golbe and White (1988) show that the takeover boom starting in the mid-1980s was characterized by many new phenomena not previously observed—hostile takeovers and takeover defenses, a widespread use of cash as a means of payment for targeted firms, and the acquisitions of companies ranking among the largest in the United States. In seeking to more clearly explain what these occurrences mean, Golbe and White examine many issues related to the process of analyzing mergers and acquisitions and study the takeover process itself. Using econometric techniques, they directly test the proposition that U.S. merger activity has occurred in waves, rigorously confirming others' impressions. Ashenfelter and Hosken (2008, 1) "propose a method to evaluate the effectiveness of U.S. horizontal merger policy and apply it to the study of five recent consumer product mergers. [They] selected the mergers from those that, from the public record, seemed to be most problematic for the government's antitrust agencies. Thus, [they] estimate an upper bound on the likely price effect of completed mergers. [Their] study employs retail scanner data and uses familiar panel data program evaluation procedures to measure price changes. [The] results indicate that four of the five mergers resulted in some increases in consumer prices, while

the fifth merger had little effect." Lichtenberg and Moshe (1989) "analyze the effect of mergers on various aspects of airline performance during the period 1970–84, using a panel data set. . . . Estimates derived from a simple "matched pairs" statistical model indicate that these mergers were associated with reductions in unit cost. The average annual rate of unit cost growth of air carriers undergoing mergers was 1.1 percentage points lower, during the five-year period centered on the merger, than that of carriers not involved in mergers. Almost all this cost reduction appears to have been passed on to consumers. Part of the cost reduction is attributable to merger-related declines in the prices of inputs, particularly labor, but about two-thirds of it is due to increased total factor productivity. One source of the productivity improvement is an increase in capacity utilization (load factor)." (See Winston 2008, pp. 115-122)

Doane, Hendricks, and McAfee (2003) start their analysis of the evolution of the market for air travel information by stressing that on November 15, 2002, DOT issued a Notice of Proposed Rulemaking regarding the regulation of Computer Reservation Systems (CRSs) in the airline industry. This notice raised a critical economic question: What is the nature and extent of competition in the supply of information regarding air travel to passengers? Doane, Hendricks, and McAfee answer DOT's question through an analysis of the characteristics of the air travel industry in general, and the suppliers of CRSs, and their competitors, in particular. In their analysis, Doane, Hendricks, and McAfee discuss the major developments that have occurred in recent years in the air-travel information market, particularly the diminishing ownership interest of CRSs by airlines and the dramatic growth of the Internet as a vital and rapidly expanding information vehicle. In particular, they discuss the implications of the fact that CRSs only handle approximately half of total bookings. They explore how the Internet has radically altered the relationships between consumers and suppliers, and how it has become a tool for consumers to "independently verify the accuracy of the information provided by CRSs, travel agents, and other providers." They "identify the relevant market for air-travel information, which includes CRSs, online travel agencies, and the websites and call centers of individual carriers. [They also] determine market concentration and market shares using the Herfindhal-Hirschman Index."

Borenstein and Rose (1994, 653) "study dispersion in the prices an airline charges to different passengers on the same route. This variation in fares is substantial; the expected absolute difference in fares between two passengers on a route is 36 percent of the airline's average ticket price. The pattern of observed price dispersion cannot easily be explained by cost differences alone. Dispersion increases on routes with more competition or lower flight density, consistent with discrimination based on customers' willingness to switch to alternative airlines or flights. The authors argue that the data support models of price discrimination in monopolistically competitive markets." Stavins (2001, 200) tests the "hypothesis that *price discrimination increases with competition* in the airline market. Using a large cross section of tickets offered by several carriers on various routes, [she approximates] price discrimination with [the]

marginal implicit prices of ticket restrictions that carriers typically use to price discriminate: Saturday-night stay over requirements and advanced-purchase discounts. There are restrictions associated with lower airfares, but the discounts are smaller on routes with higher market concentration. [The] results suggest that price dispersion [and discrimination] attributed to ticket restrictions increase as markets become more competitive." Gerardi and Shapiro (2007) "analyze the effects of market structure on price dispersion in the airline industry, using panel data from 1993 through 2006. [Their results] contrast with those of Borenstein and Rose (1994), who found that price dispersion increases with competition. [Gerardi and Shapiro] find that competition has a negative effect on price dispersion, in line with the traditional textbook treatment of price discrimination. Specifically, the effects of competition on price dispersion are most significant on routes that [they] identify as having consumers characterized by relatively heterogeneous elasticities of demand. On routes with a more homogeneous customer base, the effects of competition on price discrimination are largely insignificant. [They] conclude from these results that competition reduces the ability of a carrier to price discriminate, resulting in reduced overall price dispersion." Busse (2002, **298**) indicates that a firm knows that cutting prices "may trigger a price war," and thus the firm "must weigh present versus future gains and losses when considering such a move. The firm's financial situation can affect how it values such trade-offs. Using data on 14 major airlines between 1985 and 1992, [she tests] the hypothesis that firms in worse financial condition are more likely to start price wars. Empirical results suggest that this is true, particularly for highly leveraged firms. [She] also explores which firms join existing price wars and finds that a firm is more likely to enter a price war the greater the share of its traffic on routes is served by the price-war leader."

Schindehutte, Morris, and Kocak (2008) have a novel approach to the industry of airlines and refer to the recent marketing literature that has "placed significant emphasis on market-driving and proactive market-driven behavior within firms in attempts to reconceptualize the meaning of 'market orientation.' For their part, market-driving firms such as Starbucks, Amazon.com, Dell, and Southwest Airlines are demonstrating how business model innovation results in sustainable advantage and superior long-term performance in a wide range of industries. [They] contend that market-driving behavior is distinct from a firm's market orientation, and instead is the essence of entrepreneurial action in the sense of Schumpeterian 'creative destruction.' [They further argue] that the firm's entrepreneurial orientation interacts with other strategic orientations, in the process determining how they are manifested and, in some cases, whether they are manifested. Furthermore, an entrepreneurial orientation—[such as that of Southwest Airlines]—plays a critical role in determining transitions among various strategic orientations over time.

Jovanovic and Chung-Yi Tse (2006) follow along the lines of Schindehutte, Morris, and Kocak, (2002) indicating that "most industries go through a 'shakeout' phase during which the number of producers in

the industry declines. Industry output generally continues to rise, however, which implies a reallocation of capacity from exiting firms to incumbents and new entrants. Thus, shakeouts seem to be classic creative destruction episodes [such as Schumpeter defined]. Shakeouts of firms tend to occur sooner in industries where technological progress is rapid" than they occurred in the airline industry following deregulation. Rubin and Joy (2005, 215) explore the consumer effects of "recent airline industry change, in the context of its oligopoly market structure and current industry environment. Economic and noneconomic events, increasing competition from low-fare carriers, technological developments, and changes in industry practices all are transforming consumer travel and interaction with airlines. Consumers can anticipate more direct flights, increased price transparency, and increased fees and time cost of security."

Rose (2006, 4) presents an overall evaluation of deregulation and its main variables. "In general, the empirical evidence on the deregulation of structurally competitive industries suggests considerable gains from the removal of price and entry regulation, although the transition from regulated to competitive markets may be longer and more costly than academics or policymakers originally envisioned. Borenstein and Rose (1994) describe the significant consumer benefits from reduced fares and increased flight frequencies and from nonstop service subsequent to airline deregulation, while acknowledging the industry's considerable financial volatility. [They] argue that market power concerns have diminished as growth by low-cost air carriers now challenges legacy airlines in virtually all parts of the country."

Goolsbee and Syverson (2005) suggest "that even the threat of entry by carriers such as Southwest may reduce incumbent carriers' prices. [However,] this surge in competition—combined with adverse demand shocks, high fuel prices, and high labor costs—has contributed to current financial distress among many legacy airlines. Financial distress and accompanying bankruptcies have been costly for shareholders, high-wage workers, and the Pension Benefit Guaranty Corporation, although many costs and dislocations may be transitional. For example, Borenstein and Rose (1995) show that the schedule disruptions associated with airline bankruptcies are largely transitory; where they are more permanent, they appear to be modest relative to background fluctuations in flights and destinations served, and to be isolated to medium-sized airports. Overall airline investment and consumer benefits continue to be substantial. The greater long-run challenge may be the performance of government-controlled airports, air traffic control, and security infrastructure, which have not in general kept pace with the growth and changes in the industry."

The role of *bankruptcies* has been developed at length and has also attracted some attention with respect to the case of airlines. Borenstein and Rose (2003) indicate that the "airline industry's current financial crisis has raised concerns over the ramifications of airline bankruptcies for air service and the economy. Such bankruptcies, however, nearly always occur when demand is weak, and, thus, when even

healthy airlines are inclined to reduce flights. Moreover, from a consumer and policy perspective, the real concern is [the quantity of] total air service offered, not the number of flights offered by a particular airline. [Borenstein and Rose] study all major U.S. airline bankruptcies [starting in] 1984 to estimate the effect of bankruptcy on air service, controlling for demand fluctuations and recognizing that competing airlines may increase service in response to a reduction in flights by a bankrupt airline. [They] do not find substantial effects of bankruptcy on flights offered or destinations served at large and small airports, but they do find an impact on medium-sized airports. [They] estimate, however, that service changes due to bankruptcy are not large in comparison with [the typical] quarter-to-quarter fluctuations in service that occur at airports in the absence of carrier bankruptcies." Borenstein and Rose (1995) stress that "the behavior of firms in financial distress has attracted considerable academic and policy interest in recent years. The turmoil in the U.S. airline industry has triggered much of the public policy discussion, as some observers have argued that airlines in financial distress, particularly those operating under Chapter 11 bankruptcy protection, reduce prices to the point of harming themselves and their competitors. [Borenstein and Rose's] study investigates the pricing strategies of bankrupt airlines and their rivals. [Their] data suggest that an airline's prices typically decline somewhat before it files for bankruptcy protection and remain slightly depressed over the subsequent two or three quarters. [They] find no evidence that competitors of the bankrupt airline lower their prices, however, or that they lose passengers to their bankrupt rival. These results indicate that bankrupt carriers do not harm the financial health of their competitors." All in all, bankruptcies and their increase should have a somewhat negative impact on the quantity of air service and on the measure of load factor. This behavior, however, is not consistent in the studies that have been done. Bruner and Carr (2004) indicate that "on June 18, 2004, the United States and China reached a landmark air transportation agreement that quintupled the *number of commercial and cargo flights* between the two countries."

Leigh, Wolfers, and Zitzewitz (2003, 1) "analyze financial market data in order to produce an ex-ante assessment of the economic consequences of the war with Iraq. The novel feature of their analysis derives from the existence of a market for 'Saddam Securities,' a [then-new] future traded on an online betting exchange that [paid] only if Saddam Hussein [was] ousted. A variety of tests suggest that this future's price provid[ed] a plausible estimate of the probability of war. The spot *oil price* moved closely with the Saddam Security, suggesting that, [at the time], the war raised oil prices by around $10 per barrel. The futures prices [studied by these researchers implied] that the oil markets expect[ed] these large immediate disruptions to dissipate quickly, with prices returning to prewar levels within about a year and a half. Evidence on the long-run effects was fragile, and while prices were probably expected to fall a little as a result of war, any "oil dividend" would have been minimal. [The researchers] find large effects in equity markets: The war lowered the value of U.S. equities by around 15 percent. This effect was

concentrated in the consumer discretionary sector, airlines, and [information technology]; the prospect of war bolster[ed] the gold and energy sectors."

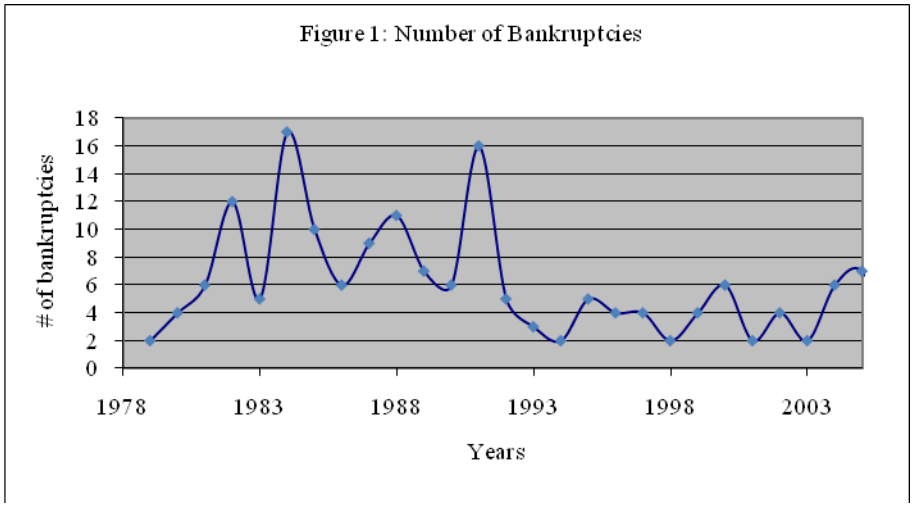
Blanchard and Gali (2007, 1) "characterize the macroeconomic performance of a set of industrialized economies in the aftermath of the oil price shocks of the 1970s and of the last decade, focusing on the differences across episodes. [They] examine four different hypotheses for the mild effects on inflation and economic activity of the recent increase in the price of oil: (1) good luck (i.e., lack of concurrent adverse shocks), (2) smaller share of oil in production, (3) more flexible labor markets, and (4) improvements in monetary policy. They conclude that all four have played an important role."

Behavior of the Main Variables

Against this background, in this section, I review the behavior of the relevant variables of the airline industry over the last 30 years, to explain their role in a conceptual framework and with a theory; to help select a testable model with a defined operational dependent variable for the study of the process of the implementation of U.S. deregulation. To that end, the literature review and the testimony of Morrison and Winston at the hearings before the U.S. House of Representatives' Subcommittee on Aviation of its Committee on Transportation and Infrastructure on September 28, 2005 provide the relevant information to review the various components of the U.S. airline deregulation process of 1978. In that context, variables that seem appropriate for the study of the deregulation are: those related to the competitive environment (e.g. bankruptcies, mergers and acquisitions), profitability, fares, number of passengers, hubs, labor, fuel, and safety.

Competitive Environment. During the past 30 years, the deregulation of the airline industry has unleashed a competitive process of creative destruction characterized by bankruptcies, mergers and acquisitions, and fluctuations of the number of carriers. *Bankruptcies* represent a first component of this new competitive environment. They play an important role (see Figure 1) in the process, in the sense that carriers that are unable to be profitable will have to quit the market. In reality, current bankruptcy policy

Figure 1: Number of Bankruptcies



enables carriers to continue to operate in bankruptcy status and have a chance to "remain as competitors —which they can only do in the current environment by lowering costs" (Morrison and Winston 2005, 4).[20]

The second component of the unleashed competition is that of *mergers and acquisitions*. As Morrison and Winston (2000, 3) recount, the U.S. Department of Justice (DoJ) and the Federal Trade Commission (FTC) periodically issue guidelines outline the method they would follow for evaluating horizontal mergers (see Whinston, 2008, p.76). They have brought several antitrust suits against airlines for engaging in uncompetitive behavior (e.g., predatory pricing) and "may bring additional suits against carriers.[21] National lawmakers have proposed legislation that would create a new commission to review airline pricing strategies. Both [the U.S. Department of Justice] and DOT have indicated that they intend to take a tougher stance on proposed airline mergers." Figure 2 shows the mergers and acquisitions that have taken place over the last 30 years. The figures are completely different from those before 1978, when the CAB did not allow companies to go bankrupt or to merge. As Winston and Crandall (2006) explain, "Mergers may harm consumers if they are the route to (or the root of) market power and ultimately allow the combined firm to increase consumer prices and reduce service. In such cases, enforcement of the antitrust laws could improve consumer welfare by blocking the mergers before they occur and by discouraging future harmful mergers. Research suggests that government efforts to address such threats do little to improve consumer welfare and sometimes actually reduce it [Morrison and Winston 2000]. . . . More importantly, government often misses fruitful opportunities to encourage benefits for consumers because it eschews market-oriented policies. The empirical evidence on the main factors that influence airlines to merge their operations does not suggest that these mergers are driven by a desire to obtain market power. Morrison and Winston analyzed the determinants of all the actual and attempted airline mergers since the 1978 deregulation. They found that carriers are generally not motivated to merge for anticompetitive reasons but rather by the acquiring carriers' desire to expand their international routes—which are far more profitable than most domestic routes due to government-to-government agreements that limit entry—and by the acquired carriers' need to be rescued from financial distress."

A third component of competition in the airline industry is the *number of operating carriers*.

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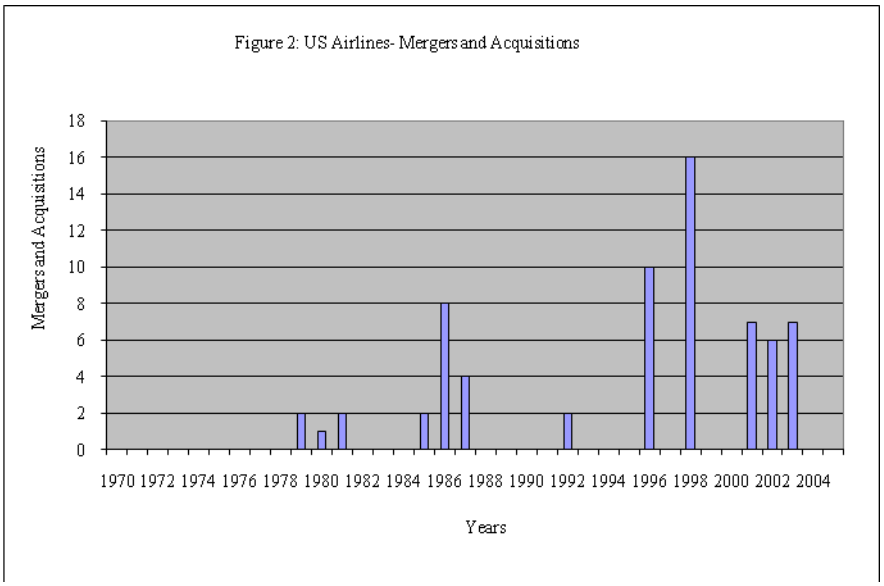
[20] As Morrison and Winston (2005, 4) further note, "Although carriers in bankruptcy do gain a cost advantage from lower capital costs, they also suffer a diminished reputation among travelers and potential investors. . . . Morrison and Winston (1995) . . . found that the effect of healthy carriers competing against bankrupt carriers was mixed—for some bankruptcies, competing carriers were helped by competing against a weakened competitor; in other cases, healthy carriers were hurt by such competition."

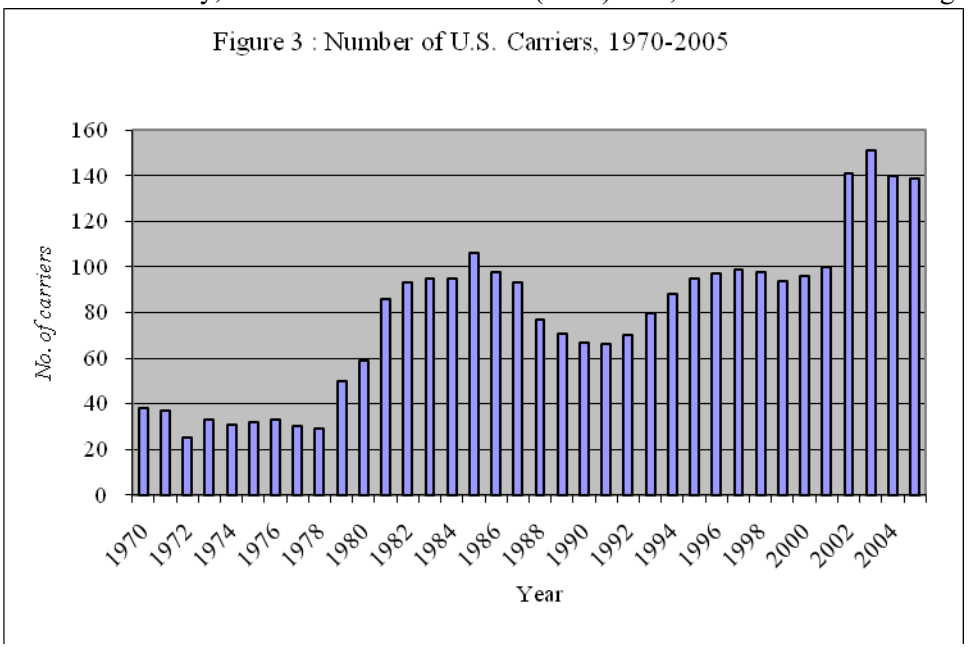
[21] For instance, there were suits against American Airlines (May 1999) for monopolizing and attempting to monopolize airline passenger service to and from Dallas–Fort Worth International Airport in violation of Section 2 of the Sherman Anti-Trust Act, 15 U.S.C. § 2.The case was subsequently dismissed.



Carriers are the product of various forces: bankruptcies, mergers and acquisitions, and new entries. Figure 3 indicates that, since the 1978 deregulation, there has been an increase of the number of U.S. carriers. In the late 1990s, new types of carriers emerged: the regional commuter carrier that links two minor cities, and the low-cost carrier. This change has led to a substantial increase in the number of carriers. Morrison and Winston (2005, 3) found that "by 2000, low-cost carriers tended to enhance traveler welfare much more than legacy carriers" (i.e., higher-cost, established firms). "Low-cost carriers have put increased pressure on legacy airlines to reduce their fares and their costs. This pressure has become intense, as low-cost carriers have increased their share of the nation's airline traffic. . . . Low-cost carriers competed on routes between metropolitan areas that accounted for over 50 percent of the nation's domestic air travel. One study (Morrison 2001) found that one low-cost airline—Southwest—lowered fares on routes accounting for more than 90 percent of domestic air travel."

Thus, airline competition seems to work, as Morrison and Winston (2005, 3), put it, "in the sense that those carriers that enhance travelers' welfare are rewarded with higher profits."

Conversely, as Morrison and Winston (1986) note, "critics of airline deregulation invariably point



to the increased concentration of the industry at the national level. It is true that the eight largest airlines now account for about 92 percent of domestic passenger miles (up from about 82 percent at the time of deregulation)."

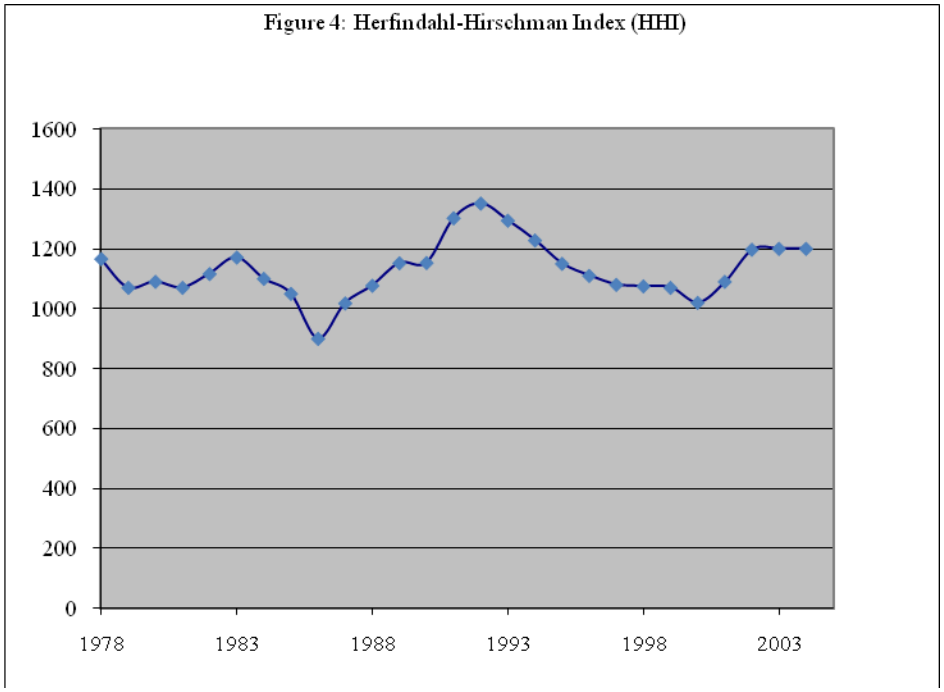


Figure 4 shows the U.S. airline industry's Herfindahl-Hirschman Index (HHI), a frequently used measure of market concentration, which is calculated by taking the square of the market share of each firm competing in a given market and then summing the results. The HHI, which can range from about 0 to 10,000, is expressed as:

HHI = $s1^{\wedge 2} + s2^{\wedge 2} + s3^{\wedge 2} + ... + sn^{\wedge 2}$, where *sn* is the market share of the *ith* firm.

