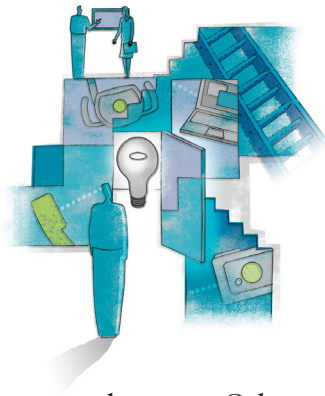


## Air Support: Creating a Safer and More Reliable Air Traffic Control System



ANYONE WHO HAS FLOWN IN THE PAST FEW YEARS for business or leisure understands the cost of flight delays: unpleasant hours on planes and in airports, lost time with family, and missed meetings and connections. In 2007, 24 percent of domestic flights were classified as delayed, even with the padded schedules airlines use to compensate for delay. For the average traveler, delays are the most pronounced symptom of a strained air traffic control system. Other symptoms, such as antiquated technology and rising costs, may be less apparent but are no less worrisome.

In a paper for The Hamilton Project, Dorothy Robyn of The Brattle Group argues that these symptoms reflect a “mismatch” between the nature of air traffic control (ATC) and the way that the government manages the ATC system. She identifies two elements of this mismatch: flaws in governance and flaws in financing. Accordingly, Robyn proposes two major reforms. First, she calls on Congress to shift the operation of the ATC system out of the Federal Aviation Administration and into a new agency within the Department of Transportation. This change would ameliorate the potential conflict of interest posed by the FAA both operating and regulating the system. Second, she proposes that the ATC system be funded through cost-based user fees. This approach would provide appropriate incentives to reduce air congestion and improve customer service.

**THE CHALLENGE**

Over the past few decades, air travel has become increasingly stressful and time consuming for travelers.

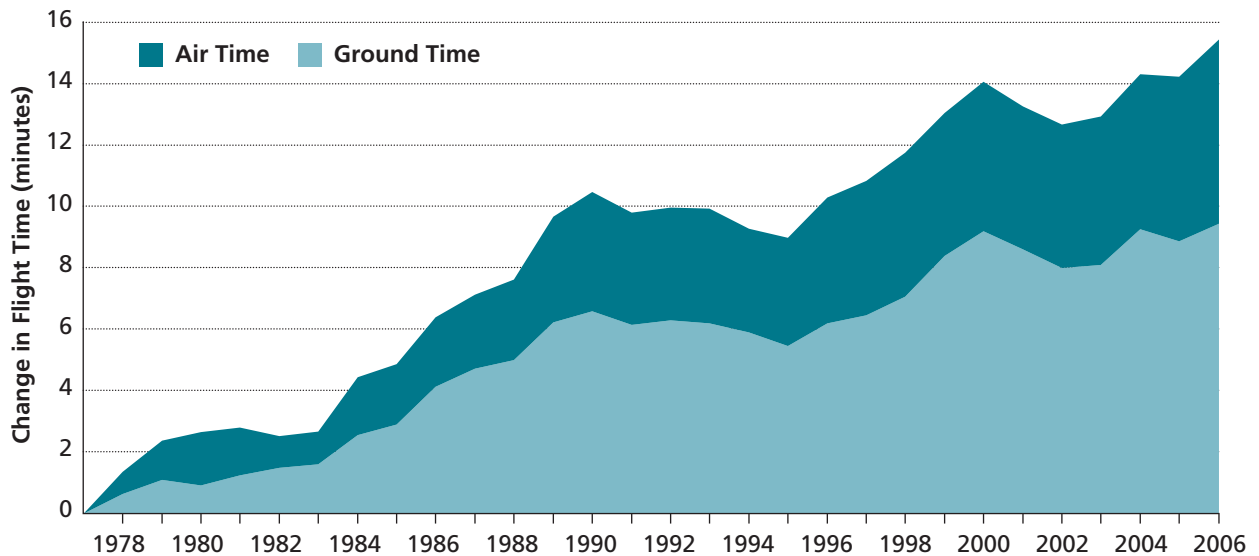
Figure 1 shows the increase in flight travel times over the past three decades. According to the Air Transport Association, the cost of delays to airlines alone was \$8 billion in 2007. These costs are passed along to passengers in the form of higher ticket prices, adding to the lost productivity and frustration that passengers already face from delays. Robyn estimates that delays in 2007 cost passengers about \$4 billion in lost time, for a total cost to airlines and passengers of around \$12 billion. Even these figures, however, underestimate the true costs to passengers. Airlines, expecting major delays, now include extra time in their flight schedules. Department of Transportation delay estimates are based on these already-padded schedules in addition to a generous definition of timeliness.