As Rubin and Joy (2005, 217) explain, the HHI is an approach to assessing "market power in the form of industry concentration. The HHI gives a broader measure of dispersion by accounting for the market share of each firm rather than the combined market share of the largest firms." (see also Whinston, 2008, p.80-81). As defined by Manian (2008, 122), "The closer a market is to being a monopoly, the higher the market's concentration (and the lower its competition). If, for example, there were only one firm in an industry, that firm would have a 100 percent market share, and the HHI would equal 10,000 ($100^{\wedge 2}$), indicating a monopoly. Or if there were thousands of firms competing, each would have nearly zero percent market share, and the HHI would be close to zero, indicating nearly perfect competition." "In 2001," Rubin and Joy (2005, 217) note, "the airline industry had an HHI of 1,180 (based on total operating revenue data for the top 20 airlines), but the HHI of the six largest airlines alone was 1,130 (ATA 2002). For reference, the U.S. Department of Justice generally prohibits mergers in an industry with an HHI concentration above 1,000, if the merger will increase the industry's HHI by 100 points" (Maldutis 1987b; Lee 2003). Overall, Figure 4 shows that the airline industry's HHI has been fluctuating around the level of 1,200, which is the starting level in 1978 with a slight upward trend. However, the number of the largest airlines that control the market and the total number of carriers only partially capture the issue of competition. In fact, it is also important to look at "how much choice travelers have at the route level, where competition actually takes place. Today, the average route has 1.9 (effective) competitors, up from 1.5 at the time of deregulation. Today, only 16 percent of travelers fly on routes where one carrier controls more than 90 percent of the market, down from 28 percent in 1978. The share of travelers on competitive routes where the largest carrier controls less than 20 percent of the market has risen to 16 percent from 8 percent. It is simply not true that there is less competition in the industry today than there was in 1978" (Morrison 1990). Rubin and Joy (2005, 215) indicate that the "airline industry is undergoing unprecedented change. Consumers can anticipate more direct flights, increased price transparency, and increased fees and time cost for security checks."

As a result, DOT has "drawn up competition guidelines that attempt to identify instances of predatory behavior and establish acceptable zones of pricing behavior" (Peltzman and Winston 2000, vii). As Morrison and Winston (2000, 3) recount, "Congressional debates calling for a 'passengers' bill of rights' have spurred the airline industry to draw up and publicize its own bill of rights—and to provide

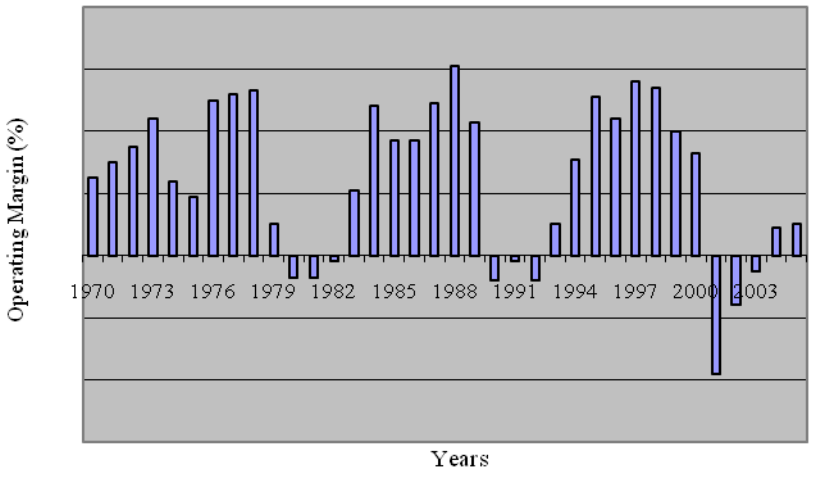
large political contributions—to fend off actual legislation. . . . As air carriers adjust to various economic cycles and contingencies that dramatically affect their financial performance (fuel prices, [GDP], aircraft replacement, etc.), they continue to adjust to competition in a deregulated market."

In sum, bankruptcies, mergers and acquisitions, number of carriers, HHI show the responsiveness of the market and also of public agencies and departments to the new functions that deregulation requires.

Profitability represents a key indicator for any company and industry. As Morrison and Winston (2005, 1) point out, "The airline industry has always exhibited cyclicality, because travelers' demand is sensitive to the performance of the macro economy. Yet airlines must predict this demand accurately because of the lead time required to acquire aircraft. When airlines over predict demand, which can happen for any number of reasons, they suffer losses." Figure 5 shows the cyclical nature of the U.S. airline industry's operating profit margin for the past 30 years. The industry has had huge losses since 2000 because, as Morrison and Winston (2005, 1) explain, "the long-standing challenge of aligning capacity with demand over the business cycle has been exacerbated by the confluence of several events that have significantly reduced its revenues and raised its costs."

The industry's financial performance represents a worrisome by-product of the process of deregulation. However, the current view (Peltzman and Winston 2000; Vasigh, Fleming, and Tacker

Figure 5: US Airlines Operating Results



2008) is that "the financial problem the industry is encountering is broadly associated with the industry's long-term adjustment to airline deregulation. Airline deregulation was based on the belief that enhanced and unfettered market competition and enlightened public policy would benefit the traveling public. But it is now clear that the airline industry still needs time to adjust to its deregulatory freedoms by ridding itself of remaining cost inefficiencies, doing a better job of matching capacity with demand, and anticipating and responding to changes in traveler preferences. Both the market and enlightened public policy can

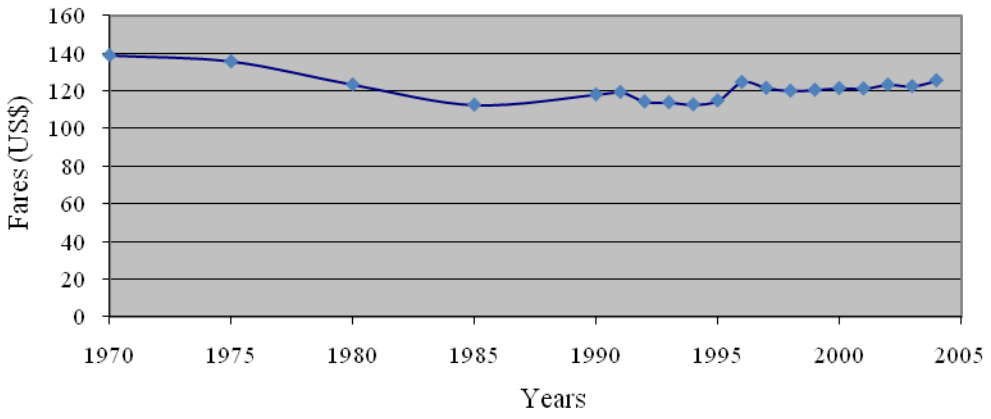
enhance the airline industry's financial viability. But [the predominant view is] that policymakers should rely on the market to do the bulk of the work" Morrison and Winston (2005, 3). Morrison and Winston (2005, 3) further point out that the "fundamental problem is that there is excess high-cost capacity in the industry and passenger yield declines consistently. Competition among air carriers will reduce such capacity and no doubt may lead at least one if not more carriers to contract, undergo liquidation, or be absorbed by another carrier. But successful carriers—that is, those that are cost-efficient and responsive to passenger preferences—will pick up any slack. Indeed, travelers will gain if legacy carriers make the required changes to be effective competitors in the new environment or are replaced by lower-cost carriers."

The sources of the industry's profitability depend on its revenues and costs. These revenues depend "on what each carrier is able to charge for its flights and the number of passengers it carries. [These] costs depend on, among other factors, the price of fuel and the wages and salaries of employees" (Morrison and Winston 2005, 1). The events that have affected these components of profitability during the past several years are reviewed in the next subsections.

FARES. WINSTON AND MORRISON "HAVE CALCULATED THAT, OVER THE ENTIRE PERIOD OF AIRLINE DEREGULATION, FARES HAVE BEEN 18 PERCENT LESS ON AVERAGE THAN THEY WOULD HAVE BEEN IF THE INDUSTRY HAD REMAINED REGULATED. THIS AMOUNTS TO A SAVINGS OF $6 BILLION PER YEAR (IN 1988 DOLLARS). TO BE SURE, ALL TRAVELERS DO NOT SHARE EQUALLY IN THE BENEFITS OF DEREGULATION, AND SOME TRAVELERS NOW ARE WORSE OFF THAN THEY WERE UNDER REGULATION. FOR EXAMPLE, TRAVELERS FLYING LESS THAN 1,000 MILES FACE FARES THAT ON AVERAGE ARE HIGHER THAN THEY WOULD HAVE BEEN UNDER REGULATION. BUT THESE FARES WERE SET ARTIFICIALLY LOW UNDER REGULATION. UNDER DEREGULATION, THE MARKET IS PROVIDING THE FARES AND QUALITY OF SERVICE THAT TRAVELERS WANT. FOR EXAMPLE, LOAD FACTORS (THE PERCENTAGE OF SEATS FILLED) FOR FLIGHTS LESS THAN 1,000 MILES ARE LOWER THAN THEY WERE IN 1978, INDICATING A HIGHER QUALITY OF SERVICE BECAUSE THERE IS A GREATER LIKELIHOOD OF GETTING A SEAT ON A PREFERRED FLIGHT. SO TRAVELERS—ESPECIALLY BUSINESS TRAVELERS, WHO TYPICALLY MAKE UP THE MAJORITY OF SHORT-HAUL FLIERS—RECEIVE A HIGHER-QUALITY PRODUCT FOR THEIR HIGHER FARES" (MORRISON 1990).

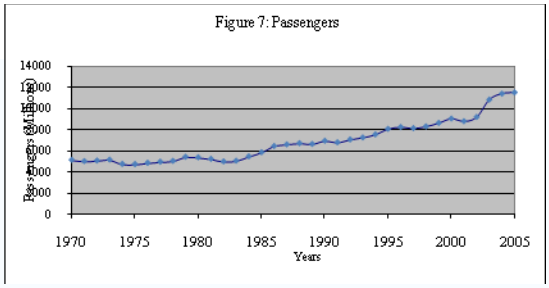
As shown in Figure 6 (nominal fares), travelers' fares in the deregulated environment continued a previous downward trend.

Figure 6: Average Passenger Fares

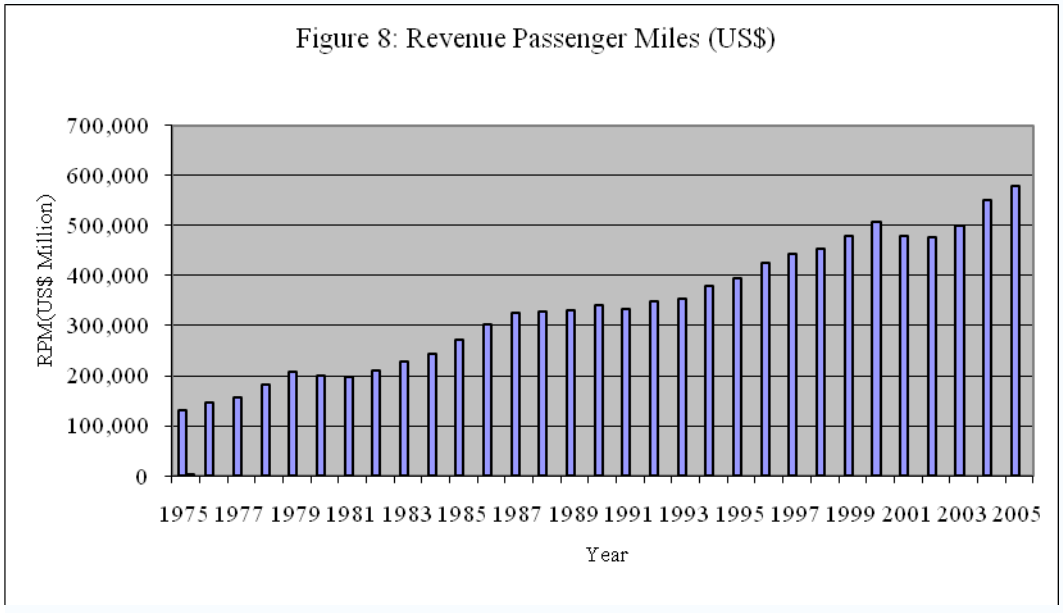


"As the airline industry adjusted to deregulation, the benefits from lower fares fluctuated. . . . [However, in real terms,] travelers have enjoyed stable fare reductions of roughly 27 percent" As Morrison and Winston (2000, 1). Airfares have been used as a dependent variable in various business analyses. Good, Roller, and Sickles (1993) indicate that fares in the United States dropped quickly—as opposed to their slow reduction in Europe. In this respect, they point out that in 1991, the yield of the 12 major U.S. airlines was about $0.079 per revenue-passenger-kilometer (RPK), while in Europe, the yields increased in the period 1989–91 from $0.0195 to $0.2225 per RPK. Kahn (1993) indicates that the drop in fare levels was due to price wars and that savings to travelers could reach $11 billion a year. Morrison and Winston (2000) confirm their previous analysis (Morrison and Winston 1995) and extend their analysis of the reduction of travel fares in the United States until 1998, indicating that "since 1994 air travelers have enjoyed stable fare reductions of roughly 27%" (Morrison and Winston 2000, 1–2).

Roberts (2003) observes that, although "deregulation has brought a decline in ticket prices of more than 25 percent, in the bad old days of regulated airlines, service was superior—even coach passengers were served hot meals. Since deregulation, block-to-block time (from departure to arrival) has extended dramatically on flights of less than 700 miles. All but full-fare tickets are full of restrictions. Free stopovers no longer exist. Overlooked, too, is the fact that ticket prices are subsidized by taxpayers through government bailouts and by the shareholders and creditors of failing airlines." Airfares constitute an intermediate variable in the process of reforming the airline industry, but they do not fully capture the concept of modifying the conditions under which the public has been served since the deregulation of 1978.



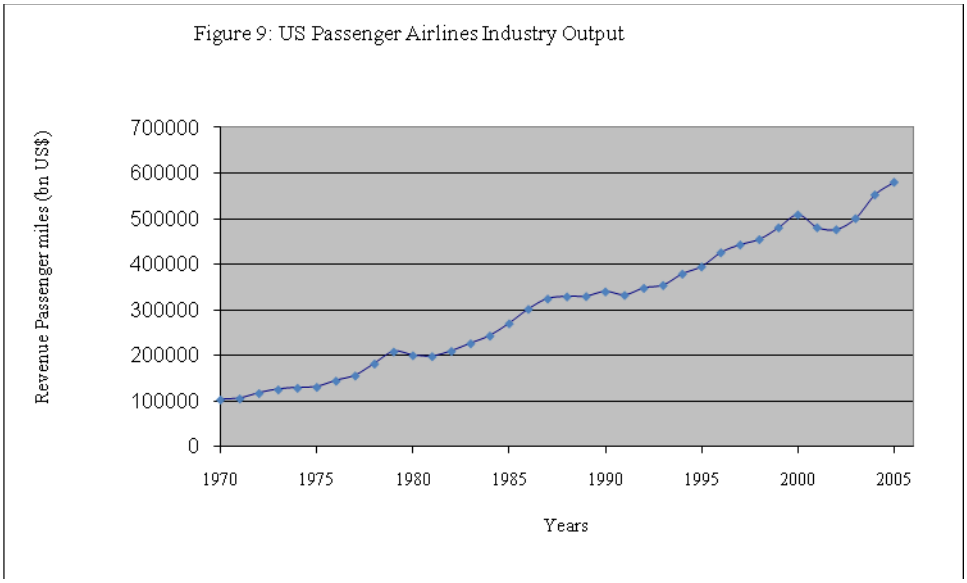
Revenue per Passenger Mile. The combination of the measures of fares (Figure 6) and number of passengers (Figure 7) provides us with "revenue passenger mile" (RPM), which is a way to measure airline passenger traffic that is calculated by multiplying the number of revenue-paying passengers on a plane by the distance traveled in miles. Those passengers who do not pay, such as employees of an airline who fly free or nearly free using passes, are not included when RPMs are measured. But those passengers who pay with an award from a frequent-flyer program are usually included. Under these circumstances, RPM is considered a measure of the demand for air travel. Figure 8 shows that RPM has increased almost steadily over the last 30 years. DOT's Bureau of Transportation Statistics has the following definition of RPM: "One revenue passenger transported one mile in revenue service. Revenue passenger miles are computed by summation of the products of the revenue aircraft miles on each inter airport segment multiplied by the number of revenue passengers carried on that segment."



Hubs. "No discussion of airline deregulation would be complete without a [mention] of hubs," Morrison (1990) notes. "Virtually all studies show that fares are higher at hub airports. But focusing on fares [leaves] an important part of the story untold. On average (after controlling for population), hub

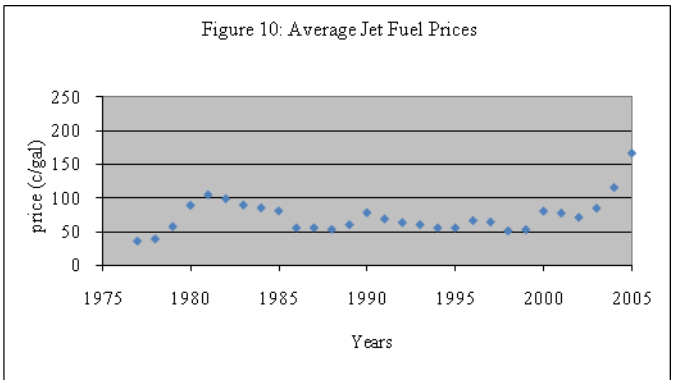
airports have direct service to 75 percent more cities than nonhub airports. They also have 120 percent more daily departures per city served with aircraft that are about 10 seats larger. Once again, travelers receive a higher-quality product for their higher fares. However, because hubs represent an efficient technology for airlines that should lower costs, higher fares mean that airlines are most likely earning supernormal profits at hubs. If—and this is by no means a generally accepted proposition—existing contracts between airlines and airports bestow unfair advantages on incumbent airlines, then laws should be drafted to ensure a level playing field for all market participants."[22]

Number of Passengers. "Negative traffic growth," Morrison and Winston explain (2005, 1), is a relatively rare occurrence in the airline industry" (see Figure 7, showing the number of passengers). Therefore, as shown in Figures 8 and 9, traffic (in RPMs) in 2004 exceeded its previous peak in 2000. "What is unprecedented about this drop in traffic in 2000 is that it took four years for traffic to rebound, and traffic growth has subsequently returned. . . . The downturn was exacerbated by the aftermath of the September 11, 2001, terrorist attacks. Since its trough in the third quarter of 2001, real GDP has been growing by more than 3 percent a year. Another reason is that more travelers are feeling that flying is safe enough for them to travel by air. Still another important reason is that the airlines responded to the initial drop in traffic by reducing fares to induce people to fly."



[22] Congress has also been debating a flurry of proposals to change how airport gates and slots (a system that limits takeoffs and landings at Chicago O'Hare, New York LaGuardia, New York John F. Kennedy, and Washington Reagan National airports) are distributed among carriers and to require carrier-dominated hubs to file plans explaining how they will open up airports to competition. Many defenders of deregulation interpret this activity as an attempt to reregulate the airline industry; policymakers respond that they simply wish to recapture the spirit of deregulation by promoting competition.

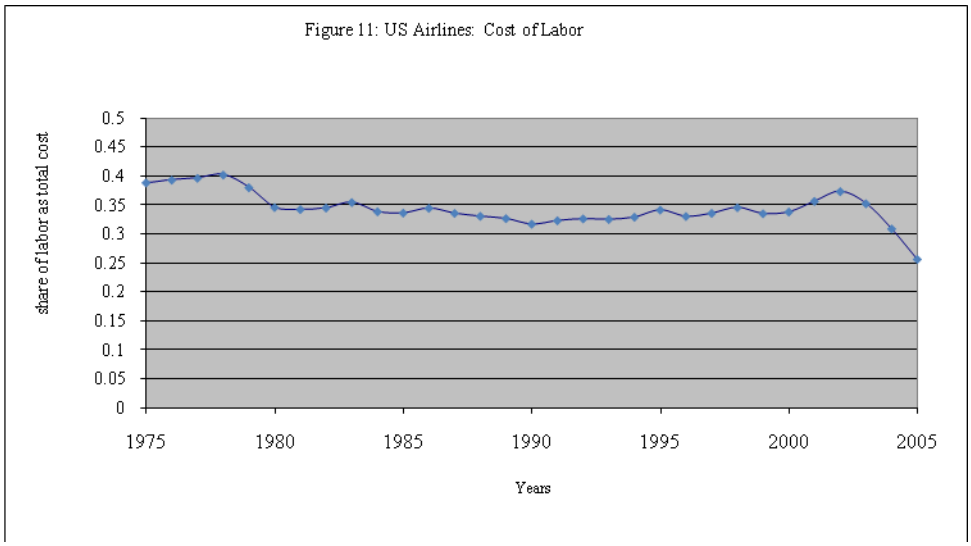
Fuel. "In addition to unanticipated reductions in travel demand," note Morrison and Winston (2005, 2), "the industry is vulnerable to unanticipated increases in costs. Jet fuel, a necessary input into



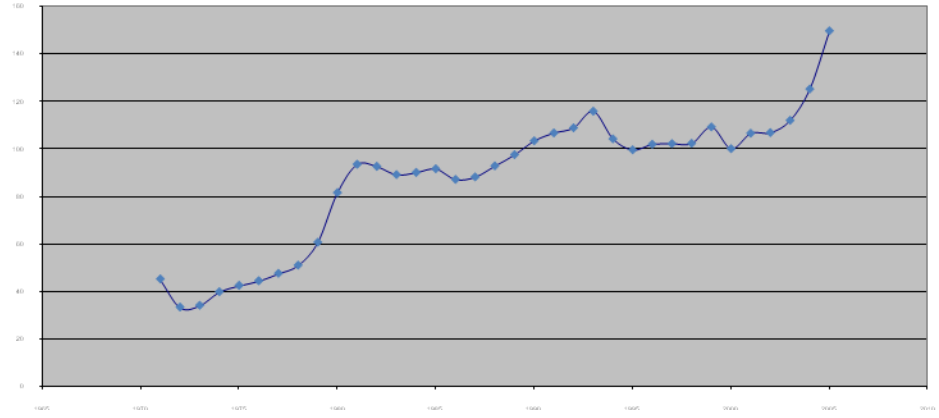
the production of air transportation, accounts for between 10 and 30 percent of airlines' costs, and its price can fluctuate widely from year to year, [as shown in Figure 10]. Fuel price increases can be a significant drain on airline profits. Relative to the (nominal) price of jet fuel that prevailed in 2000—the last "good" financial year for the airline industry (and one in which the price of fuel was relatively high by previous historical standards)—in 2003 and 2004 the industry lost an estimated $8+ billion due to the higher price of jet fuel. The higher prices in 2005, especially with the post–Hurricane Katrina price spike, made the industry lose $16 billion due to the sensitiveness to the increased cost of fuel alone."

Labor. The aspect of labor is also considered by Morrison and Winston (2005, 2). They note that "labor represents the biggest single category of airline costs, currently about 28 percent." Figure 11 shows relatively stable nominal wages, but erosion in real terms. "Legacy airlines, by definition, are those that existed during the period when airlines were regulated (through 1978). In that environment, there was so-called rent sharing, as unionized workers sought, and received, a share of the "rents" (profits) that the regulated firms earned. The low-cost carriers that emerged with the advent of deregulation in 1978 adopted a more entrepreneurial/cooperative style of labor relations that resulted in lower pay and/or higher worker productivity than legacy carriers were able to achieve with their workforces."

Figure 12: Composite Cost Index US Airlines

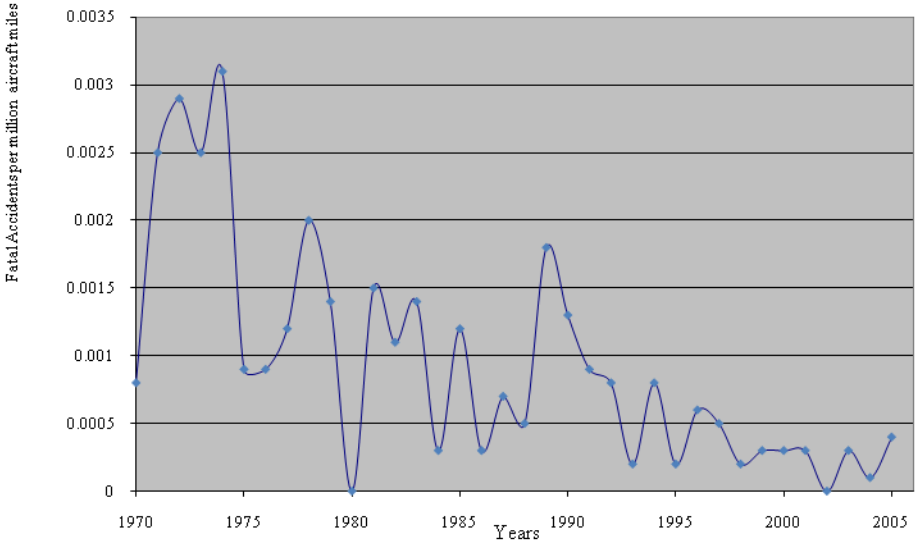


Morrison and Winston (2005, 2) further point out that "the expansion of low-cost carriers has put increasing pressure on legacy carriers to lower their labor and other costs. Since 2000, food and beverage costs per RPM have fallen by 35 percent and travel agent commissions (per available seat mile) have fallen by 69 percent. But because labor is the largest category of airline costs, it too has been the target of cost cutting (and enhanced productivity) by legacy carriers [see Figure 11], through negotiation as well as in bankruptcy, as they seek to reduce their costs to compete with low-cost carriers. Given the demand and cost shocks, the U.S. airline industry finds itself with more capacity than can be profitably supported at the fares that passengers are willing to pay. In this environment, it is difficult if not impossible to sustain fare increases to cover increased costs, such as for fuel, and this situation has caused several legacy carriers to seek bankruptcy protection."



As the Air Transport Association (ATA) explains, it "produces the Airline [Composite] Cost Index to monitor trends in the cost of inputs (e.g., labor, fuel, food, aircraft ownership, airport landing fees, insurance, and utilities) to the provision of air service over time." Figure 12 shows the movement of this index from 1965 to 2010.

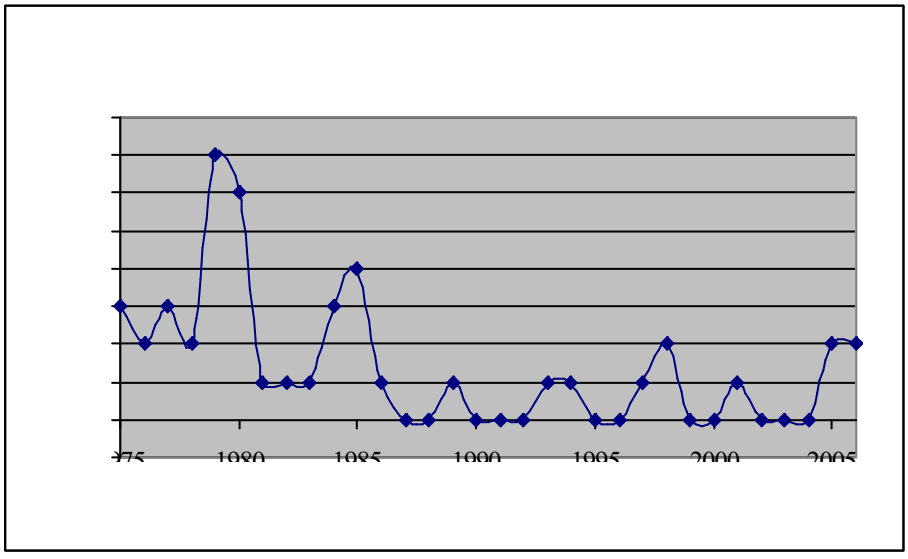
Figure 13: US Airline: Safey Records



Safety. As Morrison (1990) notes, "Critics of airline deregulation point to the declining margin of safety as evidence that deregulation has made flying less safe." However, the evidence shows—see Figure 13—the airlines' safety record "is as good or better as in 1978, even with overcrowded airways and airports."

Labor Strikes. Strikes by airline employees are expected to be an important variable. Figure 14 shows that strikes have declined since deregulation, suggesting that more strikes in a competitive environment might be less an effective instrument of bargaining.

Figure 14: Number of Airline Strikes



The review of the variables together with the issues related to implementation, unexpected consequences and complexity, provides a full understanding of the functioning of the airline industry and gives us the background to define the dependent variable of our research.

f. The Performance of the U.S. Airline Industry: The Dependent Variable

Impact and performance represent two key aspects of the deregulation of airlines that fit the issues related to implementation discussed in this paper. The economic literature on the deregulation of U.S. airlines starting in 1978 concentrates mostly on the impact of deregulation in terms of welfare gains. A review of the literature permits us to clarify that the *impact*, or ultimate outcome, of deregulation refers to the increase or decrease (gain or loss) in welfare that deregulation has brought about. This is the objective of the economic analysis. But a different kind of consideration refers to the *performance* of the airline industry since deregulation. Performance is a nonultimate outcome that has led to the gain or loss in welfare discussed above, i.e., the impact. The financial literature is concerned with the performance of the company from the business point of view and identifies various "indicators" of performance—e.g., operational goals or output, or nonultimate outcome; productivity; net margin; yield; and load factor. I look at these measures from a policy perspective taking into consideration that the goal of the 1978 reform was to improve the functioning and the performance of the industry so that the consumers could obtain welfare gains. Therefore, operational goals or output –productivity, net margin, yield and load factor- as the literature indicates represent meaningful performance indicators in the airline sector and are the candidates for the dependent variable of the implementation analysis of airline deregulation that I am undertaking.

Net Profit Margin

The net profit margin is a typical financial measure and it constitutes the bottom line of the consolidated financial statements of the overall airline industry.

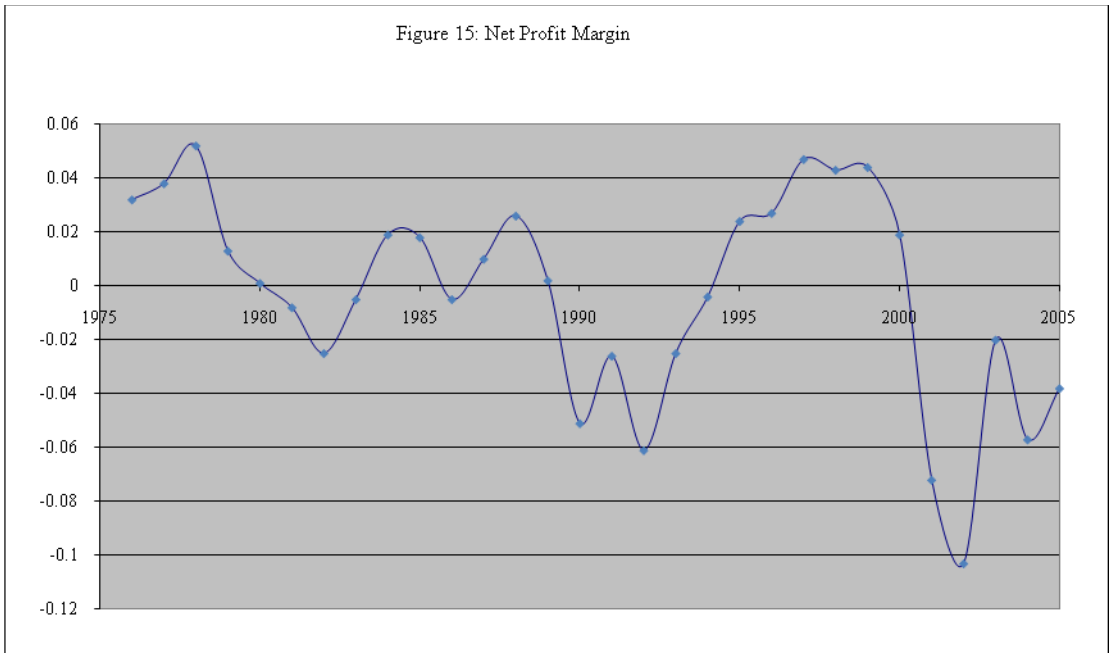


Figure 15 shows that the airlines' net profit margins have been highly volatile during the last 30 years. However, whereas in 1978 airline margins were always in positive territory, since 1978 margins have often been negative. According to the ATA (2006, 9, 13), "Airlines have been unable to recover their expenses and, in particular, have been overwhelmed by inflated fuel costs. . . . Since 2000, profit margins have been consistently negative. However, in 2005, the U.S. airline industry posted its first operating profit since 2000, earning $299 million, reflecting the remarkable efforts that the industry has undertaken. After factoring in $3.6 billion in interest expense, $1.3 billion in income taxes, and $1.0 billion in other nonoperating costs, however, the industry posted a net loss of $5.7 billion and a net profit margin of negative 3.8 percent. . . . Though recovery had been anticipated for 2005, modest revenue gains could not keep pace with the surge in fuel expense."

An airline's net profit margin is directly related to its performance and guides the movement of its stock price. Its net profit margin is also directly related to the overall airline industry, but it does not capture the concept of performance in terms of public policy, i.e., as a nonultimate outcome.

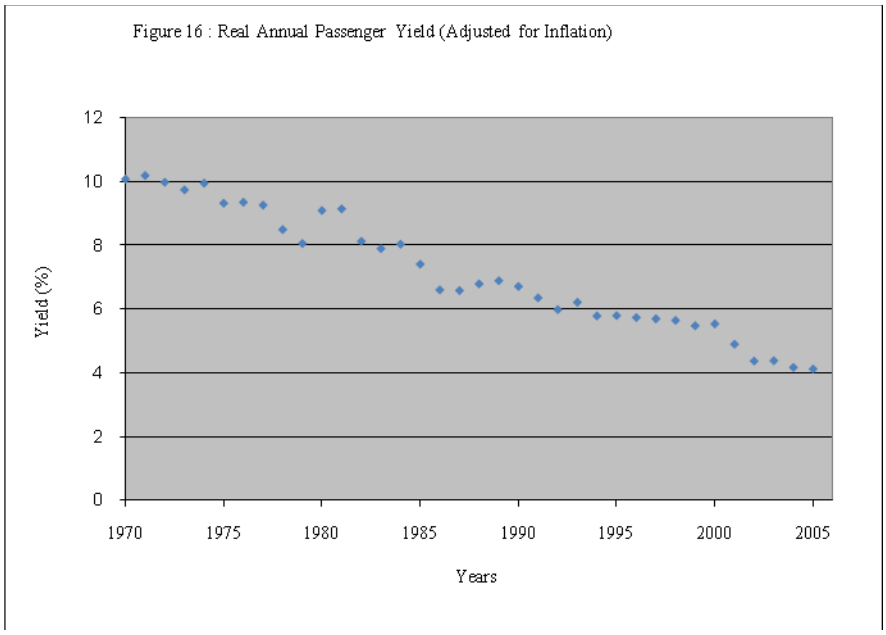
Various Measures of Productivity

Productivity, defined "in terms of net value added per [person-year] of labor and capital input, provides a more useful yardstick of airline efficiency than the widely used indices representing average unit costs or labor productivity" (Morrell and Taneja 1979, 37). Figures 16 and 17 show the annual passenger yield for U.S. passenger airlines during the period 1970–2005 in nominal and inflation-adjusted terms. In keeping with the ATA's methodology (2009), the data reflect the activity of these airlines, as defined by DOT, "under Chapter 411 of Title 49 of the U.S. Code. The [figures depict] domestic yields

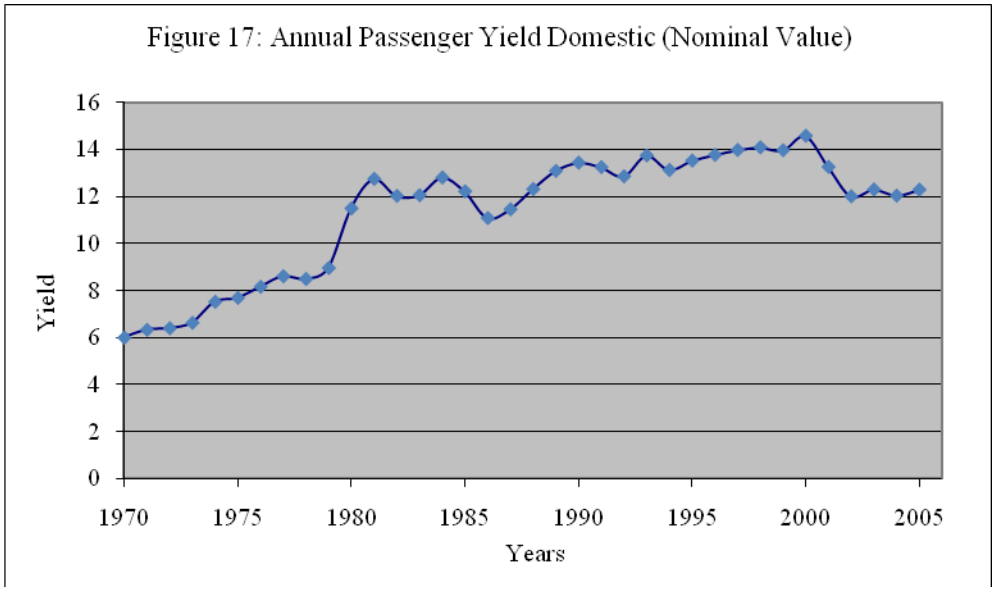
since 1970 in nominal terms and adjusted according to the annual U.S. consumer price index (CPI). Yields are computed directly from passenger revenue, and mileage data were provided by DOT. The inclusion of the CPI facilitates comparisons of historical growth in airline prices versus the average basket of U.S. goods. The [figures thus portray] airfares in both nominal (not adjusted for U.S. inflation) and real (adjusted for U.S. inflation) terms, using 1978—the year of passenger airline deregulation—as a benchmark. 'Yield' is an industry term denoting the price (in cents) a passenger pays to fly one mile and does not include taxes, which are remitted directly to the taxing authority and never recorded in carriers' financial statements." These yields can be regarded as a measure of productivity.

"Large variations in productivity between airlines," Odenthal (1981, 189) notes, "in particular between U.S. and European airlines, can be explained almost entirely by differences in level of service, demand patterns, and route characteristics." Productivity operates as an intermediate variable, which in turn permits lower fares. There is much evidence—e.g., Good, Roller, and Sickles (1993); Oum and Yu (1995, 1997); and Ng and Seabright (2001)—of studies based on a business and economic analysis of the U.S. airline industry and for which different types of productivity represent the dependent variable. Baltagi, James, and Daniel (1995) show that sources of cost savings—i.e., improvement in load factors, reduced wages, a new route structure, and increased output (due to lower fares)—constitute the main drivers of the airline business. Although there is evidence of improvement in productivity—more in the United States than in Europe—a correct calculation of productivity is difficult.

The contributions of a number of researchers—Good, Roller, and Sickles (1993) and Ng and Seabright (2001), as well as the work of Oum and Yu (1995)—document the challenge of getting indicators that are valid and comparable, given a series of constraints: the availability of reliable data, the way in which uncontrollable factors can be considered, and the impact of market structure and ownership. Ng and Seabright (2001) present a more comprehensive approach to the productivity of airlines because they include market structure and state ownership in their model. However, the issue of valid global productivity indicators cannot be resolved satisfactorily in a world where there are different economic situations and institutions. In this vein, the work of Ng and Seabright (2001) offers an important contribution because it enables us to understand—and calculate—the rents that are associated with a protective industry, to see their political implications for reform, and to realize that the global market is not yet competitive and is characterized by several inefficiencies.



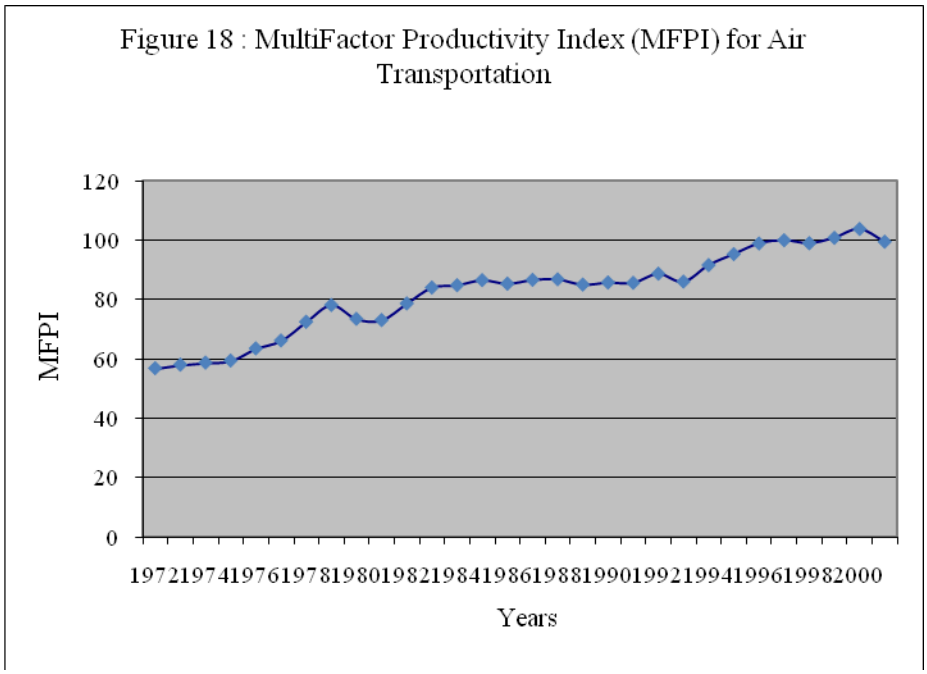
Deregulation fostered improvement in productivity "by removing the previous restrictions on [airlines' fare levels] and on where they can fly. The decontrol of prices allowed airlines to fill their planes by offering large numbers of heavily discounted fares for seats that would otherwise [have gone] unused. The decontrol of routes permitted [airlines] to plan their operations as they see fit" (Kahn 1993). The U.S. 1978 Deregulation Act allowed airlines to exploit the potential of their "hub-and-spokes operations (in which an airline routes its flights through one or several "hub" cities), has increased efficiency in a number of ways. It has allowed better adaptation of equipment to markets: small props and jet props for short hops and few passengers; and big jets for dense, long-haul routes. It has also allowed the use of larger and more efficient planes, and the offer of a wider variety of destinations" (ibid.).



Oum and Yu (1997) examine air transport services' supply side, over which airlines have extensive control. They focus on total factor productivity for different airlines and different geographic areas (e.g., Asia, Europe, North America). They provide an analysis for the period 1985–95 of the cost competitiveness of airlines by looking at various factors that have an impact on productivity—including prices of inputs, the dynamics of exchange rates, sources of labor, and maintenance. They also examine the policies, trends, and regulations that influence the airline business, even though these variables are not included in the model they test, which remains a purely business model.

As reported by Duke and Torres (2005, 32), "For many years, the U.S. Bureau of Labor Statistics (BLS) has published a measure of labor productivity for air transportation." The BLS measure is a multifactor productivity index (MFPI) "for the air transportation industry, coded 481 in the North American Industry Classification System (NAICS), covering the period 1972 to 2001"; Figure 18 shows the behavior of the MFPI over time. "This measure is consistent with the new definition of the air

transportation industry under NAICS, in which air couriers are no longer included in air transportation but [are instead] classified as NAICS 4921 couriers."



"The growth in multifactor productivity," Duke and Torres (2005, 32–33) explain, "can be seen as a measure of economic progress; it [records] the increase in output over and above the gain due to increases in a combination of inputs. The combined inputs measure is a weighted average of labor hours, capital services, and intermediate purchases. The weights represent each input's share in the total cost of output. Although the amount and complexity of the data required to calculate [the MFPI] are much greater than those for a labor productivity series, a multifactor productivity measure yields valuable insights into efficiency beyond those derived from a labor productivity measure. For example, in air transportation, the expansion in the stock of [wide-body] fleet in the mid-1970s seems to be behind the productivity increase that is unrelated to load factors. Similarly, because energy costs [make up] a large part of intermediate purchases, 'the omission of this input component would seriously degrade the true measure of productivity trends' [ATA 1982, 13]. Multifactor productivity reflects many of the same influences as the labor productivity measure, but by explicitly accounting for inputs of capital and intermediate purchases, the multifactor productivity residual reflects only changes in overall efficiency that are due to other unmeasured influences."

The analysis of productivity is very important to capture the cost and supply side of the airline business. The measures of productivity, however, are mainly interested in the improvement of the management and efficiency of airlines rather than in capturing the process of implementing public

policies. Productivity has been used as a dependent variable in various studies focusing on business and financial analysis. However, as a possible dependent variable for a study of public policy, productivity has the limitation of requiring complicated calculations and showing little comparability with other similar international measures.

Load Factor

The DOT Bureau of Transportation Statistics defines the load factor (LF) as the "percentage of seating or freight that is utilized. The data include both transborder and foreign flights by large U.S. carriers but do not include any flights by foreign carriers." In commercial aviation, the LF represents the percentage of seating or freight capacity that is utilized, i.e., capacity utilization; it is computed as the ratio of RPMs, "one fare-paying passenger transported one mile (the most common measure of demand for air travel)" to available seat miles (ASMs), i.e., "one seat transported one mile (the most common measure of airline seating capacity or supply)" (ATA 2005, 29).[23] The International Civil Aviation Organization operationalizes the passenger LF as passenger-kilometers traveled expressed as a percentage of seat-kilometers available. The LF can be expressed as this formula:

LF = RPM/ASM = (Revenues /Miles Flown)*(Miles Flown/Available Seats)

= Revenues / Available Seats

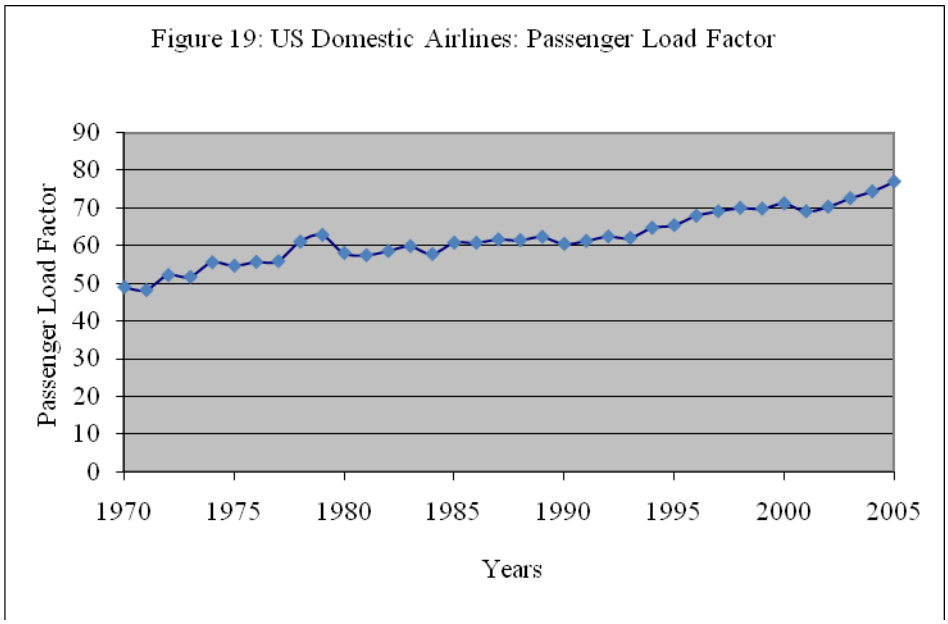
Figure 19 shows that the LF has steadily increased over the last 30 years, meaning that airlines have been more efficient and responsive to the demand of travelers.

Airlines are generally interested in increasing the LF on their systems. A high LF indicates high usage of the airline system's equipment (i.e., aircraft), and it constitutes a measure of efficiency. High-LF customers are normally very desirable from the company's point of view. Considering these aspects and the fact that the LF combines the supply of flights with the demand for flights, it constitutes both an efficiency measure and a measure of the capability to attract and satisfy the demand for flights.

The LF represents another important tool for airlines, in that it is part of the concept of "break-even LF"—i.e., the number of seats they have to sell to cover operating expenses. While airlines recently have "impressively utilized more than three-fourths of their seating capacity, the break-even LF for the industry has surpassed 80 percent, more than 10 percentage points higher than in the late 1990s. As prices

[23] In the case of cargo services, the LF is the freight capacity that is utilized, i.e., a revenue ton mile (RTM), 1 ton of revenue traffic (passenger and/or cargo) transported 1 mile to available ton miles, 1 ton of capacity (passenger and/or cargo) transported 1 mile.

fall or as unit costs rise, more seats must be filled to avoid losing money. In 2005, the average LF rose 2.1 points but, nonetheless, fell short of the aforementioned break-even threshold" (ATA 2006, 13). Given the dynamics of the airlines, the break-even LF has increased, and some carriers could not cover their operating expenses even if they sold 100 percent of their seats at average airfares, according to the DOT Bureau of Transportation Statistics. However, this simply means that these airlines should not be allowed



to fly because they are losing money.