There are other serious signs of a troubled ATC system besides flight delays. Outdated technology hinders the efficient functioning of the system, which

relies on 1950s-era ground-based radar to guide planes through airspace. Since this radar takes several seconds to transmit, air traffic regulators must maintain a large buffer space between planes, limiting the number of flights in a given area at any given time. Moreover, FAA efforts to update this system have met with delay, cost increases, and, in some cases, outright failure. In 1981, the FAA began ATC modernization that it estimated would cost \$12 billion over ten years. At \$50 billion to date, this effort is still not complete. Experts fear that the same fate will befall NextGen, the satellite-based system scheduled to come on line in the next few decades, or that the newly implemented technology will be obsolete on arrival.

Outdated technology and lagging productivity have also increased costs to the system. Compounding this problem is a decline in average aircraft size, which increases the number of planes that must be served and thereby increases congestion and costs. Higher levels of air traffic, including the introduction of thousands of so-called very light jets into the air system, are expected to exacerbate these problems in coming years.

**FIGURE 1**  
**Changes in Flight Travel Times, 1977-2006**



According to Robyn, flight delays, antiquated technology, and rising costs are actually symptoms of two larger and more fundamental problems. The first is the poor governance structure of the ATC system, which is run as a government bureaucracy rather than as the high-tech service business that it is. Congressional micromanagement encourages the system to be responsive to political goals rather than customer needs. In addition, self-regulation of the air traffic control system creates a potential conflict of interest. The second problem is the way the system is financed. Smaller planes pay significantly less than larger planes to use the system even though they require essentially the same services. This financing structure is not only inequitable but also creates economic inefficiency by encouraging overuse of the system. Robyn discusses the governance and financing problems in detail, emphasizing the mismatch between the role of the air traffic control system and how the federal government manages it.

The current governance structure of the ATC system, which relies on funds appropriated by Congress, constrains the system from functioning optimally and creates a potential conflict of interest. Air traffic control in the United States has historically been provided by the government; currently, the system is operated by the Air Traffic Organization housed in the FAA. Robyn argues, however, that there is no strong need for the government to provide this service: ATC delivers standard services to all customers with a clear mission and measurable performance standards. Moreover, the users of the system are easy to identify and therefore could be made to pay for the services they receive.

Robyn explains that Congressional appropriation of ATC funding allows Congress to micromanage the system. Instead of responding to users of the system, the ATC must be responsive to the political goals of Congress and of its individual members. For example, members of Congress have often cited concern about the loss of jobs in their districts as a reason

“A corporate jet flying from Denver to Phoenix could pay as little as \$133 in taxes while imposing the same costs on the system as a commercial airliner that pays \$1,400 in taxes.”

for blocking large-scale consolidation of the FAA's aging and inefficient facilities even though this step could save hundreds of millions of dollars every year. Compared with Congress, the airlines and aircraft operators—the true customers of the system—have limited ability to provide input or to shape a system that meets their needs. Federal budget rules also give the FAA an incentive to underestimate costs and overestimate benefits of technology to secure funding, leading to poor decisionmaking about investment and expansion.

In addition, the self-regulation of the current system poses a potential conflict of interest for the safety of the system. ATC involves a trade-off between safety and airspace capacity because maintaining a larger buffer between planes means limiting the number of planes that are permitted to fly. In other words, air traffic regulators must decide how much congestion or flight restriction to permit for the sake of safety. But since the FAA both regulates and operates the ATC system, these important decisions regarding safety are made without independent oversight or outside scrutiny.

The problem of financing is another major driver of the inefficiencies of the current system. The ATC system is funded through federal excise taxes on passengers, cargo, and fuel. This financing struc-

## Key Highlights

### The Symptoms

The modern air traffic control (ATC) system faces major flight delays that are expected to increase as a result of a doubling of air traffic by 2025, costing billions of dollars in lost productivity. The system also suffers from antiquated technology and rising costs.

### The Problem

Robyn argues that flight delays, antiquated technology, and rising costs are actually symptoms of two underlying problems plaguing the ATC system:

- **Governance structure.** ATC is a high-tech service business run by a government agency subject to congressional micromanagement and federal budget rules. In addition, the Federal Aviation Administration both operates and regulates the ATC system, creating a potential conflict of interest.
- **Financing.** The ATC system is financed through federal excise taxes. Since these taxes are not linked to the costs imposed on the system, users end up overusing the system and creating delays for others.

### The Solution

Robyn proposes that Congress implement two reforms to improve the safety and reliability of the ATC system:

- **The creation of a separate agency for ATC,** to be known as AirNav, to allow for more business-like operation of the system and independent oversight of safety decisions.
- **The implementation of cost-based user fees** would require users of the ATC system to pay the costs of their use more fully. These fees would reduce air congestion and delay and would make AirNav more responsive to its customers.

ture means that users of the system—airlines and aircraft operators—do not pay an amount proportional to the costs they impose on the system. In particular, large aircraft pay more than small aircraft even though they require essentially the same ATC services and produce a similar amount of airspace congestion. For example, a corporate jet flying from Denver to Phoenix could pay as little as \$133 in taxes while imposing the same costs on the ATC system as a commercial airliner that pays \$1,400 in taxes.

Not only is this financing structure inequitable, but—as one might expect—it results in smaller planes overusing the air traffic control system and creating congestion delays. For example, commercial airlines have increased their use of small regional jets significantly in the last two decades. The average number of seats per flight decreased nearly 30 percent from 1990 to 2007. This upswing in the number of small planes increases costs to the air traffic control system but tends to decrease its revenue.

### A NEW APPROACH

According to Robyn, improving the safety and reliability of the ATC system will require two major reforms by Congress: restructuring governance and imposing cost-based user fees.

According to Robyn, improving the safety and reliability of the ATC system will require two major reforms by Congress: restructuring governance and imposing cost-based user fees.

### Restructuring Governance

Robyn proposes moving the Air Traffic Organization out of the FAA and making it a separate agency within the Department of Transportation. The Air Navigation Services Administration (AirNav), as she would call this new agency, would be in charge of providing all air traffic services. The FAA would retain its other functions, including the regulation of AirNav, but each agency would report separately to the Secretary of Transportation.

The key advantage of this restructuring is the separation of the service provider from the

regulator of the air traffic control system. In this way, the creation of AirNav would eliminate the self-regulation of air traffic services that exists in the current system and reduce the potential conflict of interest. This new structure would ensure that decisions about safety and airspace capacity would have independent oversight and would therefore be transparent to outside observers.

Another advantage of the separation of air traffic services (to be handled by AirNav) and the FAA as different agencies on equal footing is the clarification of the role of service provider versus regulator. Air traffic services, notes Robyn, should function as a business that serves its customers—the airlines and aircraft operators. But, she points out, *regulation* of the air traffic system is not a business: it is a governmental function that should serve the public interest in its oversight of the trade-off between safety and capacity. In the current system, where FAA is both service provider and regulator, it is nearly impossible to separate these functions and use different governance models for each. Removal of air traffic services from its regulatory body would make this separation possible.