Peltzman and Winston (2000) recognize that lower airfares came at the cost of the deterioration of comfort for passengers, i.e., a higher LF. In the 1970s, domestic flights were less than 53 percent full; in the period 1997–2000, they averaged more than 70 percent full. However, overcrowding reflects the visible results of deregulation and greater efficiency. Nowadays, travelers can see that, as Alfred Kahn (1993) puts it, "deregulation has compelled improvements in efficiency through the intense pressures of price competition that it unleashed"; for example, airlines "have put more seats on their planes . . . and succeeded in filling a greater percentage" of them."[24]

The definition of "load factor" and its measurement as calculated by the DOT Bureau of Transportation Statistics as well as the International Civil Aviation Organization give us arguments to assert that the LF is probably the most comprehensive measure to not only gauge the increased productivity of the airlines—i.e., the supply side—but also to capture the demand side, in the sense that passengers are willing to fly and to increase the capacity available. The LF represents a universally accepted measure, calculated uniformly around the world. I would also argue that the LF does not give us

[24] There is also evidence that deregulation has brought about a substantial increase in the routes that customers have available.

the measure of the final outcome or impact of airline deregulation but provides a very reliable indicator of the nonultimate output factor and the dependent variable of the model. For example, Ripley and Franklin (1986, 136) state that "airlines must increase their load factor to become or remain competitive", i.e., the LF is identified as the critical variable for the functioning of airlines in a competitive environment. The questions to address are how, why, and which process has achieved these results since deregulation.

However, two independent variables that affect directly the LF should be mentioned: demand and cost. These two variables of demand and cost are part of the methodology—simultaneous equations—that I intend to use for the analysis.

g. Considerations

The review of the relevant literature on implementation, unexpected consequences, complexity, and the airline industry leads to a number of considerations:

- Deregulation decision-making occurs in the context of the choices that Calabresi and Bobbit (1978) define as tragic in the sense that deal with issues that are not fully transparent (e.g., regulation of the airline industry) and that have a tragic impact on key values of the society (e.g., lives). Those tragic choices are normally taken as a political first order decision, while economic second-order decisions that allocate the resources and further second-order decisions of how the choices will be implemented are postponed. The contribution of Calabresi and Bobbit (1978) provides the basis for the conceptual framework of analysis;
- A theory of implementation does not exist and unexpected consequences, complexity as well as the specificity of the airline industry are inherently connected with the process of implementation over an extended period of time. In other words, public policy implementation takes place in a complex and dynamic environment that goes beyond the public administration and its organization and increases the probability of unexpected consequences that ultimately affect the implementation of program and policies. Following Pressman and Wildavsky (1984), a larger number of sequences of causes and effects dilutes the effectiveness of the implementation. Along these lines, Scharpf (1997) recognizes that complex interactions cannot be avoided.
- Implementation is a process that explains the output, or the performance, or the nonultimate outcome; in this respect, implementation is not evaluation, which is concerned with the impact of the program/policy.

- Implementation relies on the variables that come from the public policy environment and government action; unexpected consequences and complexities not fully included and considered in the original design; airline industry that includes variables typical of the business.

Following these considerations, the next step is to develop a framework of analysis that allows capturing and understanding the complexity of the process of U.S. airline deregulation and the many variables that have influenced it.

4. Scope of the Research: A Framework of Analysis

Policies to implement deregulation can be effectively studied in two different and complementary fashions. The first is a more traditional, short-term approach to detect that the political and administrative activities have been in place to assure that the deregulation policy can effectively operate. The second is to take a long-term view—in addition to the activities and initiatives of the administrative system connected to the deregulation, i.e., to analyze a series of variables that are both inside and outside the "system," some of which were not necessarily anticipated when the policy was designed and formulated but that influence the process of implementation.

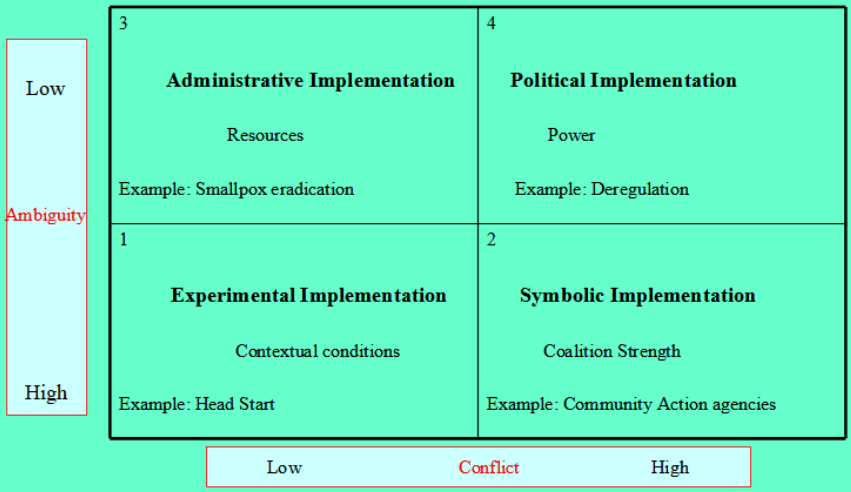
For traditional implementation analysis, the effects of the policy should be monitored and evaluated at specified intervals (Williams et al. 1982, 11) and "the success or failure [in] achieving goals should be reckoned early and timely adjustments made. [In this respect, the] evaluation [of implementation] should be seen as a device to enhance confidence in the policy" (Hayes 2001). In the case of airline deregulation, there has been no midterm evaluation, which would lead to some adjustment. However, the dynamics of the market have provided a continuous interaction between the functioning of deregulation and the realities of the marketplace. In the case of the proposed analysis of airline deregulation, the working of implementation is tested over a long period of time, "ex post," but with the objective of gaining a better understanding of the variables in a dynamic and complex environment. Within this context, deregulation represents an example of how implementation incorporates the unexpected consequences and the complexity of the interactions among various players (e.g., in the case of the deregulation of airlines, government departments, agencies, airports, and airlines), all of which must be analyzed to gain a broader understanding of the complexity and dynamism of implementation in the public sector. The important element that characterizes the review of implementation of deregulation policies is the notion of time, which increases complexity and the probability of unexpected consequences.

The scope of the research is to see if and how issues deriving from implementation, unintended consequences, complexity, and the airline industry have had a significant role in the application and evolution of deregulation of the U.S. airline industry over time. Based on the literatures on those areas, I develop a theoretical framework that would lead to a model for testing the variables that have influenced U.S. airline deregulation.

Implementation of deregulation, as I consider it, develops over a very long period of time (e.g., around 30 years) and a series of events—anticipated and unexpected—occur and shaped the final outcome. In this context, various frameworks have been considered. The frameworks of Mazmanian and Sabatier (1989), Nakamura and Smallwood (1980, 114), Salamon (1989, 2002), McDonnell and Elmore (1987), and Elmore (1982) can be used to discern how to model the implementation process of the airline industry and equip us with the tools to understand relevant framework and the variables that have operated over time in the case of the U.S. airline deregulation.

Matland (1995, 159) presents a very thorough review of the implementation literature and provides a reference and framework that fits the scope of the research. He argues that a "literature with three hundred critical variables does not need more variables: it needs structure" (p. 146). He suggests a taxonomy of the types of implementation in an ambiguity-conflict matrix (see Exhibit 1 below) that would also help to achieve the objective of parsimony. Exhibit 1 includes at the center the indication of the main factor that influences implementation—e.g., power in the case of political implementation, and resources in the case of administrative implementation.

Exhibit 1: Taxonomy of the Types of Implementation in an Ambiguity–Conflict Matrix



In Matland's framework, conflict and ambiguity and also unexpected consequences constitute the key dimensions to capture the concepts of complexity and dynamism and the consequent interactions between players that characterize public policy and its implementation. Matland's grid presents similarities with the framework developed by Vedung (1977, 226–30), who sees four major problem areas for implementation: national agencies; intermediaries or interorganizational networks; street-level bureaucrats; and addressees' participation in low-level intervention areas. The point to stress here is that this framework identifies the various levels of the complexity of implementation, and in some practical cases the implementation could involve a combination of Vedung's four areas.

As a complement to Matland' framework, Hill and Hupe (2006, 141) posit an interesting taxonomy of the type of implementation situation to be studied and the type of analysis to be used. They propose two categories: multiple or single events related to the implementation; and organizations—both single and multiple—involved in the application of the policy. Exhibit 2 includes the four cross-categories stemming from Hill and Hupe's work, identifying the appropriate type of analysis.

Exhibit 2 : Quantitative and Qualitative Analysis of Implementation			
		Organizations Involved in the Implementation	
		Single	Multiple
Events	Single	Qualitative Analysis (1)	Qualitative Analysis (3)
	Multiple	Quantitative Analysis backed by Qualitative Analysis (2)	Quantitative Analysis (4)

For instance, in the case of the involvement of a single organization and single event, the most appropriate method is the case study. In category 2—i.e., a single organization making multiple decisions and with multiple events (e.g., a regulatory agency making decisions about pollution or the decisions of the social security agency)—quantitative analysis is possible, provided a sufficient number of observations is available. In category 3—a single event, with a number of organizations involved—the quantification would be feasible if complemented by qualitative analysis. An example is the privatization of a service at the national or municipal level. Category 4—multiple events and multiple organizations—includes a series of complex public/private sector activities and players of various private/public and hybrid nature as well as interactions. Under these circumstances, quantitative analysis is more appropriate.

The frameworks of Matland (1995) and of the Hill and Hupe (2003) given here in Exhibit 1 and Exhibit 2 complement each other to provide the operational framework to use for policy implementation. The analysis has shown that the levels of complexity, dynamics, and interactions characterize policy implementation. Quadrants 2 and 4 of Maitland's grid (Exhibit 1)—where conflict is high—include the areas in which implementation encounters the highest level of complexity, dynamics, and where interactions occur the most. In addition, the increased focus on the private sector make us consider that deregulation and similar types of interventions that remove programs and policies and in which several players interact are legitimately part of implementation and would fall in quadrant 4, political implementation.

On the basis of the combined frameworks of Exhibits 1 and 2, a model of implementation that would incorporate both the political implementation (quadrant 4 of Matland), and the quantitative dimension (quadrant 4 of Hill and Hupe) - over a long period of time would be of the type indicated in Exhibit 3 below.

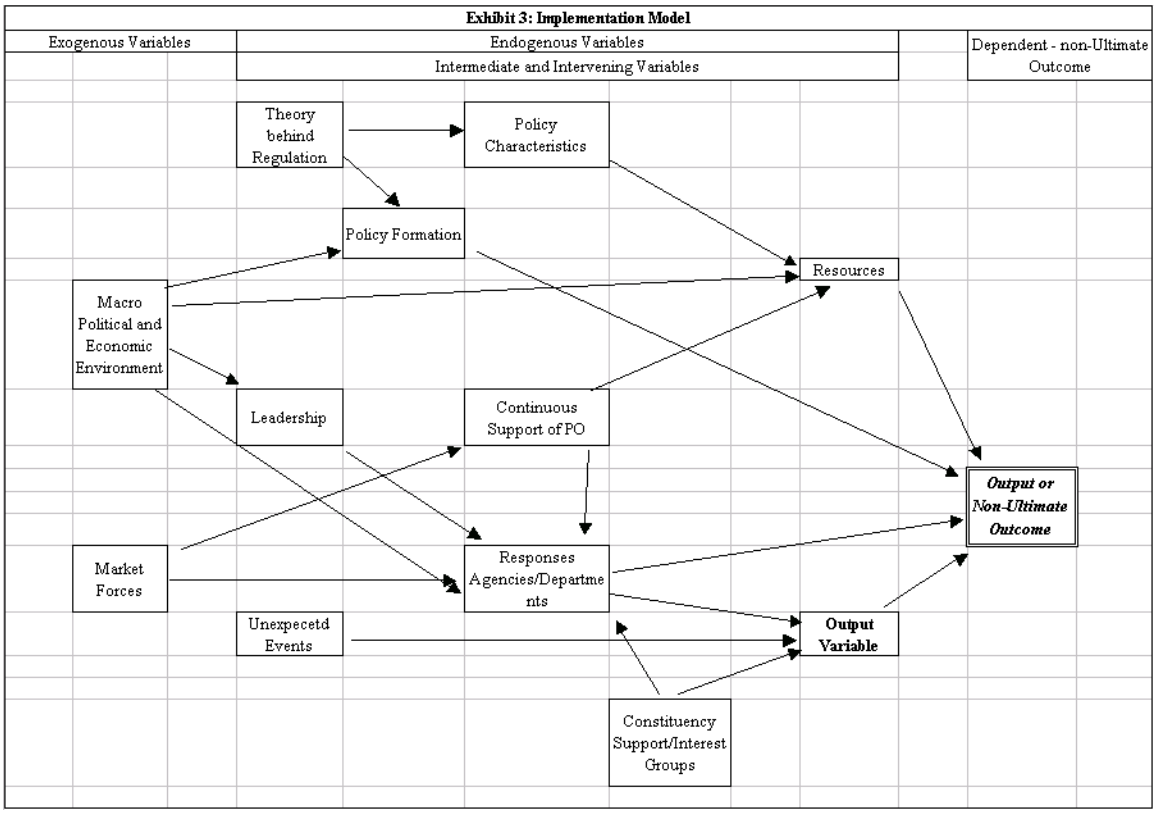


Exhibit 3 draws mostly from the categories of the model of Mazmanian and Sabatier (1989). In line with the goal of the research, it includes unexpected consequences and complexity as well as the specificity of the airline business. The Exhibit indicates a series of interactions over time among the variables. The selection of the categories and the "operationalization" of the variables to build a testable model come next.

The Choice of the Dependent and Independent Variables

The Load Factor (LF) as dependent variable is influenced—directly or indirectly—by many variables—economic and noneconomic—including demand and cost. A review of the variables has to deal with the fact that implementation of deregulation involves a large degree of uncertainty and complexity, which are also handled to look at two types of variations (Hill and Hupe 2006, 23):

a. Variation between policy issues, or types of policy issues;
b. Variations between institutional contexts, which includes the issue of generalization, i.e., to what extent the policy applies outside the specific sector/study.

I identified several categories that are necessary for effective implementation and would capture the two types of variation. The list of the categories of Exhibit 3:

i) *Theory behind deregulation and reform.* A solid and articulate theory is a relevant factor mostly to introduce the reform, and subsequently the implementation of the reform would be also determined by the level of support that the reform/deregulation enjoys in the society.

ii) *Policy characteristics*: "The policy must be conceptually clear and simple, theoretically sound, and stated in terms of desired changes achieved among target groups. It is vital that the means-ends analysis actually represents real-world cause-effect relationships" (Hayes 2001). In this respect, the taxonomy of Lowi (1964) for policy types can be applied: distributive, redistributive, regulatory, and constituent.

iii) *Policy formation*: This deals with the issue of the relationship between politics and administration. "The policy should clearly specify who does what and how. Clear directives and organizational structures should be issued in the legislative process" (Hayes 2001). This category would look at the role of policymakers and also agencies and departments as well as their interaction during the formation and the implementation periods.

iv) "*Effective and recognized leadership*, [both] skilled and experienced, should be committed to the policy" (Hayes 2001).

v) *Continuous support of public opinion*. "The executive priority given to the policy and its goals must not fade, nor can conflicting public policies or changing conditions weaken the implementation of the policy" (Hayes 2001). This implies that over the implementation period, there are measures that reflect the support or disapproval of public opinion and also measures indicating the policies and behavior in the particular area. Measures that gauge public opinion over time with respect to the role of the government, the role of regulation in general, and specifically for airlines would be included in the model as an explanatory variable.

vi) *Active constituency (constituency support):* Groups and policy champions within the government, and possibly public opinion, "should support the policy throughout the implementation" phase (Hayes 2001). Advisory groups and legislative oversight play a role (Hill and Hupe 2006, 134). The application of policies is affected by the reactions of those affected by the policies. Negotiations and bargaining can take place.

vii) *The responses of the agencies/departments* involved constitute important variable(s) that operate and interact among them and can be the outputs of the entities involved or some other indicator that gauges the level of implementation related to that particular variable/factor (and agency) (Hill and Hupe 2006, 128–30). In this category, the activity of so-called street-level bureaucrats is also included (Lipsky 1980). This category also reflects the administrative effort —undertaken at the federal level—of the agencies and departments to which Mead (2005) and Werner (2004) refer.

viii) "*The technical and budgetary means (resources)* should be provided for the period of time needed to carry out the mission and achieve the goals. In particular, the financing of the policy [or program] must be secured for an adequate planning time horizon" (Hayes 2001). This category should be "operationalized" by taking into consideration the budgetary resources that over the period were considered have been assigned to the government agencies and departments involved in the implementation of airline deregulation (e.g., the CAB, FAA, Justice Department; see section 10).

ix) *The macro political and economic environment*, i.e., the external environment. Policy outcomes and policy outputs are influenced by a series of exogenous variables, over which government agencies and implementers do not have influence and about which they have little to say (Meier, Wrinkle, and Polinard 1995, 219). These variables also capture to a large extent the complexity of the system.

x) *Unexpected events.* During the period of implementation, there will likely be events that were not or could not be anticipated at the time of the enactment of the reform. But as these events occur, they have a great influence on the implementation. An example of unexpected event can be the price of oil that goes up and down beyond the levels forecasted (and this has happened). The mechanics would be as follows. The price of oil has risen significantly, and beyond expected levels, i.e., "at the end of October [2004] the oil price had more than doubled in dollar terms since the late 1990s, while increasing substantially, though somewhat less, in terms of the other major currencies. [This implies] short-term influences, which may have caused risk premia to rise, volatility to increase, and the oil price to diverge from its equilibrium." Higher oil prices have an impact on inflation and on the all airline industry in various forms. "Notwithstanding more efficient use of oil in production, oil is likely to retain its importance as a fuel in the longer term, increasingly for transport" (OECD 2004).

I should also stress that two important independent variables have an impact on the LF and need to be considered as part of the model: demand and cost, which are typical variables of the airline industry.

The next step is to find appropriate measures of the categories indicated above so that I can make the theoretical model of Exhibit 3 operational and testable. Table 2 links the categories of the theoretical model with the operational variables that are included in the equations of the model.

Table 2: Variables for the Analysis of the Implementation of Deregulation

Table 2 : Variables for the Analysis of the Implementation of Deregulation		
Variable		**Operazionalization**
Dependent Variable	Implementation outcome	Actual Load factor: from Composite Cost table Air Transport Association (ATA) - Load factor: The percentage of seating or freight capacity that is utilized. Average is computed as the ratio of RPMs to ASMs or, in the case of cargo services, RTMs to ATMs. Air Transport Association (ATA: http://www.airlines.org/) - LF
Dependent-Independent Variables	Intermediate Variables	Demand for Flight: Revenue per passenger mile (cents) - Revenue Passenger Mile (RPM): One fare-paying passenger transported one mile; the most common measure of demand for air travel. Air Transport Association (ATA) - Demand Composite Cost: Cost Index Air Transport Association (ATA) (1982=100) - Cost
	i) Theory behind Deregulation	Number of studies on deregulation and airline industry before 1978 (see also under Policy Formation and existence of rules and legal structure) -STBR
	ii) Policy Characteristics	The policy must be conceptually clear and simple, theoretically sound, and stated in terms of desired changes achieved among target groups. In this respect, the taxonomy of Lowi (1964) for policy types can be applied: distributive, redistributive, regulatory, and constituent and operate as a Dummy variable. - PCD
Independent Variables	iii) Policy Formation and Existence of rules and legal structure, Legal Responsiveness of the System, i.e., the enabling legislation	Number of studies on airline deregulation during the period - rate/ dummy. - Studies Freedom House: Freedom in the World Historical Rankings http://www.freedomhouse.org/template.cfm?page=15. - Freedom Indices of Economic Freedom of the World (EFW) -The Fraser Institute: Economic Freedom of the World (EFW) Index -- Chain Link Index http://www.freetheworld.com/release.html - IEF Component of EFW:Legal System & Property Rights - Economic Freedom of the World (EFW) Index: legal component (annual reports) http://www.freetheworld.com/release.html - Legal The Database on Political Institutions (DPI) is a large new cross-country database of political institutions that covers 177 countries over 21 years, 1975 – 1995. This database was prepared by Thorsten Beck, George Clarke, Robert Cull, Alberto Groff, Philip Keefer, and Patrick Walsh of the Development Research Group of the World Bank. - DPI
	iv) Effective Leadership and Responses of Agencies/Departments	Mergers and Acquisitions (#) - various sources (e.g., Peltzman and Winston 2000). - MA Leadership role in relevant positions, e.g., CAB, Antitrust, Congress. It will operate as a Dummy variable.- LD Total Bankruptcy (#), various sources, e.g., ATA: http://www.airlines.org/economics/specialtopics/Airline+Bankruptcy+Overview.htm; Charles River Associates Inc. (CRA) - Bankrupt
	v) Continuous Support of the Public Opinion	Government Regulation of business usually does more harm than good (Pew Research Center For The People & The Press -PEW - http://people-press.org/).- GR Indicator of Efficiency and Equity : competition, regulatory environment and entrepreneurship in the period 1977-2006. IEE
	vi) Constituency Groups and Interest Groups	Accidents per million aircraft miles Bureau of Transportation Statistics (BTS)-http://www.bts.gov/- (author's calculations) (BZ2/BX2). - Accidents Duration of Strikes (various sources, e.g., Strike Report 1947-2005 and Author's calculations). - Strikes Complaints - All (#) per FLIGHT OPERATIONS Aircraft Miles (000,000)- Bureau of Transportation Statistics (BTS)-http://www.bts.gov/- , various years. -Complaints
	vii)Technical and Budgetary Means (Resources)	Budget appropriated for US DOT; Justice Department anti-Trust division; Federal Aviation Administration (FAA); Civil Aeronautics Board (CAB).http://www.gpoaccess.gov/usbudget/. - Budget
	viii) Macro Economic and Political Environment	GDPPCG (GDPgrowth percapita)- World Development Indicators: http://devdata.worldbank.org/dataonline/. - GDPPCG
	ix) Market Forces	Herfindahl-Hirschman Index (HHI) - Various Sources. - HHI Total Air Carriers- Bureau of Transportation Statistics (BTS)-http://www.bts.gov/- carrier groups categorized based on their annual operating revenues. Air Carriers
	x) Unexpected Events.	Avg. Paid Price*- $/bbl -ATA- Oil

Table 2 converts specific categories (e.g., market forces, constituency support, and public opinion support) into operational terms. In the case of some of the categories, we see more than one measure. For

instance, in the case of the category "Effective Leadership and Responses of Agencies/Departments," bankruptcies would provide a measure of the responsiveness of the financial and banking system, while mergers and acquisitions a response of the department and agencies (e.g., the Justice Department) in charge of competition. In the case of "Continuous Support of the Public Opinion," the measure of PEW could provide an overall sentiment of the public opinion, while the number of studies over time would provide a sense of the view and attention that experts give to the problem. The category "Constituency Groups and Interest Groups" could operate in different forms, in the sense that strikes would provide a measure of the constituency of labor; accidents (in the forms of reported and also nonreported events) would measure the strength of safety associations as well as that of the Department of Safety; complaints would provide a measure of the strength of the public or customers at large vis-à-vis the management of airlines In the case of the category "Market Forces," the two measures indicated in Table 2 are more complementary. In fact, the Herfindahl-Hirschman Index—again, HHI—measures the working of competition in the market, while the number of operating carries (air carriers) would constitute a complementary measure.

Conversely, we should also be aware that some of the variables would tend to border two or more categories, as spelled out in Exhibit 3 and Table 1 above. For instance, mergers and acquisitions could be regarded as part of the effort of departments and agencies as well as a measure of the support or opposition of constituency groups and as a measure of the influence of market sources. Also, labor strikes could be regarded as a measure of the support or /opposition of interest groups but also as a measure of support or opposition from public opinion.

Efficiency and equity could be included as part of the continuous support of public opinion and also under the headings of the macroeconomic and political environment.

Based on the above considerations, the next step is to focus on the research question and identify the relevant variables to "operationalize" Exhibit 3 more specifically based on Table 2 and define a testable model.