One drawback to the separation of air traffic services is that interagency decisionmaking generally takes longer than decisionmaking within an agency. AirNav and the FAA would have to coordinate any instructions coming from the president or Congress, which air traffic services and the FAA now do with greater ease in the same agency. Robyn argues that procedural delays are a small price to pay for a safer air traffic control system.

The logic of separating air traffic services from the FAA begs the question of why air traffic services should not be removed from the government altogether. In fact, Robyn notes, evidence from other countries points to the many benefits of an autonomous ATC system. Countries such as Australia and Canada have achieved significant

This proposal has two major components: imposing cost-based user fees and separating the regulatory and operational responsibilities of the air traffic system.

improvements in quality and efficiency by creating autonomous organizations such as government corporations, stakeholder-owned cooperatives, or public-private partnerships. Autonomy allows ATC to serve its customers and invest in modern technology without political micromanagement. Despite these obvious benefits, Robyn notes, the political landscape in the United States will simply not allow for autonomous ATC. Attempts to achieve autonomy in the past have met with significant opposition. Nonetheless, Robyn argues, simply separating ATC from its regulator is a step in the right direction that could yield dividends in accountability and safety.

### Imposing Cost-Based User Fees

In addition to addressing the safety issue, Robyn also proposes reform of the current financing mechanism for the ATC system, which in her view has contributed to airspace congestion and flight delays, antiquated technology and cost run-ups, and lack of responsiveness to customer needs. Robyn argues that shifting financing to direct cost-based user fees would address many of these problems.

The goal of cost-based user fees is to provide users of the ATC system with better economic incentives. Under the current system, many users—especially operators of small aircraft—do not pay fees commensurate with the costs they impose on the system. Since these users do not pay for the delays

Reforming the air traffic control system would reduce flight delays, improve technology, and create a more efficient system for air travelers.

they impose on other travelers, they often overuse the system. In contrast, cost-based user fees would require all users to face the full costs of using the system. Commercial airlines, for example, would face new price signals. They would be discouraged from using small regional jets, instead shifting to larger planes that hold more passengers and produce less congestion. Business jets would also face fees commensurate with the costs they impose on the system. Air traffic would involve less frustration and delay.

Cost-based user fees would also provide signals to decision makers within AirNav about the optimal areas for expansion of services and investment in technology. The new user fees would indicate areas of greatest demand, allowing decision makers to target resources to particular locations and times. In addition, user fees present an opportunity for AirNav to facilitate modernization of the air traffic control system. AirNav could lower prices for those users that adopt new technology, solving the current waiting game in which users wait to adopt technology until other users have adopted it first.

With this new source of funding, ATC would become more responsive to its customers. The input of airlines and aircraft operators would help design a system that works for its users,

especially for decisions involving new technology and communication among aircraft. AirNav would make better investment decisions by assessing new technologies on their merit rather than anticipating how Congress might perceive them. User fees would therefore improve decisionmaking within ATC services.

## Questions and Concerns

### **The current ATC system has a near-perfect safety record. Why fix what isn't broken?**

Defenders of the current ATC system point to its excellent safety record. Many argue that operation and regulation of the system are inextricably linked and, given this safety record, should not be separated. While it is true that the current system has an excellent safety record, self-regulation of the ATC system nonetheless poses a potential conflict of interest. Both logic and international evidence indicate a positive effect of independent oversight on the transparency of the air traffic control system. The International Civil Aviation Organization recommends separation of the operation and regulation of air traffic control.

### **Would shifting to cost-based user fees really change the behavior of airlines and air travelers?**

Economists have documented significant responses to price signals across a wide range of aspects of behavior. Regarding flight schedules and other aspects of air travel, evidence indicates that airlines, at least, are very price sensitive and would respond to user fees. Simulations of user fees indicate that they would significantly change the relative profitability of large aircraft versus regional jets, prompting airlines to make decisions that are more efficient.