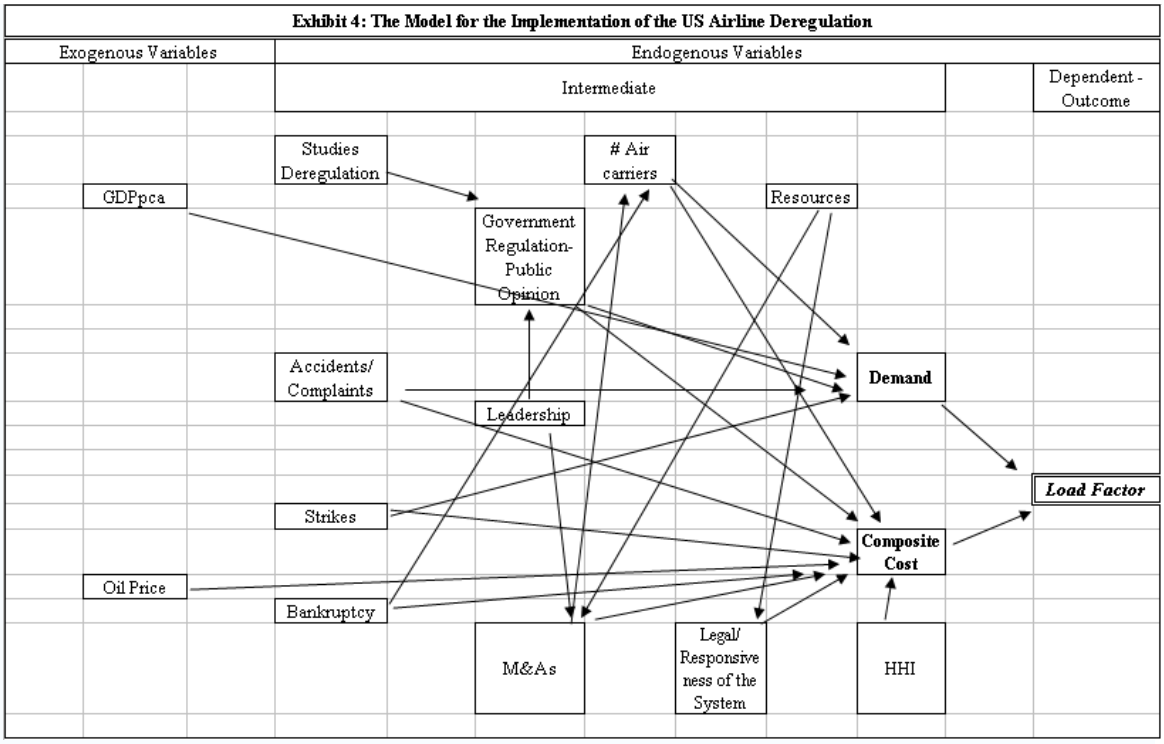
5. The Research Question

On the basis of the framework articulated above, the main research question is to find and test the variables that explain the process of implementing airline deregulation in the United States over an extended period of time and how the role of government has evolved.

Exhibits 1 and 2 constitute the basis for the framework and then for the model of implementation in a deregulation environment. Exhibit 3 shows that the implementation outcome is the dependent—or response—variable, a measure of performance to explain and which responds to independent variables connected to

implementation, unexpected consequences, complexity, and the airline industry. Exhibit 4 provides us with the "operazionalization" of the framework and identifies the economic and noneconomic variables that influenced the United States' implementation of the deregulation of its airlines.

Exhibit 4: Model for the Implementation of Deregulation



The model indicates that the Load Factor—again, "LF"—is the dependent outcome that I want to explain. Composite Cost and Demand (Revenue, RPM) represent the supply and demand sides of the airline industry, which are considered intermediate or intervening variables. In fact, many of the other variables of Exhibit 4—both endogenous and exogenous—exercise an influence on the LF through the intermediation of these intervening variables.

Based on the above, the model requires the use of various simultaneous equations.

6. A Testable Model for the Deregulation of the U.S. Airline Industry

Equations 1, 2, and 3 below represent a testable model to link exogenous, explanatory variables that interact among themselves and with endogenous variables and have direct and indirect effects. The model intends to respond to the question about the "working" of the implementation, i.e., the influence of the changes of the independent variables—economic variables (e.g., cost) and noneconomic variables

(e.g., public opinion)—over the implementation of airline deregulation in the United States (Gray 2004, 70).

Table 2 relates Exhibit 3- the theoretical model- to operational variables and leads to the model depicted in Exhibit 4, which constitutes the testable model. In turn, Exhibit 4 shows the variables that are expected to play a role in the deregulation process and can be tested with three equations that can be estimated using simultaneous equations:[25]

Equation 1

$$\text{Composite Cost} = \alpha_0 + \beta_1 \text{HHI} + \beta_2 \text{Legal} + \beta_3 \text{MA} + \beta_4 \text{Bankruptcy} + \beta_5 \text{GR} + \beta_6 \text{Strikes} + \beta_7 \text{Accidents} + \beta_8 \text{Oil} + \varepsilon \quad [1]$$

Equation 2

$$\text{Demand} = \alpha_0 + \beta_1 \text{Air Carrier} + \beta_2 IEE + \beta_3 \text{ Strikes} + \beta 4 \text{ Accidents} + \beta_5 \text{GDPPCG} + \varepsilon \quad [2]$$

Equation 3

$$\text{Load Factor} = \alpha_0 + \beta_1 \text{Composite Cost} + \beta_2 \text{Demand} + \varepsilon \quad [3]$$

In the three equations, there are number of explanatory variables that are intended to test the hypothesis. Oil price and GDP per capita (GDPPCG) are considered exogenous variables that influence Demand and Composite Cost. Strikes is a variable that is expected to have a direct effect on both Demand and also on the Composite Cost. The Accidents and complaints about safety measures directly influence Demand and Cost.

Bankruptcy influences Composite Cost. Mergers and Acquisitions (MA), the responsiveness of the legal system (Legal), and the variable that captures the level of efficiency en equity of the system, IEE, are expected to influence Composite Cost.

Public opinion about regulation in the system is expected to influence demand. In this case, I consider a different measure from IEE. I include a variable—GR—that captures public opinion about regulation.

There are variables that affect Cost and Demand and therefore, indirectly, the LF. For instance, studies of deregulation are expected to influence public opinion about regulation, which in turn affects Demand. The availability of resources (i.e., budgetary resources for DOT and the FAA are expected to have an important function as explanatory variables) influences activities that permit the functioning of the antitrust division and its role in mergers and acquisitions, as well as the functioning of the legal

[25] The series of variables could be analyzed recurring to the Structural Equation Modeling.

system, and these two variables in turn affect Cost. Leadership influences government regulation / public opinion and the capability to undertake actions related to mergers and acquisitions.

The impact of these variables could be estimated with separate equations.

Hypotheses

ON THE BASIS OF THE CONSIDERATIONS ABOUT THE LONG-TERM NATURE OF THE IMPLEMENTATION OF THE DEREGULATION OF THE AIRLINE INDUSTRY, THE STUDY TESTS SPECIFIC HYPOTHESES:

a. The first hypothesis pertains to the discovery of those factors and variables that are relevant for the implementation process of deregulating airlines in the United States. Deregulation—a removal of government intervention—represents a form of policy, which can be studied from a novel point of view as a process of implementation over a long period of time. The evaluation of the implementation process over a long time span and the identification of variables are expected to capture the interactions of a very dynamic and diverse environment and provide material for further implementation research. Thus, the three-equation model tests the hypothesis that the model is appropriate and that the effects of deregulation take place over a long period of time. In this respect, we need the significance of the overall model in terms of variability that the model explain (i.e., R^2) and that the model pass all the statistical tests related to the assumptions (e.g., independence, multicollinearity).
b. The second hypothesis is that by deregulating, the government is not disappearing but will exercise its functions (e.g., regulatory and oversight) differently and will add other functions (e.g., safety). Therefore, the dismantling of comprehensive regulation does not imply total government laissez-faire. In fact, deregulation allows the government to relinquish some actions (e.g., establishing prices and entry) but expand others (e.g., bankruptcy, antitrust, and social regulation). To that end, the model is expected to show that the implementation of deregulation has enabled other types of policies to work more effectively, i.e., regulatory and antitrust policies (Viscusi, Harrington, and Vernon 2005, 638–40) and bankruptcies. In addition, social regulation—in parallel to economic regulation[26]—emerges mainly in relation to safety and security concerns. In fact, "accidents" that occur periodically in the airline business are promptly disclosed and start to have an impact on the demand for flights. "Complaints" is another variable that influence the working of the system. Accidents and complaints are part of social regulation. In this context, despite economic deregulation,

[26] i.e., economic vs. social regulation.

government agencies continue to play an important and significant role, but the focus shifts to a different set of questions. Therefore, the second hypothesis implies that the significance of some of the variables (e.g., antitrust , bankruptcy, accidents, complaints) will substantiate the hypothesis that deregulation does not mean laissez-faire and that in fact, deregulation allows the government to relinquish some actions (e.g., establishing prices and entry) but expand others (e.g., bankruptcy, antitrust, and social regulation).

The two hypotheses will allow to articulate further considerations and prompt research about the role of regulation and that of market, particularly in the specific airline industry and the issue of re-regulation; the validity of the US experience for emerging countries.

Table 3 summarizes the variables and whether they can be part of implementation, unexpected consequences, complexity, or the airline industry; the expected impact; and the reference to the literature.

Table 3 : Explanations of equations and their expected influence

Equations	Dependent	Independent	Expected impact of	Type of Influence	Literature Reference
Equation 1					
Composite Cost = $\alpha_0 + \beta_1$HHI + β_2Legal + β_3MA + β_4Bankruptcy + β_5 GR + β_6Strikes + β_7Accidents + $\beta 8$ Oil + ε					
Composite Cost	x			Airline Industry	
HHI		x	same direction	Complexity	Mcafee and Hendricks (2003)
Legal		x	It could be both directions	Implementation	Kaplow and Shapiro (2007); Kole and Lehn (1997)
MA		x	same direction	Airline Industry	Lichtenberg and Moshe (1989); Healy, Palepu and Rubak (1990); Cook (2008); Golbe and White (1988)
Bankruptcy		x	It could be both directions	Implementation	Borenstein and Rose (2003); Borenstein, Severin and Rose (1995)
GR		x	It could be both directions	Complexity	Gagnepain and Marin (2004); Levine (2007)
Strikes		x	opposite direction	Complexity	Hoffer, Von Nordenflycht and Kochan (2003); Hirsch (2007);Mordkoff (2007)
Accidents		x	opposite direction	Unexpected Consequences	Noronha, and Singal (2003); Haunschild, Sullivan and Ni (2008)
Oil		x	same direction	Unexpected Consequences	Leigh, Wolfers, and Zitzewitz (2003); Blanchard and Gali(2007)
Equation 2					
Demand = $\alpha_0 + \beta_1$Air carrier + β_2IEE + β_3 Strikes + β_4 Accidents + β_5GDPPCG + ε					
Demand	x			Airline Industry	
Air carrier		x	same direction	Airline Industry	Gonenc, Rauf and Nicoletti (2000); Bruner and Carr (2004)
IEE		x	same direction	Complexity	Schindehutte, Morris, and Kocak (2008); Levine (2007); Linda Lee GMU (2007)
Strikes		x	opposite direction	Complexity	Hoffer, Von Nordenflycht and Kochan (2003); Hirsch (2007);Mordkoff (2007)
Accidents		x	opposite direction	Unexpected Consequences	Noronha, and Singal (2003); Haunschild, Sullivan and Ni (2008)
GDPPCG		x	same direction	Unexpected Consequences	Mueller and Clemens (2000)
Equation 3					
Load Factor = $\alpha_0 + \beta_1$Composite Cost + β_2Demand + ε					
Load Factor	x			Airline Industry	
Composite Cost		x	opposite direction	Airline Industry	
Demand		x	same direction	Airline Industry	

7. Public Policy Relevance and Expected Results

Policymakers in the United States (and in other regions of the world, e.g., the Latin American and Caribbean region) and the public administration sector constitute the intended audience for the study, so as to generate policy recommendations and action plans. Other players—including civil society groups, and particularly nongovernmental organizations—will appreciate the impact of a fruitful implementation of programs and policies.

The findings of this research would be important with respect to several aspects. First, the significance of the model and of the variables in the three equations would be valuable for policymakers, who would be able to better consider the experience of implementing airline deregulation and be aware of the crucial variables when designing deregulation policies. Policymakers would be highly interested in understanding the reasons for the effective functioning of particular variable during the implementation of deregulation of programs and policies. The deregulation of U.S. airlines has required that a number of government agencies cease their contribution but that new government interventions come to play a role. In this respect, direct regulation (e.g., fixing prices and quantities) leaves room for more market-oriented regulation through antitrust laws, competition, and social regulation. Therefore, deregulation is being implemented not only because market forces have been put to work but also because of a continuous, albeit different role for the government. This role of the government is often underestimated. The results would be very valuable for considerations related to the process of implementation and more specifically to deregulation, and how the implementation has to be examined over an expanded time span and include a series of dynamic variables that are part of an advanced political and economic system. In this context, the role of government is expected to change and evolve so that "deregulation" needs a combination of market, institutional, and public administration forces. All this represents the institutional setting that permits the deregulation process to operate effectively. These considerations may lead to the further recommendation that institutions and the role of a solid public sector are crucial and probably need to preexist for the correct implementation of reforms such as deregulation.

Second, the findings could prompt to undertake—following the framework and the methods proposed in this paper—specific implementation studies, which would be applied in the context of an advanced economy such as the United States. A similar kind of approach could also be applied to implementation in emerging market economies where the institutional setting is weak and very possibly institutional interactions do not take place and lead to failure of many policies and programs. Along these lines, the study is expected to prompt another set of considerations that would apply to emerging markets that undertake reform and deregulation. The U.S. airline deregulation has been a reform that permits market forces and institutions and public administration to operate appropriately. The model is expected to show that market institutions and government organizations, which mostly existed before the deregulation of 1978, were requested to work differently following the reform of 1978. Similar attempts

at deregulation and privatization (also in sectors other than airline and transportation)—particularly in emerging markets such as those in Asia and in Latin America and the Caribbean—occur in a setting that lacks institutional and market forces as well as public administration. A number of research studies have focused on reforms in emerging market countries, and various causal relationships have been explored (see Chong and López de Silanes 2005). Several analyses have been conducted for reforms in emerging markets, and most of them present unsatisfactory outcomes. In large part—and certainly in Latin America —market-oriented reforms have not always functioned well and there has been a strong backlash and a revival of interventionist policies. In Latin America, markets, various institutions, and established organizations—particularly those in the public sector—existed before the reforms, but during the implementation of the reforms – with few exceptions (e.g., Chile) they did not perform as expected. The US experience could be of interest for instance for countries like China where market reforms had to create private sector institutions, while public sector organizations had to play a total different role than that played during the period of the country's command economy.

8. Methodology: Time-Series Data and Simultaneous Equations

The relevant variables can be observed in a time-series analysis and be part of a testable theoretical model of the implementation process for deregulation. This testable model is expected to show the working of the implementation process and in a dynamic and complex situation, with a web of completely new players that leads to a continuum of bargaining and experimentation (e.g., a series of destructive activities; see Baumol 1990), i.e., the creation of a more effective market system according to the objectives of the 1978 deregulation. However, the specific event of the disappearance of the CAB not only prompts markets to operate but also induces markets, institutions, and public administration to interact differently and play key roles in the process.

Thus, the research will make use of existing time-series data (so-called hard data). As repeatedly stated, Exhibits 1, 2 illustrates the framework model that will guide the research (Creswell 2003, 87, 93). Exhibit 3 represents a general model for implementation, and Exhibit 4 constitutes the model for the research on the implementation of the US airline deregulation; equations 1, 2, and 3 represent the testable model. The results of the study would point to the determinants relevant to the process of airline deregulation and permit those concerned to draw considerations and make policy recommendations.

Time-Series Data[27]

[27] The time series statistics draws heavily on the Stata, SPSS and Minitab references and manuals.

The unit of analysis is the airline industry over time[28]. "A time series is a sequence of observations which are ordered in time (or space). If observations are made on some phenomenon throughout time, it is most sensible to display the data in the order in which they arose, particularly since successive observations will probably be dependent. Time series are best displayed in a scatter plot. The series value *X* is plotted on the vertical axis, and time *t* [is plotted] on the horizontal axis. Time is called the independent variable (in this case, however, [it is] something over which [one has] little control). There are two kinds of time-series data" (Easton and McColl 2008):

I. Continuous, where one has an observation at every instant of time, e.g., lie detectors, electrocardiograms. This is denoted using observation *X* at time *t*, *X* (*t*).

II. Discrete, where one has an observation at (usually regularly) spaced intervals. This is denoted as *Xt.*

The times series that will be used in the analysis are discrete with a spaced interval of one year. In the context of the present research, time series would be used in a multiple regression setting. In multiple regression, the concern is with the correlation between independent or predictor variables, which creates problems in the model referred to as multicollinearity. In regression with time series, we are concerned with serial correlation—autocorrelation of a time series—because this violates the regression assumption of independent observations. In this context, time series such as those that I am going to use for the study will have to be analyzed to remove various components from the time series.

> Time series present a number of peculiarities, which it is useful to itemize:
>
> *Autocorrelation.* "Autocorrelation is the correlation between members of a time series of observations, such as weekly share prices or interest rates, and the same values at a fixed time interval later. More technically, autocorrelation occurs when residual error terms from observations of the same variable at different times are correlated (related). Serial autocorrelation of the data would probably emerge and constitute the major issue to address. The use of path analysis and lags, and autoregressive models, should help to solve the problems of autocorrelation" (Easton and McColl 2008).
>
> *Trend component.* "Trend is a long-term movement in a time series. It is the underlying direction (an upward or downward tendency) and rate of change in a time series, when allowance has been made for the other components. A simple way of detecting trend in seasonal data is to take averages over a certain period. If these averages change with time, one can say that there is evidence of a trend in the series. There are also more formal tests to enable detection of trend in a time series" (Easton and McColl 2008).
>
> *Cyclical component.* "One of these main features of a time series is the cyclical component. Descriptive techniques may be extended to forecast (predict) future values. In weekly or monthly data, the cyclical component describes any regular fluctuations" (Easton and McColl 2008).
>
> *Seasonal component.* "In weekly or monthly data, the seasonal component, often referred to as seasonality, is the component of variation in a time series, which is dependent on the time of year. It describes any regular fluctuations with a period of less than one year. For example, the costs of various types of fruit and vegetables, unemployment figures, and average daily rainfall all show marked seasonal variation. We are interested in comparing the seasonal effects within the years, from year to year; in removing seasonal effects so that the time

[28] The research is not going to deal with the data related to each airline in existence before deregulation and instead will look at the evolution of the overall industry.

series is easier to cope with; and in adjusting a series for seasonal effects using various models" (Easton and McColl 2008).

Irregular component. "One of the main features of a time series is the irregular component (or "noise"). Descriptive techniques may be extended to forecast (predict) future values. The irregular component is that which is left over when the other components of the series (trend, seasonal, and cyclical) have been accounted for" (Easton and McColl 2008).

Smoothing. "Smoothing techniques are used to reduce irregularities (random fluctuations) in time-series data. They provide a clearer view of the true underlying behavior of the series. In some time series, seasonal variation is so strong that it obscures any trends or cycles, which are very important for the understanding of the process being observed. Smoothing can remove seasonality and makes long-term fluctuations in the series stand out more clearly. The most common type of smoothing technique is moving-average smoothing, although others do exist. Because the type of seasonality will vary from series to series, so must the type of smoothing" (Easton and McColl 2008).

Exponential smoothing. "Exponential smoothing is a technique used to reduce irregularities (random fluctuations) in time-series data, thus providing a clearer view of the true underlying behavior of the series. It also provides an effective means of predicting future values of the series (forecasting)" (Easton and McColl 2008).

Moving-average smoothing. "A moving average is a form of average that has been adjusted to allow for the seasonal or cyclical components of a time series. Moving-average smoothing is a technique used to make the long-term trends of a time series clearer. When a variable, like the number of unemployed people or the cost of strawberries, is graphed against time, there are likely to be considerable seasonal or cyclical components in the variation. These may make it difficult to see the underlying trend. Taking a suitable moving average can eliminate these components. By reducing random fluctuations, moving-average smoothing makes long-term trends clearer" (Easton and McColl 2008).

Running-medians smoothing. "Running-medians smoothing is a technique analogous to that used for moving averages. The purpose of the technique is the same: to make a trend clearer by reducing the effects of other fluctuations" (Easton and McColl 2008).

Differencing. "Differencing is a popular and effective method of removing trend from a time series. This provides a clearer view of the true underlying behavior of the series" (Easton and McColl 2008). Differences can also imply the use of logarithmic transformation.

Autoregressive models. In case there is autocorrelation of the dependent variable—i.e., values of the dependent variable in one time are linearly related to values of the dependent variable in another time period—the dependent variable lagged at appropriate periods can be used as a predictor or independent variable, i.e., a linear regression of the current value of the series against one or more prior values of the series. The autoregressive model is one of a group of linear prediction formulas that attempt to predict an output $y\,[n]$ of a system based on the previous outputs ($y\,[n-1]$, $y\,[n-2]$ . . .) and inputs ($x\,[n]$, $x\,[n-1]$, $x\,[n-2]$ . . .). Deriving the linear prediction model involves determining the coefficients $a1$, $a2$,.. and $b0$, $b1$, $b2$, . . . in the equation:

$y[n]$ (estimated) = $a1*y[n-1] + a2*y[n-2]$ ... + $b0*x[n] + b1*x[n-1]$ + ...

Within this context, some relevant tests for autocorrelation will be used, e.g., the Durbin-Watson test for autocorrelation in a regression model; the Durbin-Watson *h* test;[29] and plots of autocorrelations. I will also examine the residuals from the regression model to determine if autocorrelation is present.

[29] See Pindyck and Rubinfeld (2001). The *h* statistic is used to test for autocorrelated residuals in a model such as $YT = a1 + a2Yt - 1$ (*Y* predicted by lagged *Y*). The statistic is $h = (1 - DW)\ \{(n / (1 - nV\,(a1))\}$ **0.5, where $V\,(b1)$ is the estimated variance of coefficient $a1$. *DW* is the Minitab Durbin Watson statistic. It requires a large sample > 30. We test to see if the serial correlation is zero and reject if $h > 1.645$ (5 percent level). It is not dependent on number of independent variables in the model.

Regression models with autocorrelation can be adjusted with the autoregressive model. Also, a dummy variable can be used to model a seasonal pattern in data.

In a time-series analysis, it is possible to encounter heteroskedasticity, i.e., nonconstant variance of the residuals. The problem of heteroskedasticity can be tested.[30] The model that I intend to test includes several variables that can help solve the problem of autocorrelation, i.e., adding an omitted variable can explain the association in the response from one period to the next. However, the presence of several independent variables can lead to problems of multicollinearity; i.e., the independent variables are highly related to each other, they will explain the same variation, and the addition of variables will not improve the forecast. Multicollinearity will be tested and be dealt with by way of transformation of the variables[31] and tackled in conjunction with the issue of autocorrelation.

However, the use of simultaneous equations would allow creating various sets of equations that would reduce the potential problem of multicollinearity.

Causality is one of the key problems in a model such as the one depicted in equations 1, 2, and 3. The analysis is intended to look at Granger's causality, cointegration, and the use of lag variables to explain the dynamic and causal relationships that the variables and factors have in the model, also allowing country-specific effects to be uncovered.

Simultaneous Equations

"Unlike the single-equation model in which a dependent (y) variable is a function of independent (x) variables, other y variables are among the independent variables in each [simultaneous] equation. The y variables in the system are jointly (or simultaneously) determined by the equations in the system" (Barreto and Howland 2005; also see Pindyck and Rubinfeld 2001).

A simple, three-simultaneous equation system is that indicated above,

Equation 1

$$\text{Composite Cost} = \alpha_0 + \beta_1 \text{HHI} + \beta_2 \text{Legal} + \beta_3 \text{MA} + \beta_4 \text{Bankruptcy} + \beta_5 \text{GR} + \beta_6 \text{Strikes} + \beta_7 \text{Accidents} + \beta_8 \text{Oil} + \varepsilon \quad [1]$$

Equation 2

[30] Heteroskedastity: variance of e not equal for all levels of x. in Stata it can be tested with robust reg and also with hettest, rvfplot. If significant, the variance of residuals is not constant.

[31] A test of multicollinearity is the so-called level of Variance Inflation Factors, which would tell us whether there is multicollinearity or not. If it is above 5, then multicollinearity is likely. It is very hard not to have some multicollinearity in business data. The question is to look at the potentially overlapping variables that are also contributing something unique and useful to the model. It is also important to check the level of correlation among the independent variables.

Demand = α_0 + β_1*Air Carrier + $\beta_2 IEE$ + β_3 Strikes + β4 Accidents + β_5GDPPCG + ε [2]

Equation 3

Load Factor = α_0 + β_1Composite Cost + β_2Demand + ε [3]

Following Barreto and Howland (2005), "The first equation [1] in [our] system has a conventional *x* variable (Cost). Likewise, the second equation [2] has a dependent variable (Demand). In the third equation [3], Cost and Demand are independent variables. In a simultaneous-equations system, variables that appear only on the right-hand side of the equals sign are called exogenous variables. They are truly independent variables because they remain fixed. Variables that appear on the right-hand side and also have their own equations—i.e., Cost and Demand (e.g., *y*1, *y*2)—are referred to as endogenous variables. Unlike exogenous variables, endogenous variables change value as the simultaneous system of equations grinds out equilibrium solutions. They are endogenous variables because their values are determined within the system of equations."

In Stata, we would follow the following steps:

Step 1. Write the structural model equation for equation 1

*reg y*1 *y*2 *x*1

Step 2. Add a list of the exogenous variables in parentheses.

*reg y*1 *y*2 *x*1 (*x*1 *x*2)

Step 3. Repeat steps 1 and 2 for equation 2 to get estimates of the full model. The parenthetical exogenous variables will be the same list for each equation.

*reg y*2 *y*1 *x*2 (*x*1 *x*2)

Robust standard errors can be computed by adding "robust" as a modifier in step 2.[32]

Again following Barreto and Howland (2005), "A natural question to ask is: What happens if we just ignore the simultaneity? Suppose, for example, we are interested only in the effect of y_1 on y_2. Could we simply toss out the first equation and treat the second one as a standalone, single equation, using our usual ordinary least squares regression to estimate the coefficients? In fact, this is what most single-equation regressions actually do—they simply ignore the fact that many *x* variables are not truly exogenous, independent variables. Unfortunately, it turns out that closing your eyes to the other equations is not a good move; the single-equation ordinary least squares estimator of 1 is biased. This important result, called simultaneity bias, occurs because y_1 is correlated with e_2."

"There are ways to consistently estimate the coefficients in the system", as Barreto and Howland (2005), explain. "The most common approach is called the method of instrumental variables. When

[32] These steps are from "Simultaneous Equation Models in Stata," http://polsci.colorado.edu/~mciverj/stata_sem1.html.

several instrumental variables are available, they are combined via regression (the first stage) and then used in a second regression. This procedure is called two-stage least squares."

Data Availability

Time-series data are available mostly from the Air Transport Association (ATA) and also various other organizations. They provide annual data on the overall airline industry (e.g., load factor, accidents, yield, fuel cost, and profits):

a. Actual load factor from the ATA's Composite Cost Table. Load factor is the percentage of seating or freight capacity that is utilized. The average is computed as the ratio of revenue passenger miles —again, RPMs—to available seat miles—again, ASMs (ATA: http://www.airlines.org/).

b. RPM (cents): One fare-paying passenger transported one mile; the most common measure of demand for air travel. ATA (http://www.airlines.org/).

c. Composite cost: ATA Cost Index (http://www.airlines.org/) (1982 = 100).

The two variables indicated above—RPM and Composite Cost—are analyzed in section 4 above.

d. Leadership in the government's departments and agencies, in Congress, and also in the private sector that has helped to carry on the deregulation. This variable can be relatively well measured for the period before 1978 when the role of Alfred Kahn and also that of Senator Kennedy were crucial for the passing of the legislation. However, what we need to measure is the existence of leadership in the period of implementation of the deregulation. I would look into the administrators of the agencies (e.g., FAA, DOT, and Justice) as well as at the chief executives of airlines to construct a dummy variable over the year that would provide information about the existence or lack thereof of leaders during the implementation period of the deregulation of the U.S. airline industry.

e. The number of studies on airline deregulation during the period—author's compilation: rate/dummy. This variable would capture the so-called theory behind policy and the policy characteristics related to deregulation and airlines. The studies considered would be published books and articles in refereed journals.

f. There are various sources that could provide a measure of the policy formation and the role/existence of the legal and regulatory environment in the United States. These measures should not be specific to the airline but general, as the deregulation of airlines prompted a series of pressures on various subsets of the legal system (e.g., bankruptcy, mergers and acquisitions, strikes that are included in the model; see h, l, m below). In this area, various databases might be related to specific interest groups and therefore need to be carefully considered. However, various alternative measures could be reviewed in order to select the most appropriate indicator for capturing the legal and regulatory environment in the United States during the last 30 years. Variables for the legal environment in the United States could come from the following databases:

    i. Indices of Economic Freedom of the World, e.g., Chain Link Index (http://www.freetheworld.com/release.html).

    ii. Freedom House: Freedom in the World Historical Rankings (http://www.freedomhouse.org/template.cfm?page=15).

    iii. Polity IV Database (http://www.cidcm.umd.edu/polity/)

iv. Database of Political Institutions (http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/0,,contentMDK:20649465~pagePK:64214825~piPK:64214943~theSitePK:469382,00.html).

g. How government regulation of business usually does more harm than good (Pew Research Center for the People & the Press (http://people-press.org/). This measure, which gauges the situation of the continuous support of public opinion toward regulation in general, is included in the model as an explanatory variable that influences policymakers and decisions about public opinion. This is a general measure available over a very long period of time. The Pew Center has surveyed people in the United States over a long period of time on various attitudes, including toward regulation and deregulation and the role of government. These measures are not directly related to airlines and airline deregulation, but they can provide a very good measure of the mood of U.S. public opinion over time about regulation and the role of government. I will try to see if there are similar specific measures for the airline industry.

h. This subsection is more extended than the others to cover the rationale of setting up an indicator that captures the efficiency and equity of the system and would provide a measure of political support in the policy and political circles of the competitive environment. In a few words, these two concepts of efficiency and equity indicate a drive toward pure economic efficiency, at times complemented by policies directed toward opening economic growth opportunities to particular groups. While the first type of action has a direct, positive impact on efficiency, the second has a more mediated, long-term impact. However, the combination of these two types of policies provides an overall sense of the status of competition, regulation, and entrepreneurship in the United States. The review of these policies will allow assessing and possibly quantifying the evolution of the business environment in the United States and consider it in the context of the analysis of the implementation of the airline industry's deregulation, particularly on the side of cost.

Economic efficiency is defined as achieving the highest level of possible output from a market system using the lowest level of inputs in order to decrease inefficiencies, waste, and unnecessary effort. Many general business and entrepreneurial policies focus on increasing the efficiency of the economic system by eliminating the causes of restrained productivity, such as rent controls, trade barriers, and specific industry regulations. Advocates of efficiency-oriented policies argue that society benefits from an overall increase in efficiency as these policies lead to greater productivity and broader aggregate economic possibilities.

Equity is defined as working to overcome social and market barriers to business participation. Its goal is to promote economic growth and social justice by assuring that specific groups secure equal or greater access to economic opportunities and benefits (Nicholson 2005). Target market equity policies seek to increase economic prosperity by reserving space within institutions and markets for specific populations, such as affirmative action placement in universities and government contracting preferences. These policies may also seek to promote one type of business or industry through federal support in order to achieve specific economic policy goals. Advocates of target market equity policies argue that, over the long term, economies cannot expand and prosper if all groups in society do not engage in business and development activities.

Policies that increase economic efficiency may seek to eliminate the group preferences designed to protect industries or promote market participation by specific groups. Policies that increase the market participation levels of underrepresented groups, or seek to advance specific industry sectors, may decrease economic efficiency.

To that end, during the presidential administrations of Jimmy Carter, Ronald Reagan, George H. W. Bush, and William Clinton, a series of legislations have been enacted that cover the issues of economic efficiency and equity and particularly those focused on entrepreneurship and small business policies.

Between 1977 and 2006, these administrations removed many of the regulatory constraints, innovation obstacles, and barriers to market entry, which like fences previously constrained small business and entrepreneurial growth. Some policies promoted eliminating international barriers to trade and restrictive industry regulations that hampered competition. These policies focused on increasing economic efficiency and creating benefits for most companies. Other policies focused on creating target market equity for specific groups, by cultivating particular types of business owners and entrepreneurs, in order to increase their total market participation or type of industry output. Over these 24 years, the decentralized energies and disparate innovations of entrepreneurs and small business owners increasingly spurred technological advancements in U.S. markets (Schramm 2006b). These uncoordinated entrepreneurial activities undermined the managerial capability of the iron triangle—made up of big government, big business, and big unions—to centrally dictate the direction of the U.S. economy (Schramm 2006b). Entrepreneurs' efforts made some industries obsolete, forced many industries to modernize, and created new advancements and business opportunities. This process of entrepreneur-driven creative destruction renewed and transformed the U.S. economy. The small business and entrepreneurial policies adopted during these administrations enabled this radical economic transformation.

The four questions for determining a policy's target market equity are:

Narrow

1. To what degree does the policy narrowly provide targeted federal aid, contracts, or other types of governmental assistance, to small business owners, based on specific characteristics such as gender, race, veteran, disabled, or economic status in order to increase these groups' market participation and total overall economic output?
2. To what degree does the policy seek to narrowly promote entrepreneurship in a specific industry sector, like technology entrepreneurship, or the development of advanced technologies, by providing targeted federal benefits, aid, or other types of assistance to that sector?

Broad

3. To what degree does the policy broadly promote small business formation, and survival by reducing barriers to small business financing or by providing technical assistance and counseling to small business owners?
4. To what degree does the policy seek to broadly reduce barriers to market entry or to reduce small business owners' regulatory or compliance burdens?

The four questions for determining a policy's economic efficiency are

Narrow

A. To what degree does the policy narrowly focus on barriers to competitiveness, such as reducing industry-level regulatory requirements, or increasing technology transfer, where one industry will most prominently benefit from these federal actions?
B. To what degree does this policy narrowly aim to increase economic efficiency and total output by promoting specific types of activities, such as research and development or technology commercialization, in order to produce innovations and advancements?

Broad

C. To what degree does this policy broadly reduce barriers to market entry, and increase market efficiency and competition, by eliminating domestic and international trade restrictions, legal restrictions, and lending restrictions that will broadly benefit businesses and entrepreneurs across industries?
D. To what degree does this policy broadly increase competition by increasing the majority of entrepreneurs' and business owners' desire and capability to pursue opportunities within the economy?

i. Accidents and complaints: Total number of per-flight operations, in thousands of aircraft miles (ATA: http://www.airlines.org/, various years). The data for airlines are mostly

taken from the DOT's Bureau of Transportation Statistics and from the airline industry (ATA). Data from *The Statistical Abstract of the United States* are reformulated from those primary sources and therefore are avoided.

j. Duration of labor strikes (various sources, e.g., *Strike Report 1947–2005* http://www.nmb.gov/publicinfo/airline-strikes.html, and the author's calculations).

k. Total air carriers (ATA: http://www.airlines.org/, and DOT's Bureau of Transportation Statistics): Carrier groups categorized based on their annual operating revenues. ATA provides very good data with respect to the number of air carriers in operation each year in the domestic United States and divides the carriers in categories, i.e., major, regional, and commuters.

l. GDP and the growth of GDP per capita: the World Bank's World Development Indicators (http://devdata.worldbank.org/dataonline/).

m. Average price paid for oil (dollars per barrel) (ATA: http://www.airlines.org/).

n. Airline bankruptcy: "The early years of deregulation saw numerous filings among startup carriers that lacked viable business plans or sufficient capitalization. In addition, recession, fierce competition, rising costs, the Gulf War, and the September 11, 2001, tragedy prompted bankruptcy filings among several larger carriers. Many lay observers broadly equate bankruptcy with going out of business. However, the U.S. Bankruptcy Code and the Federal Rules of Bankruptcy Procedure are complex, affording companies different means of addressing their respective financial plights. The most common path, commonly known as Chapter 11 (or 'Reorganization'), ordinarily is used by commercial enterprises that desire to continue operating . . . and repay creditors concurrently through a court-approved plan of reorganization. Under more extreme circumstances, companies engage in Chapter 7 (or 'Liquidation') proceedings, which entail 'an orderly, court-supervised procedure by which a trustee collects the assets of the debtor's estate, reduces them to cash, and makes distributions to creditors, subject to the debtor's right to retain certain exempt property and the rights of secured creditors'" (http://www.airlines.org/economics/specialtopics/Airline+Bankruptcy+Overview.htm). For more information on federal bankruptcy law, proceedings, and terminology, see Bankruptcy Basics (http://www.deb.uscourts.gov/bankruptcybasics.pdf), published by the Bankruptcy Judges' Division of the Administrative Office of the United States Courts. Other sources of bankruptcy research include BankruptcyData.com (http://www.bankruptcydata.com/researchcenter2.htm), the American Bankruptcy Institute (http://www.abiworld.org), and the Cornell University Legal Information Institute (http://www.law.cornell.edu/topics/bankruptcy.html).

o. Mergers and acquisitions: Data related to mergers and acquisitions over the period 1979–2004 are found in Peltzman and Winston (2000) and various other sources.

p. Budgets appropriated for DOT, the Justice Department's Anti-Trust Division, the FAA, and the CAB: http://www.usdoj.gov/atr/public/10804a.htm, http://www.faa.gov/about/history/chronolog_history/, and http://www.gpoaccess.gov/usbudget/.
Historical tables:
http://www.aia-aerospace.org/stats/resources/hist.pdf.

Definition of Terms

By its own nature, public policy, implementation, and deregulation as well as the airline industry use a series of terms (Creswell 2003, 142), some of which are clarified in the literature review (e.g., capture theory) and in various publications:

- Definitions of phrases, concepts, and ideas discussed that are related to airlines: http://members.airlines.org/about/d.aspx?nid=7954.
- Organization for Economic Cooperation and Development, Paris, 1997: "Deregulation is a subset of regulatory reform and refers to the complete or partial elimination of regulation in a sector to improve economic performance"; "Regulatory Reform: A Synthesis" (http://stats.oecd.org/glossary/detail.asp?ID=4643).
- ATA: "Economics Glossary" (http://www.airlines.org/econ/d.aspx?nid=5244).

References and Bibliography

ATA (Air Transport Association). 1982. *The Sources of Airline Productivity*. Washington: ATA.

———. 2002. *2002 Air Transport Association Economic Report*. Washington: ATA. http://www.airlines.org/NR/rdonlyres/821E9AE0-61F8-4ABF-A322-49062F0C22D6/0/2002AnnualReport.pdf.

———. 2005. *New Thinking for a New Century: 2005 Air Transport Association Economic Report*. Washington: ATA. http://www.airlines.org/NR/rdonlyres/7B5D0F9D-6F3B-4958-B50C-8BC4FDFE84B7/0/2005AnnualReport.pdf.

———. 2006. *Smart Skies: A Blueprint for the Future—2006 Air Transport Association Economic Report*. Washington: ATA. http://www.airlines.org/NR/rdonlyres/905B6DE0-4E5C-402E-829E-A9CAA23C4DD1/0/2006AnnualReport.pdf.

———. 2009. Annual Passenger Yields: U.S. Airlines. http://www.airlines.org/economics/finance/papricesyield.htm.

Alesina, Alberto, Silvia Ardagna, Giuseppe Nicoletti, and Fabio Schiantarelli. 2003. *Regulation and Investment*, NBER Working Paper 9560. Cambridge, Mass.: National Bureau of Economic Research.

Allison, Graham T. 1992. Public and Private Management: Are They Fundamentally Alike in All Unimportant Respects? in *Public Administration: Concepts and Case*s, 5 edition. ed. Richard J. Stillman III. Boston: Houghton Mifflin.

American Antitrust Institute. 2008. *The Next Antitrust Agenda*. Vandeplas Institute, Lake Mar, Florida.

Antoniou, Andreas. 1992. The Factors Determining the Profitability of International Airlines: Some Econometric Results. *Managerial and Decision Economics* 13, no. 6 (November–December): 503–14.

Ariely Dan. 2009. *Predictably Irrational: The Hidden Forces That Shape Our Decisions* . Harper.

Aron, Raymond. 1970. *Main Currents in Sociological Thought II.* New York: Anchor Books.

Ashenfelter, Orley, and Daniel Hosken. 2008. *The Effect of Mergers on Consumer Prices: Evidence from Five Selected Case Studies*. NBER Working Paper 13859. Cambridge, Mass.: National Bureau of Economic Research.

Baily, Martin Neil, and Clifford Winston, eds. 1987. *Brookings Papers on Economic Activity: Special Issue on Microeconomics*. Washington: Brookings Institution Press.

Baldwin, Norman. 1991. Public versus Private Employees: Debunking Stereotypes. *Review of Public Personnel Administration* 11, no. 2: 1–27.

Balko, Radley. 2003. Airline Deregulation Revisited. *Capitalism Magazine*, June 25. http://www.capmag.com/article.asp?r=55.05784037823&svr=4&lang=en_us&ID=2873.

Baltagi, Badi, Griffin James, and Rich Daniel. 1995. Airline Deregulation: The Cost Pieces of the Puzzle. *International Economic Review* 36, no. 1: 245–58.

Bardach, Eugene. 1977. *The Implementation Game*. Cambridge, Mass.: MIT Press.

Bardach, Eugene, and Robert Kagan, eds. 1982. *Social Regulation.* New Brunswick, N.J.: Transaction.

Bardach, Eugene, and Robert Kagan. 1986. *Going by the Book: The Problem of Regulatory Unreasonableness*. Philadelphia: Temple University Press.
Barnum, John. W. 1998. What Prompted Airline Deregulation 20 Years Ago? What Were the Objectives of That Deregulation and How Were They Achieved? Paper delivered at Annual Meeting of International Bar Association, Vancouver. Available at http://library.findlaw.com/1988/Sep/1/129304.html.
Barreto, Humberto, and Frank Howland. 2005. *Introductory Econometrics*. New York: Cambridge University Press. Available at http://www3.wabash.edu/econometrics/EconometricsBook/index.htm.
Baumgartner, Frank R. 2005. A Model of Choice for Public Policy. *Journal of Public Administration Research and Theory* 15, no. 3.
Baumgartner, Frank R., and Bryan D. Jones, eds. 2002. *Policy Dynamics*. Chicago: University of Chicago Press.
Baumgartner, Frank R., and Bryan D. Jones. 2005. *The Politics of Attention: How Government Prioritizes Problems.* Chicago: University of Chicago Press.
Baumgartner, Frank R., and Beth Leech. 1998. *Basic Interests. The Importance of Groups in Politics and in Political Science*. Princeton, N.J.: Princeton University Press.
Baumol, J. William. 1990. Entrepreneurship: Productive, Unproductive, and Destructive. *Journal of Political Economy* 98, no. 5, part 1 (October): 893–921.
Becker, Gary. 1983. A Theory of Competition among Pressure Groups for Political Influence. *Quarterly Journal of Economics,* 98 (August): 371–400.
Behn, R. D. 2003a. One Approach to Performance Leadership Eleven "Better Practices" That Can Help "Ratchet Up" Performance. Paper presented at Seventh National Public Management Research Conference, Georgetown Public Policy Institute, Georgetown University, Washington, October 9–11.
———. 2003b. Why Measure Performance? *Public Administration Review* 63, no. 5 (September): 586–606.
Berry, F. S. 1994. Innovation in Public Management: The Adoption of Strategic Planning. *Public Administration Review* 54, no. 4 (July–August): 322–30.
Bhat, Vasanthakumar N. 1995. A Multivariate Analysis of Airline Flight Delays. *International Journal of Quality & Reliability Management* 12, no. 2: 54–59.
Bilotkach, Volodymyr. 2007. Price Effects of Airline Consolidation: Evidence from a Sample of Transatlantic Markets. *Empirical Economics* 33, no. 3.
Blanchard, Olivier J., and Jordi Gali. 2007. *The Macroeconomic Effects of Oil Shocks: Why Are the 2000s So Different from the 1970s?* NBER Working Paper 13368. Cambridge, Mass.: National Bureau of Economic Research.
Borenstein, Severin, and Nancy L. Rose. 1994. Competition and Price Dispersion in the U.S. Airline Industry. *Journal of Political Economy* 102, no. 4 (August): 653–83.
———. 1995. Do Airlines in Chapter 11 Harm Their Rivals? Bankruptcy and Pricing Behavior in U.S. Airline Markets. *RAND Journal of Economics* 33, no. 2. Available at http://ssrn.com/abstract=225826.
———. 2003. *Do Airline Bankruptcies Reduce Air Service?* NBER Working Paper 9636. Cambridge, Mass.: National Bureau of Economic Research.
———. 2007. *How Airline Markets Work . . . Or Do They? Regulatory Reform in the Airline Industry*. NBER Working Paper W13452. Cambridge, Mass.: National Bureau of Economic Research.
Brewer, G. A. 2003. When Core Values and Mission Collide: Gut-Wrenching Change in the U.S. Department of Agriculture. Paper presented at Seventh National Public Management Research Conference, Georgetown Public Policy Institute, Georgetown University, Washington, October 9–11.
Breyer, Stephen. 1982. *Regulation and Its Reform*. Cambridge, Mass.: Harvard University Press.
Brooks, H. 1986. The Typology of Surprises in Technology, Institutions and Development. In *Sustainable Development of the Biosphere*, ed. W. C. Clark and R. E. Munn. Cambridge: International Institute for Applied Systems Analysis and Cambridge University Press.
Brenner, Melvin. 1988. Airline Deregulation: A Case Study in Public Policy Failure. *Transportation Law Journal* 16, no. 179.
Brown, Anthony. 1987. *The Politics of Airline Deregulation*. Knoxville: University of Tennessee Press.
Brown, William P. 1998. *Groups, Interests, and U.S. Public Policy.* Washington: Georgetown University Press.
Browne, Secor. 1975. Remarks at Salomon Brothers Airline Symposium, February 26, New York. Reprinted in *Regulatory Reform* 125, no. 1 (Staff of Civil Aeronautics Board, Staff Report).
Browner, C. H. 2005. *Some Unexpected Consequences of Implementing Gender "Neutral" Reproductive Programs and Policies*. Working Paper 284. East Lansing: Women and International Development Program at Michigan State University. http://www.wid.msu.edu/resources/papers/pdf/WP284.pdf.

Bruner, Robert F., and Sean Carr. 2004. The Battle for Value, 2004: Fedex Corp. vs. United Parcel Service, Inc. Available at http://www.ccip.fr/ccmptest/ccmp-publishing/en_darden/abstracts.asp?ref=UVA-F-1484.
Bryson, John. 2003. What to Do When Stakeholders Matter: A Guide to Stakeholder Identification and Analysis Techniques. Paper presented at Seventh National Public Management Research Conference, Georgetown Public Policy Institute, Georgetown University, Washington, October 9–11.
———. 2004. *Strategic Planning for Public and Non-Profit Organizations: A Guide to Strengthening and Sustaining Organizational Achievement*, 3rd ed. San Francisco: Jossey-Bass.
Burgess, Heidi, Guy Burgess and Michelle Maiese. 2004. Incrementalism. In *Beyond Intractability*, ed. Guy Burgess and Heidi Burgess. Boulder: Conflict Research Consortium, University of Colorado. http://www.beyondintractability.org/essay/incrementalism/.
Busse, Meghan R. 2002. Firm Financial Condition and Airline Price Wars. *RAND Journal of Economics* 33, no. 2 (Summer): 298–318. Available at http://ssrn.com/abstract=307727.
Button, Kenneth. 1991. *Airline Deregulation*. New York: New York University Press.
———. 2003. Does the Theory of the "Core" Explain Why Airlines Fail to Cover Their Long-Run Costs of Capital? *Journal of Air Transport Management* 9: 5–14.
———. 2004. *Wings across Europe: Towards an Efficient European Air Transport System*. Burlington, Vt.: Ashgate.
Calabresi, Guido, and Philip Bobbit. 1978. *Tragic Choices.* Fels Lectures on Public Policy Analysis. New York: W. W. Norton.
Cameron, M., A. Vulcan, C. Finch, and S. Newstead. 1994. Mandatory Bicycle Helmet Use following a Decade of Helmet Promotion in Victoria, Australia: An Evaluation. *Accident Analysis and Prevention* 26, no. 3 (June): 325–27.
Card, David. 1996. *Deregulation and Labor Earnings in the Airline Industry*. NBER Working Paper 5687. Cambridge, Mass.: National Bureau of Economic Research.
Carlton, Dennis W., and Randal C. Picker. 2007. *Antitrust and Regulation*. NBER Working Paper 12902. Cambridge, Mass.: National Bureau of Economic Research.
Chen, Huey-Tsyh. 2004. *Practical Program Evaluation.* Thousand Oaks, Calif.: Sage.
Chong, Alberto, and Florencio López de Silanes, eds. 2005. *Privatization in Latin America: Myths and Reality*. Stanford, Calif. and Washington: Stanford Economics and Finance and the World Bank.
Christensen, Tom, and Per Laegreid, eds. 2006. *Autonomy and Regulation: Coping with Agencies in the Modern State.* Comparative Studies of Organizations in the Public Sector. Northampton, Mass.: Edward Elgar.
Chun, Y. H. 2003. Goal Ambiguity in U.S. Federal Agencies. Paper presented at Seventh National Public Management Research Conference, Georgetown Public Policy Institute, Georgetown University, Washington, October 9–11.
Chun, Young Han, and Hal G. Rainey. 2005. Goal Ambiguity and Organizational Performance in U.S. Federal Agencies. *Journal of Public Administration Research and Theory* 15, no. 4: 529–57.
Cigliano, Joseph M. 1982. The Demand for Jet Fuel by the U.S. Domestic Trunk Airlines. *Business Economics*, September.
Cohen Michael, R Axelrod. 1984. Coping with Complexity: The Adaptive Value of Changing Utility, *The American Economic Review*, Vol. 74, No. 1 (Mar.,), pp. 30-42
Cohen, Michael, James March, and Johan P. Olsen. 1972. A Garbage Can Model of Organizational Choice. *Administrative Science Quarterly* 17: 1–25.
Collingridge, D. 1992. *The Management of Scale: Big Organizations, Big Decisions, Big Mistakes*. London: Routledge.
Cook, Victor J. 2008. Why Airline Mergers Don't Work. Available at http://ssrn.com/abstract=1148782.
Coppin, Clayton A., and Jack High. 2003. *The Politics of Purity*. Ann Arbor: University of Michigan Press.
Cordes Joseph J. 1997. Reconciling Normative and Positive Theories of Government*, The American Economic Review*, Vol. 87, No. 2, Papers and Proceedings of the Hundred and Fourth Annual Meeting of the American Economic Association (May), pp. 169-172
Coser, Lewis A. 1977. *Masters of Sociological Thought: Ideas in Historical and Social Context*, 2nd ed. New York: Harcourt Brace Jovanovich.
Costello, Frank J. 2008. The Lessons of Airline Deregulation. Working paper, Zuckert, Scoutt & Rasenberger, LLP, Washington. http://www.zsrlaw.com/publications/articles/fjclessons.htm.
Coursey, Don R., Mark Isaac, Margaret Luke, and Vernon L. Smith. 1984. Market Contestability in the Presence of Sunk (Entry) Costs. *RAND Journal of Economics* 15, no. 1 (Spring): 69–84.

Creswell, John W. 2003. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. London: Sage.
Curran, Sara R. 2002. Open Borders and the Environment: Externalities and Unexpected Consequences, Discussion paper for cyber seminar "Should Borders Be Open: The Population and Environment Dimension," Population Environment Research Network, September 30–October 14. http://www.populationenvironmentresearch.org/
Daniel, Caroline. 2005. UAL in $1.5 bn Pension Offer. *Financial Times.* April 25.
Davis, Glyn Conrad, and Chalmers, Jim. 2001. Rediscovering Implementation: Public Sector Contracting and Human Services *Australian Journal of Public Administration* 60: 74–85.
De Lancer, Julnes P., and M. Holzer. 2001. Promoting the Utilization of Performance Measures in Public Organizations: An Empirical Study of Factors Affecting Adoption and Implementation. *Public Administration Review* 61, no. 6 (November/December): 693–708.
DeLeon, Peter. 1999. The Stages Approach to the Policy Process: What Has It Done? Where Is It Going? In *Theory of the Policy Process*, ed. P. A. Sabatier. Boulder, Colo.: Westview Press.
DeLeon, Peter, and Linda DeLeon. 2002. Whatever Happened to Policy Implementation? An Alternative Approach. *Journal of Public Administration Research and Theory* 12, no. 4: 467–92.
Dempsey, Paul Stephen. 1990. *Flying Blind: The Failure of Airline Deregulation*. Washington: Economic Policy Institute.
Dempsey, Paul Stephen, and Andre R. Goetz. 1992. *Airline Deregulation and Laissez-Faire Mythology*. Westport, Conn.: Quorum Books.
Dennard, Linda F., Kurt A. Richardson, and Goktug Morcol, eds. 2008. *Complexity and Policy Analysis: Tools and Concepts for Designing Robust Policies in a Complex World.* Mansfield, Mass.: ISCE Publishing.
Derthick, Martha, and Paul Quirk. 1985. *The Politics of Deregulation*. Washington: Brookings Institution Press.
DeVany, A. 1975. The Effects of Price and Entry Regulation on Airline Output, Capacity, and Efficiency. *Bell Journal of Economics and Management Science* 6: 327–45.
DiIulio, John J., Jr. 1993. Measuring Performance When There Is No Bottom Line: Bureau of Justice Statistics, Performance Measures for the Criminal Justice System. Article prepared for the U.S. Department of Justice, Bureau of Justice Assistance, Washington.
Doane, Michael J., Kenneth Hendricks, and R. Preston McAfee. 2003. Evolution of the Market for Air-Travel Information. In *Organizing the New Industrial Economy*, ed. Michael R. Baye. Oxford: Elsevier.
Doganis, Rigas. 2002. *Flying Off Course*, 3rd ed. London: Routledge.
Donohue, John J., and Steven Levitt. 2001. The Impact of Legalized Abortion on Crime. *Quarterly Journal of Economics* 116, no. 2: 379–420.
Douglas, G. W., and J. C. Miller. 1974. *Economic Regulation and Domestic Air Transport: Theory and Policy*. Washington: Brookings Institution Press.
Duke, John, and Victor Torres. 2005. Multifactor Productivity Change in the Air Transportation Industry. *Monthly Labor Review*, March, 32–45. Available at http://findarticles.com/p/articles/mi_m1153/is_3_128/ai_n15630940/.
Durant, Robert. 1984. EPA, TVA and Pollution Control: Implications for a Theory of Regulatory Policy Implementation. *Public Administration Review* 44, no. 4 (July–August): 305–15.
Eads, C. George. 1975. Competition in the Domestic Trunk Airline Industry. In *Promoting Competition in Regulated Markets*, ed. Almarin Phillips. Washington: Brookings Institution Press.
Easton, Valerie J., and John H. McColl. 2008. *Statistics Glossary, Volume 1.1*. http://business.clayton.edu/Course%20Requirments/.%5Carjomand/business/glossary/tsd.html#trend.
Ehrlich, Isaac, Georges Gallais-Hamonno, Zhiqiang Liu, and Randall Lutter. 1994. Productivity Growth and Firm Ownership: An Analytical and Empirical Investigation. *Journal of Political Economy* 102, no. 5: 1006–38. Available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=961463.
Ellison, B. A. 1998. The Advocacy Coalition Framework and Implementation of the Endangered Species Act: A Case Study in Western Water Politics. *Policy Studies Journal* 26, no. 1: 11–29.
Elmore, Richard. 1982. Backward Mapping: Implementation Research and Policy Decisions. In *Studying Implementation: Methodological and Administrative Issues*, ed. Walter Williams. Chatham, N.J.: Chatham House.
Emmons, Willis. 2000. *The Evolving Bargain: Strategic Implications of Deregulation and Privatization*. Boston: Harvard Business School Press.
Eppen, Gary, F. J. Gould, and Charles Schmidt. 1988. *Quantitative Concepts for Management*, 3rd ed. Englewood Cliff, N.J.: Prentice Hall.

Epstein, Gil S., and Shmuel Nitzan. 2007. *Endogenous Public Policy and Contests*. New York: Springer.
Euel, W. Elliott, and L. Douglas Kiel, eds. 2000. *Nonlinear Dynamics, Complexity and Public Policy*. Hauppauge, N.Y.: Nova Science Publishers.
Farmer, Susan Beth. 2008. *Competition Policy and Merger Analysis in Deregulated and Newly Competitive Industries*. Northampton, Mass.: Edward Elgar.
FDA (U.S. Food and Drug Administration) 2008. Regulatory Policy Program for the Food and Drug Administration. Available at http://www.publicpolicy.umd.edu/OEP/fda.htm.
Gayle, Philip G. 2007. Airline Code-Share Alliances and Their Competitive Effects. *Journal of Law and Economics* 50 (November): 781–819.
Gagnepain, Philippe, and Pedro Luis Marín Uribe. 2004. *Regulation and Incentives in European Aviation*. CEPR Discussion Paper 4318. London: Centre for Economic Policy Research.
GAO (U.S. Government Accountability Office). 1976. Selected Views and Issues Related to Regulatory Reform. In *The Transportation Industry*. GAO Staff Paper. Washington: GAO.
———. 2003a. *Airline Competition: Barriers to Entry Continue in Some Domestic Markets.* Report GAO/T-RCED-98-112. Washington: GAO.
———. 2003b. *Airline Ticketing Impact of Changes in the Airline Ticket Distribution Industry*. Report GAO-03-749. Washington: GAO.
———. 2004. *Commercial Aviation Legacy Airlines Must Further Reduce Costs to Restore Profitability*. Report GAO-04-836. Washington: GAO.
———. 2006. *Airline Deregulation: Reregulating the Airline Industry Would Likely Reverse Consumer Benefits and Not Save Airline Pensions.* Report GAO-06-630. Washington: GAO.
Gerardi, Kristopher, and Adam Hale Shapiro. 2007. *Does Competition Reduce Price Discrimination? New Evidence from the Airline Industry*. Working Paper 07-7. Boston: Federal Reserve Bank of Boston.
Glinavos, Ioannis. 2008. Neoliberal Law: Unintended Consequences of Market Friendly Law Reforms. *Third World Quarterly* 29, no. 6. Available at http://ssrn.com/abstract=1199262.
Goetz, Andrew R., and Christopher J. Sutton. 1997. The Geography of Deregulation in the U.S. Airline Industry. *Annals of the Association of American Geographers* 87, no. 2 (June): 238–63.
Goggin, Malcolm L. 1986. Too Few Cases / Too Many Variables: Problems in Implementation Research. *Western Political Quarterly* 39, no. 2: 328–47.
Goggin, Malcolm L., Ann Bowman, James Lester, and Laurence O'Toole. 1990. *Implementation Theory and Practice: Toward a Third Generation*. New York: HarperCollins.
Golbe, Devra L., and Lawrence J. White. 1988. A Time-Series Analysis of Mergers and Acquisitions in the U.S. Economy. In *Corporate Takeovers: Causes and Consequences*, ed. Alan J. Auerbach. Chicago: University of Chicago Press. Available at http://www.nber.org/chapters/c2058.pdf.
Gonenc, Rauf, and Giuseppe Nicoletti. 2000. *Regulation, Market Structure and Performance in Air Passenger Transportation*. Economics Department Working Paper 254. Paris: Organization for Economic Cooperation and Development.
Good, David H., M. Ishaq Nadiri, Robin C. Sickles. 1991. *Production, Technical Change and Efficiency in a Multiproduct Industry: An Application to U.S. Airlines*. NBER Working Paper 3939. Cambridge, Mass.: National Bureau of Economic Research.
Good, David H., Lars-Hendrick Roller, and Robin C. Sickles. 1993. The U.S. Airline Deregulation: Implications for European Transport. *Economic Journal* 103, no. 149: 1028–41.
Goolsbee, Austan, and Chad Syverson. 2005. *How Do Incumbents Respond to the Threat of Entry? Evidence from the Major Airlines*. NBER Working Paper 11072. Cambridge, Mass.: National Bureau of Economic Research.
Gordon, Robert J. 1993. *Productivity in the Transportation Sector*. NBER Working Paper 3815. Cambridge, Mass.: National Bureau of Economic Research.
———. 1996. *Problems in the Measurement and Performance of Service-Sector Productivity in the United States*. NBER Working Paper W5519. Cambridge, Mass.: National Bureau of Economic Research.
Gowrisankaran, Gautam. 2002. *Competition and Regulation in the Airline Industry*. FRBSF Economic Letter 2002-01. San Francisco: Federal Reserve Bank of San Francisco.
Graham, David, Daniel Kaplan, and David Sibley. 1983. Efficiency and Competition in the Airline Industry. *Bell Journal of Economics* 2: 118–38.
Gronau, Reuben. 1970. *The Value of Time in Passenger Transportation: The Demand for Air Travel*. Ann Arbor: UMI.

Guasch, J. Luis, and Robert W. Hahn. 1997. *The Costs and Benefits of Regulation: Implications for Developing Countries*. Policy Research Working Paper 1773. Washington: World Bank. http://www.worldbank.org/html/dec/publications/workpapers/wps1700series/wps1773/wps1773.pdf.
Gulich, Luther. 2005. Notes on the Theory of Organization. In *Classics of Organization Theory*, ed. Jay Shafritz, Steven Ott, and Yong Suk Jang. Washington: Thomson.
Gulich, Luther, and Lyndall Urwick, eds. 1937. *Papers on the Science of Administration*. New York: Institute of Public Administration.
International Labor Office. 1999. *Symposium on the Social and Labor Consequences of Technological Developments, Deregulation and Privatization of Transport*. Geneva: International Labor Office.
Joskow, Paul. 2004. Regulation and Deregulation after 25 Years: Lessons Learned for Research in Industrial Organization. Keynote address at 2004 International Industrial Organization Conference, April, Chicago.
Hahn, A. 2004. *Lessons from Deregulation: Telecommunications and Airlines in the Crunch*. Washington: AEI-Brookings Joint Center for Regulatory Studies.
Hargrave, Andrea Millwood, Geoff Lealand, Paul Norris, and Andrew Stirling. 2006. *Issues Facing Broadcast Content Regulation*. Wellington: New Zealand Broadcasting Standards Authority. http://www.bsa.govt.nz/publications/IssuesBroadcastContent-2.pdf.
Hargrove, Erwin. 1975. *The Missing Link*. Washington: Urban Institute Press.
Harris, Lloyd C., and Emmanuel Ogbonna. 2002. The Unintended Consequences of Culture Interventions: A Study of Unexpected Outcomes. *British Journal of Management* 13: 31–49. Available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=316048.
Harrison, Neil E., ed. 2006. *Complexity in World Politics: Concepts and Methods of a New Paradigm.* Albany: State University of New York Press.
Haunschild, Pamela, and Bilian Ni Sullivan. 2002. Learning Complexity: Effects of Prior Accidents and Incidents on Airlines' Learning. *Administrative Science Quarterly* 47: 609–43.
Hawkins, K. 1984. *Environment and Enforcement: Regulation and the Social Definition of Pollution*. Oxford: Clarendon Press.
Hayes, Wayne. 2001. Good Implementation. *The Public Policy Web, ProfWork*, July 12. http://www.geocities.com/~profwork/pp/implement/good.html.
Heady, Ferrel. 2001. *Public Administration, A Comparative Perspective*, 6th ed. New York: CRC Press.
Healy, Paul M., Krishna G. Palepu, and Richard C. Rubak. 1990. *Does Corporate Performance Improve After Mergers?* NBER Working Paper 3348. Cambridge, Mass.: National Bureau of Economic Research.
Hershberger, S. L., P. C. M. Molenaar, and S. E. Corneal. 1996. A Hierarchy of Univariate and Multivariate Structural Time Series Models. In *Advanced Structural Equation Modeling: Issues and Techniques*, ed. G. A. Marcoulides and R. E. Schumacker. Mahwah, N.J.: Lawrence Erlbaum.
Hill, Charles W. L., and Gareth R. Jones. 2006. *Strategic Management: An Integrated Approach*, 6th ed. Boston: Houghton Mifflin.
Hill, Michael, and Peter Hupe. 2006. *Implementing Public Policy.* Thousand Oaks, Calif.: Sage.
Hirsch, Barry T. 2007. *Sluggish Institutions in a Dynamic World: Can Unions and Industrial Competition Coexist?* IZA Discussion Paper 2930. Bonn: Institute for the Study of Labor. http://ftp.iza.org/dp2930.pdf.
Hoffer Gittell, Jody, Andrew Von Nordenflycht, and Thomas A. Kochan. 2003. *Mutual Gains or Zero Sum? Labor Relations and Firm Performance in the Airline Industry*. MIT Sloan Working Paper 4298-03. Cambridge, Mass.: Institute for Work and Employment Research, Massachusetts Institute of Technology. http://papers.ssrn.com/sol3/delivery.cfm/delivery.cfm/SSRN_ID395447_code030417590.pdf?abstractid=395447.
Hogwood, Brian, and Lewis Gunn. 1984. *Policy Analysis for the Real World*. Oxford: Oxford University Press.
Hollifield, J. F. 1990. Immigration and the French State: Problems of Policy Implementation. *Comparative Political Studies* 23, no. 1: 56–79.
Hood, C. and B. G. Peters. 2004. The Middle Aging of New Public Management: Into the Age of Paradox? *Journal of Public Administration Research and Theory* 14: 267–82.
Jovanovic, Boyan, and Chung-Yi Tse. 2006. *Creative Destruction in Industries*. NBER Working Paper 12520. Cambridge, Mass.: National Bureau of Economic Research.
Kahn, Alfred E. 1988. Surprises of Airline Deregulation. *American Economic Review, Papers and Proceedings* 78, no. 2: 316–22.
———. 1993. Airline Deregulation. In *The Concise Encyclopedia of Economics*. http://www.econlib.org/library/enc1/airlinederegulation.html.
———. 1998. *The Economics of Regulation*. Cambridge, Mass.: MIT Press, 1998.

———. 2004. *Lessons from Deregulation: Telecommunications and Airlines in the Crunch.* Washington: AEI-Brookings Joint Center for Regulatory Studies.
Kaplan, Robert S., and David P. Norton. 2004. *Strategy Maps: Converting Intangible Assets into Tangible Outcomes.* Boston: Harvard Business School Press.
Kaplow, Louis, and Carl Shapiro. 2007. *Antitrust*. Harvard Law and Economics Discussion Paper 575. Cambridge, Mass.: Harvard University Law School.
Keiser, Lael R., and Kenneth J. Meier. 1996. Policy Design, Bureaucratic Incentives and Public Management: The Case of Child Support Enforcement. *Journal of Public Administration Research and Theory* 6, no. 3: 337–64.
Kennedy, Leonard J., and Heather A. Purcell. 2004. Wandering Along the Road to Competition and Convergence: The Changing CMRS Roadmap. Working paper, Nextel Communications, Inc., and Purcell LLC, Denver. Available at http://www.law.indiana.edu/fclj/pubs/v56/no3/Purcell%20Final%202.pdf.
Kerwin, Cornelius. 2003. *Rulemaking: How Government Agencies Write Law and Make Policy*, 3rd ed. Washington: CQ Press.
Kim, E. Han, and Vijay Singal. 1993. Mergers and Market Power: Evidence from the Airline Industry. *American Economic Review* 83, no. 3. (June): 549–69.
Kingdon, John. 2002. *Agendas, Alternatives, and Public Policies*, 2nd ed. New York: Longman.
Knauer, Nancy J. 1997. Reinventing Government: The Promise of Institutional Choice and Government-Created Charitable Corporations. *New York Law School Law Review* 41. Available at http://ssrn.com/abstract=888838.
Kole, Stacey R., and Kenneth Lehn. 1997. *Deregulation and the Adaptation of Governance Structures: The Case of the U.S. Airline Industry*. Simon School of Business Working Paper FR 97-05. Rochester: Simon Graduate School of Business, University of Rochester.
Krugman, P. 2006. Tax Farmers, Mercenaries and Viceroys. *New York Times*, August 21.
Lapre, Michael A. 2006. Reducing Customer Dissatisfaction: How Important Is Learning to Reduce Service Failure? Draft paper, Owen Graduate School of Management, Vanderbilt University, Nashville. Available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=922766.
Lasswell, Harold D. 1936. *Politics: Who Gets What, When, How.* New York: Whittlesey House.
———. 1956. *The Decision Process: Seven Categories of Functional Analysis.* College Park: University of Maryland Press.
Lee, Darin N. 2003. Concentration and Price Trends in the US Airline Industry. *Journal of Air Transport Management* 9, no. 2: 91–101.
Leigh, Andrew, Justin Wolfers, and Eric Zitzewitz. 2003. *What Do Financial Markets Think of War in Iraq?* NBER Working Paper 9587. Cambridge, Mass.: National Bureau of Economic Research.
Lester, James, and Malcom Goggin. 1998. Back to the Future: The Rediscovery of Implementation Studies. *Policy Currents* 8, no. 3: 1–10.
Levine, Michael E. 1987. Airline Competition in Deregulated Markets: Theory, Firm Strategy, and Public Policy. *Yale Journal on Regulation*, Spring, 393–494.
———. 2006. *Why Weren't the Airlines Reregulated?* NYU Law and Economics Working Paper 54. New York: New York University Law School. http://lsr.nellco.org/nyu_lewp/54.
———. 2007. *Regulation, the Market, and Interest Group Cohesion: Why Airlines Were Not Reregulated*. NYU Law and Economics Working Paper 80. New York: New York University Law School. http://lsr.nellco.org/nyu_lewp/80.
Levitt, S. and S. Dubner. 2006. *Freakonomics: A Rogue Economist Explores the Hidden Side of Everything*. London: Penguin.
Lichtenberg, Frank R., and Moshe Kim. 1989. *The Effects of Mergers on Prices, Costs, and Capacity Utilization in the U.S. Air Transportation Industry, 1970–84*. NBER Working Paper 3197. Cambridge, Mass.: National Bureau of Economic Research.
Liedtka, Stephen L. 2002. The Information Content of Nonfinancial Performance Measures in the Airline Industry. *Journal of Business Finance & Accounting* 29: 1105–21.
Light, Paul. 2003. *The Search for Public Service.* Washington: Center for Public Service, Brookings Institution.
Lin, Ann Chih. 2000. *Reform in the Making: The Implementation of Social Policy in Prison.* Princeton, N.J.: Princeton University Press.
Lindblom, Charles E. 1969.The Science of Muddling Through. *Public Administration Review* 38: 232–39.

Lindstädt, René, and Jeffrey K. Staton. 2008. Managing Expectations: When Is It Profitable to Underreport Competence? Draft paper, Trinity College Dublin and Emory University. Available at http://ssrn.com/abstract=1031976.
Lipsky, M. 1980. *Street-Level Bureaucracy: Dilemmas of the Individual in Services*. New York: Russell Sage Foundation.
Llewellyn, S., and E. Tappin. 2003. Strategy in the Public Sector: Management in the Wilderness. *Journal of Management Studies* 40, no. 4: 955–82.
Lowi, Theodore. 1964. American Business, Public Policy, Case Studies, and Political Theory. *World Politics* 15: 677–715.
Lukes, S. 1974. *Power: A Radical View*. London: Macmillan.
Lynn, L. E. 1996. *Public Management as Art, Science and Profession*. Chatham, N.J.: Chatham House.
Maldutis, Julius. 1987a. *Airline Competition at the 50 Largest U.S. Airports Since Deregulation.* New York: Salomon Brothers.
———. 1987b. Testimony of Julius Maldutis Before the Senate Committee on Commerce, Science, and Transportation, November 4.
———. 1993. Industry Investment Requirements: Looking Beyond 2000. Speech to the Seventh International Air Transport Association High-Level Aviation Symposium, Cairo, September 6–7.
Mallaby, Sebastian. 2003. The Place of Government. *Policy Review*, no. 117. http://www.policyreview.org/feb03/mallaby.html.
Manian, K. 2008. *Karunya School of Management Finance Dictionary, from Investopedia*. http://www.karunya.edu/mba/Downloads/FinDir.doc.
Matland, Richard E. 1995. Synthesizing the Implementation Literature: The Ambiguity-Conflict Model of Policy Implementation. *Journal of Public Administration Research and Theory* 5, no. 2 (April): 145–74.
Mazmanian, Daniel, and Paul Sabatier. 1989. *Implementation and Public Policy*. Lanham, Md.: University Press of America.
MacCain Roger A. 2009. *Game Theory and Public Policy*. Edward Elgar Pub.
McCraw, Thomas K. 1984. *Prophets of Regulation*. Cambridge, Mass.: Harvard University Press.
McDonnell, Lorraine, and Richard Elmore. 1987. *Alternative Policy Instruments*. Joint Notes Education Series. Santa Monica, Calif.: RAND Corporation.
Mead, Lawrence M. 2005. Performance Analysis. In *Policy Into Action*, ed. Lennon Marie Claire and Thomas Corbett. Washington: Urban Institute Press.
Meier, K. J., R. D. Wrinkle, and J. L. Polinard. 1995. Politics, Bureaucracy, and Agricultural Policy: An Alternative View of Political Control. *American Politics Quarterly* 23, no. 4: 427–60.
Merton, Robert K. 1936. The Unanticipated Consequences of Purposive Social Action. *American Sociological Review* 1, no. 6: 904.
———. 1996. *On Social Structure and Science*. Chicago: University of Chicago Press.
———. 1998. Afterword: Unanticipated Consequences and Kindred Sociological Ideas—A Personal Gloss. In *Robert K. Merton and Contemporary Sociology*, ed. C. Mongardine and S. Tabboni. New Brunswick, N.J.: Transaction.
Micklethwait, John, and Adrian Wooldridge. 2004. *The Right Nation: Conservative Power in America*. New York: Penguin Press.
MindTools. 2009. Impact Analysis. http://mindtools.com/pages/article/newTED_96.htm.
Mintzberg, H. 1987. Crafting Strategy. *Harvard Business Review*, July–August, 66-75.
———. 1994. The Fall and Rise of Strategic Planning. *Harvard Business Review*, January–February, 107–14.
Mohr, Lawrence B. 1995. *Impact Analysis for Program Evaluation*. Thousand Oaks, Calif.: Sage.
Moore, W. E., and M. M. Tumin. 1949. Some Social Functions of Ignorance. *American Sociological Review* 14:787–95.
Moynihan, D. P. 1969. *Maximum Feasible Misunderstanding.* New York: Free Press.
Morales-Gómez, Daniel, ed. 1999. *Transnational Social Policies: The New Development Challenges of Globalization*. Ottawa: International Development Research Center. http://www.crdi.org/en/ev-9380-201-1-do_topic.html.
Mordkoff, David. 2007. From Bonehead to Chaos: The Demise of the Right to Strike in the Airline Industry. Working paper, University of Virginia.
Morgan Stanley. 2003. *Report on the U.S. Airline Industry*. New York: Morgan Stanley.

Morrell, Peter S., and Nawal K. Taneja. 1979. Airline Productivity Redefined: An Analysis of U.S. and European Carriers. *Transportation* 8, no. 1 (March): 37–49. Available at http://www.springerlink.com/content/p228ml1723334402/.
Morrison, Steven A. 1990. Airline Deregulation. *TransLaw*, Fall. Available at http://www.economics.neu.edu/morrison/research/tlfall90.htm.
———. 2001. Prepared Statement of Steven A. Morrison at the Hearing on Clear Skies or Turbulence Ahead? Subcommittee on Antitrust, Business Rights, and Competition of the Committee on the Judiciary, U.S. Senate, May 2.
Morrison, Steven A., and Clifford Winston. 1986. *The Economic Effects of Airline Deregulation*. Washington: Brookings Institution Press.
———. 1990. The Dynamics of Airline Pricing and Competition. *American Economic Review* 80, no. 2 (Papers and Proceedings of the Hundred and Second Annual Meeting of the American Economic Association, May): 389–93.
———. 1995. *The Evolution of the Airline Industry.* Washington: Brookings Institution Press.
———. 2000. The Remaining Role for Government Policy in the Deregulated Airline Industry. In *Deregulation of Network Industries: What's Next?* ed. Sam Peltzman and Clifford Winston. Washington: AEI-Brookings Joint Center for Regulatory Studies.
———. 2005. What's Wrong with the Airline Industry? Diagnosis and Possible Cures. Testimony at the Hearings before the Subcommittee on Aviation, Committee on Transportation and Infrastructure of the U.S. House of Representatives, September 28.
Morrison, Steven A., Clifford Winston, and Tara Watson. 1999. Fundamental Flaws of Social Regulation: The Case of Airplane Noise. *Journal of Law & Economics* 42, no. 2 (October): 723–43.
Meyers, John, and Thomas Menzies. Airline Deregulation: Time to Complete the Job. *Issues in Science and Technology* 16, no. 2: 24–29. http://www.issues.org/16.2/p_meyer.htm.
Mueller, Clemens. 2000. A Simple Multi-Factor Model of Corporate Bond Prices October. Available at http://ssrn.com/abstract=248369.
Mulligan, Casey B., and Tsui, Kevin. 2006. *Political Competitiveness*. NBER Working Paper W12653. Cambridge, Mass.: National Bureau of Economic Research.
Murray, Michael. 1975. Comparing Public and Private Management: An Exploratory Essay. *Public Administration Review* 34, no. 4 (July–August): 364–71.
Musgrave Abel Richard. 1959. *The Theory of Public Finance: A study in public economy,* McGraw-Hill.
Nakamura, Robert T., and Frank Smallwood. 1980. *The Politics of Policy Implementation.* New York: St. Martin's Press.
Nathan, R. P. 1983. *The Administrative Presidency.* New York: John Wiley.
Ng, Charles, and Paul Seabright. 2001. Competition, Privatization, and Productive Efficiency: Evidence from the Airline Industry. *Economic Journal* 111: 591–619.
Nivola, Pietro, ed. 1997. *Comparative Disadvantage? Social Regulations and the Global Economy.* Washington: Brookings Institution Press.
Noll, Roger. 1997. Internationalizing Regulatory Reform. In *Comparative Disadvantage? Social Regulations and the Global Economy*, ed. Pietro Nivola. Washington: Brookings Institution Press.
Noronha, Gregory, and Vijay Singal. 2004. Financial Health and Product Safety. *Managerial and Decision Economics* 25, no. 1 (January–February): 1–16. Available at http://ssrn.com/abstract=429848.
Norris, Pippa. 2003. Is There Still a Public Service Ethos? Work Values, Experience and Job Satisfaction among Government Workers. In *For the People: Public Service in the 21st Century*, ed. John D. Donahue and Joseph S. Nye Jr. Washington: Brookings Institution Press.
Norton, Rob. 2008. Unintended Consequences. In *The Concise Encyclopedia of Economics*. http://www.econlib.org/library/enc/unintendedconsequences.html**.**
Nutt, Paul. 1986. Tactics of Implementation. *Academy of Management Journal* 29, no. 2 (June): 230–61.
Odenthal, Willy. 1981. Civil Aviation in the Area of the European Civil Aviation Conference: An Evaluation and Possible Developments. *Transport Reviews* 1, no. 2 (April): 189–208.
OECD (Organization for Economic Cooperation and Development). 1997. *Regulatory Reform: A Synthesis*. Paris: Organization for Economic Cooperation and Development.
———. 2004. IV. Oil Price Developments: Drivers, Economic Consequences and Policy Responses. *OECD Economic Outlook*, December. Available at http://findarticles.com/p/articles/mi_m4456/is_76/ai_n13724727/?tag=content;col1.

Oster, C. V., Jr., and Miles McLean. 1987. Air Cargo: Impact of Adapting to Deregulation. *Transportation Research Record* 1147, 25–30.
O'Toole, Laurence, Jr. 1986. Policy Recommendations for Multi-Actor Implementation: An Assessment of the Field. *Journal of Public Policy* 6, no. 2: 181–210.
———. 1988. Strategies for Inter-Governmental Management: Implementing Programs in Inter-Organizational Networks. *Journal of Public Administration* 25, no. 1: 43–57.
———. 1989. Goal Multiplicity in the Implementation Settings: Subtle Impacts and the Case of Wastewater Treatment Privatization. *Policy Studies Journal* 18, no. 1: 1–20.
———. 1993. Inter-Organizational Policy Studies: Lessons Drawn from Implementation Research. *Journal of Public Administration Research and Theory* 3, no. 2: 232–51.
———. 1994. Economic Transition, Constitutional Choice, and Public Administration: Implementing Privatization in Hungary. *Journal of Public Administration Research and Theory* 4, no. 4: 493–519.
———. 1995. Rational Choice and Policy Implementation, *American Review of Public Administration* 25, no. 1: 43–57.
———. 1996. Hollowing the Infrastructure: Revolving Loan Programs and Network Dynamics in the American States. *Journal of Public Administration Research and Theory* 6, no. 2: 225–42.
———.1997a. Treating Networks Seriously: Practical and Research-Based Agendas in Public Administration. *Public Administration Review* 57 (January–February): 45–52.
———. 1997b. Networking Requirements, Institutional Capacity, and Implementation Gaps in Transitional Regimes: The Case of Acidification Policy in Hungary. *Journal of European Public Policy* 4, no. 1: 1–17.
———. 2000a. Different Public Managements Implications of Structural Context in Hierarchies and Networks. In *Advancing Public Management: New Development in Theory, Methods, and Practice*, ed. J. L. Brudney, L. J. O'Toole Jr. and H. G. Rainey. Washington: Georgetown University Press.
———. 2000b. Research on Policy Implementation: Assessment and Prospects. *Journal of Public Administration Research and Theory* 10, no. 2: 263–88.
———. 2004. The Theory-Practice Issue in Policy Implementation Research. *Public Administration* 82, no. 2: 309–29.
Oum, Tae Hoon, and Chunyan Yu. 1995. A Productivity Comparison of the World's Major Airlines. *Journal of Air Transport Management* 2, nos. 3–4: 181–95.
———. 1997. *Winning Airlines: Productivity and Cost Competitiveness of the World's Major Airlines.* Boston: Kluwer Academic Publishers.
Padilla, Alexandre, and Andrei Kreptul. 2004. Government Regulation, Unintended Consequences, and the Rise of Omnipotent Management. Working paper, Metropolitan State College of Denver and Seattle University School of Law. Available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=625703.
Palumbo, D. J., ed. 1987. *The Politics of Program Evaluation.* Newbury Park, Calif.: Sage.
Palumbo, D. J., and D. J. Calista. 1990. Introduction: The Relation of Implementation Research to Policy Outcomes. In *Implementation and the Policy Process: Opening Up the Black Box*, ed. D. J. Palumbo and D. J. Calista. New York: Greenwood Press.
Peltzman, Sam, and Clifford Winston, eds. 2000. *Deregulation of Network Industries: What's Next?* Washington: AEI-Brookings Joint Center for Regulatory Studies.
Persson, Torsten, and GuidoTabellini. 2007. *The Growth Effect of Democracy: Is It Heterogeneous and How Can It Be Estimated?* NBER Working Paper 13150. Cambridge, Mass.: National Bureau of Economic Research.
Peters, Craig T. 2003. *Evaluating the Performance of Merger Simulation: Evidence from the U.S. Airline Industry*. Antitrust Division Economic Analysis Group Discussion Paper 03-1. Washington: U.S. Department of Justice. Available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=399941.
Pindyck, Robert S., and Daniel L. Rubinfeld. 2001. *Microeconomics*, 5th ed. Upper Saddle River, N.J.: Prentice Hall.
Poole, Robert W., Jr., and Viggo Butler. 1999. *Airline Deregulation: The Unfinished Revolution*. Policy Study 265. Washington: Reason for Public Interest Institute. http://reason.org/files/2ad199e8224f814ae006d35fbd9b2924.pdf.
Porter, Michael. 1986. What Is Strategy? *Harvard Business Review*, November–December.
Posner, Richard. 1971. Taxation by Regulation. *Bell Journal of Economics and Management Science* 2: 22–50.
———. 1974. Theories of Economic Regulation. *Bell Journal of Economics and Management Science* 5: 335–58.
Pressman, Jeffrey, and Aaron Wildavsky. 1984. *Implementation.* Berkeley: University of California Press. Orig. pub. 1973.

Rainey, Hal G. 1983. Public Agencies and Private Firms: Incentives Structures, Goals, and Individual Roles. *Administration and Society* 15, no. 2: 207–42.
Rainey, Hal G., Robert W. Backoff, and Charles H. Levine. 1976. Comparing Public and Private Organizations. *Public Administration Review*, March–April, 233–44.
Rainey, Hal G., and Barry Bozeman. 2000. Comparing Public and Private Organizations: Empirical Research and the Power of the A Priori. *Journal of Public Administration Research and Theory* 10, no. 2: 447–69.
Raymond Eve, Sara Horsfall, and Mary Lee, eds. 1997. *Chaos, Complexity, and Sociology: Myths, Models, and Theories.* Thousand Oaks, Calif.: Sage.
Rasenberger, H. 1975. Regulation and Local Airline Service: An Assessment of Risks. *Journal of Air Law and Commerce* 41: 856.
Rasmusen, Eric. 2006. Economic Regulation and Social Regulation. Working paper, Indiana University. http://www.rasmusen.org/social/social.htm.
Rattner, Steven. 2006. The Mother of all Electoral Issues. Wall Street Journal, July 19.
Reich Robert. 2008. *Supercapitalism*. First Vintage Books Edition.
Ring, P. S., and James Perry. 1985. Strategic Management in Public and Private Organizations: Implications of Distinctive Contexts and Constraints. *Academy of Management Review* 10 (April): 276.
Ringland, Gill. 2002. *Scenarios in Public Policy*. New York: Wiley.
Ripley, Randall, and Grace A. Franklin. 1986. *Policy Implementation and Bureaucracy*, 2nd ed. Homewood, Ill.: Dorsey Press.
Rizzo, Mario J., and Douglas Glen Whitman. 2002. The Camel's Nose is in the Tent: Rules, Theories and Slippery Slopes. Working paper, New York University and California State University, Northridge. Available at http://ssrn.com/abstract=352981.
Roberts, Paul Craig. 2003. Did Airline Deregulation Fail? *Washington Times*, September 2. Available at http://vdare.com/roberts/airlines.htm.
Rose, Nancy L. 1990. Profitability and Product Quality: Economic Determinants of Airlines' Safety Performance. *Journal of Political Economy* 98: 944–64.
———. 1991. *Fear of Flying? Economic Analysis of Airline Safety*. NBER Working Paper 3784. Cambridge, Mass.: National Bureau of Economic Research.
———. 2006. Industrial Organization. *NBER Reporter*, Summer. http://www.nber.org/programs/io/io.html.
Rosser J. Barkley. 2009. *Handbook of Research on Complexity*. Edward Elgar Publishing.
Rosser, J. Barkley, Jr. 1981. The Emergence of the Megacorpstate and the Acceleration of Global Inflation. *Journal of Post Keynesian Economics* 3: 429–39.
———. 1983. Reswitching as a Cusp Catastrophe. *Journal of Economic Theory* 31: 182–93.
———. 1990. Chaos Theory and the New Keynesian Economics. *Manchester School of Economic and Social Studies* 58: 265–91.
———. 1991. *From Catastrophe to Chaos: A General Theory of Economic Discontinuities*. Boston: Kluwer Academic Publishers (2nd ed., 2000).
———. 1999. On the Complexities of Complex Economic Dynamics. *Journal of Economic Perspectives* 13: 169–92.
———. 2001. Complex Ecologic-Economic Dynamics and Environmental Policy. *Ecological Economics* 37: 23–37.
———, ed. 2004. *Complexity in Economics: The International Library of Critical Writings in Economics 174, Vols. I–III*. Northampton, Mass.: Edward Elgar.
Rosser, J. Barkley, Jr. 2006. The Nature and Future of Econophysics. In *Econophysics of Stock and Other Markets*, ed. Arnab Chatterjee and Bikas K. Chakrabarti. Milan: Springer.
———. 2009. *Handbook of Research on Complexity*. Northampton, Mass.: Edward Elgar.
Rosser, J. Barkley, Jr., Marina V. Rosser, and Ehsan Ahmed. 2000. Income Inequality and the Informal Economy. *Journal of Comparative Economics* 28: 156–71.
Rosser, J. Barkley, Jr., and Marina V. Rosser. 2004. *Comparative Economics in a Transforming World Economy*. Chicago: Irwin.
Rothstein, B. 1998. *Just Institutions Matter: The Moral and Political Logic of the Universal Welfare State.* Cambridge: Cambridge University Press.
Rubin, Rose M., and Justin N. Joy. 2005. Where Are the Airlines Headed? Implications of Airline Industry Structure and Change for Consumers. *Journal of Consumer Affairs* 39: 215–28.

Rupp, Nicholas G., George M. Holmes, and Jeffrey S. Desimone. 2003. *Airline Schedule Recovery after Airport Closures: Empirical Evidence since September 11th*. NBER Working Paper W9744. Cambridge, Mass.: National Bureau of Economic Research.
Sabatier, Paul. 1991. Towards Better Theories of the Policy Process. *PS: Political Science and Politics* 24: 147–56.
Saetren, Harald. 2005. Facts and Myths about Research on Policy Implementation: Out-of-Fashion, Allegedly Dead, but Still Very Much Alive and Relevant. *Policy Studies Journal* 33, no. 4: 559–82. Available at http://www3.interscience.wiley.com/cgi-bin/fulltext/118651733/htmlstart.
Salamon, Lester. 1989. *Beyond Privatization: The Tools of Government Action.* Washington: Urban Institute Press.
———. 2002. The New Governance and the Tools of Public Action. In *The Tools of Government: A Guide to the New Governance*, ed. Lester Salamon and Odus Elliot. Oxford: Oxford University Press.
Salzano, Massimo, and David Colander. 2007. *Complexity Hints for Economic Policy*. New York: Springer.
Sayre, Wallace. 1958. Premises of Public Administration: Past and Emerging. *Public Administration Review* 18: 102–5.
Scharpf, Fritz. 1997. *Games Real Actors Play*. Boulder, Colo.: Westview Press.
Schindehutte, Minet, Michael H. Morris, and Akin Kocak. 2008. Understanding Market-Driving Behavior: The Role of Entrepreneurship. *Journal of Small Business Management* 46: 4–26.
Schwartz, Marius. 1986. The Nature and Scope of Contestability Theory. *Oxford Economic Papers* (New Series) 38 (Supplement: Strategic Behavior and Industrial Competition): 37–57.
Schneider, Anne L. 1999. Terminator! Who, Me? Some Thoughts about the Study of Policy Implementation. *Policy Currents* 9.
Schultze, Charles. 1977. *The Public Use of Private Interest*. Washington: Brookings Institution Press.
Schumacker, Randall E., and Richard G. Lomax. 2004. *A Beginner's Guide to Structural Equation Modeling*. Mahwah, N.J.: Lawrence Erlbaum.
Schumpeter, Joseph. 1934. *The Theory of Economic Development.* New Brunswick, N.J.: Transaction.
Semenick-Alam, Ila M., and, Robin C. Sickles. 2000. Time Series Analysis of Deregulatory Dynamics and Technical Efficiency: The Case of the U.S. Airline Industry. *International Economic Review* 41, no. 1: 203–18. Available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=241889.
Shleifer, Andrei. 1998. State versus Private Ownership. *Journal of Economic Perspectives* 12, no. 4: 133–50. Available at http://links.jstor.org/sici?sici=0895-3309%28199823%2912%3A4%3C133%3ASVPO%3E2.0.CO%3B2-I&origin=bc.
Sieber, S. 1981. *Fatal Remedies.* New York: Plenum.
Simon, Herbert. 1997. *Administrative Behavior*, 4th ed. New York: Free Press.
Singer, Hal J., and Robert E. Litan. 2007. Unintended Consequences of Net Neutrality Regulation. *Journal on Telecommunications and High Technology Law* 5: 533–72. Available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=942043.
Sivo, S. A. 2001. Multiple Indicator Stationary Time Series Models. *Structural Equation Modeling: A Multidisciplinary Journal* 8: 599–612.
Sivo, S. A., and V. L. Willson. 2000. Modeling Causal Error Structures in Longitudinal Panel Data: A Monte Carlo Study. *Structural Equation Modeling: A Multidisciplinary Journal* 7: 174–205.
Skousen Mark. 2008. *Economic Logic*. Capital Press, Washington DC.
Smith, Adam. 1776. *The Wealth of Nations*. (New York: Bantam, 2003.)
Smith, Patrick. 2004. Shakeup in the Airline Industry. *Washington Post*, November 7, 2004.
Stavins, Joanna. 1996. *Price Discrimination in the Airline Market: The Effect of Market Concentration*. Boston: Federal Reserve Bank of Boston.
———. 2001. Price Discrimination in the Airline Market: The Effect of Market Concentration. *Review of Economics and Statistics* 83, no. 1: 200–202.
Stigler, George. 1971. The Theory of Economic Regulation. *Bell Journal of Economics and Management Science* 2: 3–21.
Swelbar, William S. 2009. *Jim. "Hell No" Berstar and the Fear Mongers; Thomas K. Merton and the Unintended Consequences*. International Center for Air Transportation, Massachusetts Institute of Technology, March 9. http://www.swelblog.com/articles/jim-hell-noberstar-and-thomas-k-merton.html.
ThisNation.com. Definitions of Phrases, Concepts and Ideas Discussed. http://www.thisnation.com/glossary.html.
Thompson, Frank J., and Michael J. Scicchitano. 1985. State Implementation Effort and Federal Regulatory Policy: The Case of Occupational Safety and Health. *Journal of Politics* 47: 686–703.
Tornell, Aaron. 1999. *Privatizing the Privatized*. NBER Working Paper 7206. Cambridge, Mass.: National Bureau of Economic Research.

Trapani, John, and Vincent Olson. 1982. An Analysis of the Impact of Open Entry on Price and the Quality of Service in the Airline Industry. *Review of Economics and Statistics* 64: 118–38.
Tretheway, Michael. 2004. Distortions of Airlines Revenues: Why the Network Airline Business Is Broken. *Journal of Air Transport Management* 10: 3–14.
U.S. Census Statistical Abstract. Various years.
U.S. Social Security Administration. 2000. *Gathering and Using Customer Information to Improve Service to the Public*. Washington: U.S. Government Printing Office.
Van Overtveldt Johan. 2007. *The Chicago School*. A B2 Book AGATE, Chicago.
Vasigh, Bijan, Ken Fleming, and Thomas Tacker. 2008. *Introduction to Air Transport Economics*. Burlington, Vt.: Ashgate.
Vedung, Evert. 1997. *Public Policy and Program Evaluation*. New Brunswick, N.J.: Transaction.
Vietor, Richard H. K. 1992. The Hubris of Regulated Competition in Airlines 1925–1988. In *Regulation: Economic Theory and History*, ed. Jack High. Ann Arbor: University of Michigan Press.
Viscusi, Kip W., Joseph E. Harrington, and John R. Vernon. 2005. *Economics of Regulation and Antitrust*, 4th ed. Cambridge, Mass.: MIT Press.
Wade, H. W. R. 1982. *Administration Law*, 5th ed. Oxford: Oxford University Press.
Waldo, C. D. 1948. *The Administrative State: A Study of the Political Theory of American Public Administration.* New York: Ronald Press.
Waldo, Dwight. 1961. Organizational Theory: An Elephantine Problem. *Public Administration Review* 21 (Fall): 210–15.
Wachter, Michael L., Barry T. Hirsch, and James W. Gillula. 2001. *Difficulties of Regulation When Wage Costs Are the Major Cost*. Paper 01-08. Philadelphia: Institute for Law and Economic Research, University of Pennsylvania. Available at http://ssrn.com/abstract=273978.
Weber, Max. 1949. *The Methodology of the Social Sciences*, ed. Edward Shils and Henry Finch. New York: Free Press.
———. 1968. *Economy and Society*, trans. and ed. Guenther Roth and Claus Wittich. New York: Bedminster Press. (Orig. pub. 1921.)
———. 1997. *The Theory of Social and Economic Organization.* New York: Free Press.
———. 2005. Bureaucracy. In *Classics of Organization Theory*, ed. Jay Shafritz, Steven Ott, and Yong Suk Jang. Washington: Thomson.
Werner, Alan. 2004. *A Guide to Implementation Research*. Washington: Urban Institute Press.
Whinston Michael D. 2008. *Lectures on Antitrust Economics*. The Cairoli Lectures. The MIT Press, Cambridge Massachusetts.
Williams, Walter, Richard Elmore, John Stuart Hall, Richard Jung, Michael Kirst, Susan MacManus, Betty Narver, Richard Nathan, and Robert Yin. 1982. *Studying Implementation*. Chatham, N.J.: Chatham House.
Wilson, James Q. 1982. *The Politics of Regulation*. New York: Basic Books.
———. 1989. *Bureaucracy: What Government Agencies Do and Why They Do It.* New York: Basic Books.
Wilson, Woodrow. 2004. The Study of Administration. In *Public Administration: Concepts and Case*s, 8th edition, ed. Richard J. Stillman III. Boston: Houghton Mifflin.
Winston, Clifford. 1993. Economic Deregulation: Days of Reckoning for Microeconomists. *Journal of Economic Literature* 31: 1263–89.
———. 1998. U.S. Industry Adjustment to Economic Deregulation. *Journal of Economic Perspectives* 12: 89–110.
———. 2006. *Government Failure versus Market Failure: Microeconomics Policy Research and Government Performance.* Washington: AEI-Brookings Joint Center for Regulatory Studies.
Winston, Clifford, and Robert W. Crandall. 2006. Unfriendly Skies. *Wall Street Journal*, December 18. Available at http://www.brookings.edu/opinions/2006/1218corporations_crandall.aspx.
Winter, Soren. 1990. Integrating Implementation Research. In *Implementation and the Policy Process: Opening Up the Black Box*, ed. D. J. Palumbo and D. J. Calista. New York: Greenwood Press.
———. 1999. New Directions for Implementation Research. *Policy Currents* 8: 4.
Wood, B. D. 1992. Modeling Federal Implementation as a System: The Clean Air Case. *American Journal of Political Science* 36: 40–67.
Wood, B. D., and R. W. Waterman. 1991. The Dynamics of Political Control of the Bureaucracy. *American Political Science Review* 85: 801–28.
World Bank. 2005. *Economic Growth in the 1990s*: *Learning from a Decade of Reforms*. Washington: World Bank.
Wright, B. E. 2003. Toward Understanding Task, Mission and Public Service Motivation: A Conceptual and Empirical Synthesis of Goal Theory and Public Service Motivation. Paper presented at Seventh National

Public Management Research Conference, Georgetown Public Policy Institute, Georgetown University, Washington, October 9–11.
Yin, R. 1994. *Case Study Research: Design and Methods.* London: Sage.