## CONCLUSION

Robyn notes that reform of the ATC system has been attempted in the past with limited success. Taking on political lobbies and an entrenched government agency is no easy task, but this proposal takes that political landscape into account and develops a practical way to move forward despite the obstacles. Although creating an autonomous ATC system would be ideal, Robyn proposes a simpler and more feasible separation of air traffic control, which, with proper implementation, would achieve many of the same goals.

Importantly, Robyn targets the underlying causes of flight delays and inefficiencies that often fly below the radar. She recognizes that the current inefficiency is caused not by ineffective people, but by ineffective governance and financing structures. By linking fees to costs and by turning users into customers, her proposed reforms of misaligned incentives promise to create a more efficient, navigable, and accountable ATC system.

## Learn More About This Proposal

This policy brief is based on The Hamilton Project discussion paper, *Air Support: Creating a Safer and More Reliable Air Traffic Control System*, which was authored by:

### DOROTHY ROBYN

Principal, The Brattle Group

Robyn is a public policy expert who served on President Clinton's economic team. Her research and consulting work have focused on the use of market mechanisms in aviation, telecommunications and other network industries.

## Additional Hamilton Project Proposals

### An Economic Strategy for Investing in America's Infrastructure

This overview paper presents a comprehensive strategy for physical and telecommunications infrastructure policy in the United States. It emphasizes the need to use existing infrastructure more efficiently, improve the way in which infrastructure-related decisions are made, and promote infrastructure as a component of broadly shared growth.

### Physical Infrastructure

Several new papers from The Hamilton Project discuss ways to make better use of physical infrastructure. These policies would encourage users to consider the full costs of their infrastructure use through better pricing mechanisms, while compensating low- and middle-income households with the revenue generated by these mechanisms. These papers include:

- *America's Traffic Congestion Problem: A Proposal for Nationwide Reform* by David Lewis
- *Pay-As-You-Drive Auto Insurance: A Simple Way to Reduce Driving-Related Harms and Increase Equity* by Jason E. Bordoff and Pascal J. Noel
- *Creating a Safer and More Reliable Air Traffic Control System* by Dorothy Robyn

### Telecommunications Infrastructure

Two new Hamilton Project papers on telecommunications infrastructure aim to facilitate technological innovation and share the benefits of technology more broadly. Maximizing the value of telecommunications will require using wireless spectrum—the airwaves that allow devices to communicate—more efficiently and facilitating deployment of high-speed Internet access to rural areas. These papers include:

- *The Untapped Promise of Wireless Spectrum* by Philip J. Weiser
- *Bringing Broadband to Unserved Communities* by Jon M. Peha

**The Hamilton Project** seeks to advance America's promise of opportunity, prosperity, and growth. The Project's economic strategy reflects a judgment that long-term prosperity is best achieved by making economic growth broad-based, by enhancing individual economic security, and by embracing a role for effective government in making needed public investments. Our strategy—strikingly different from the theories driving economic policy in recent years—calls for fiscal discipline and for increased



public investment in key growth-enhancing areas. The Project will put forward innovative policy ideas from leading economic thinkers throughout the United States—ideas based on experience and evidence, not ideology and doctrine—to introduce new, sometimes controversial, policy options into the national debate with the goal of improving our country's economic policy.

### The Hamilton Project Update

A periodic newsletter from The Hamilton Project is available for e-mail delivery. Subscribe at [www.hamiltonproject.org](http://www.hamiltonproject.org).

**The Project is named after Alexander Hamilton**, the nation's first treasury secretary, who laid the foundation for the modern American economy. Consistent with the guiding principles of the Project, Hamilton stood for sound fiscal policy, believed that broad-based opportunity for advancement would drive American economic growth, and recognized that "prudent aids and encouragements on the part of government" are necessary to enhance and guide market forces.

### THE BROOKINGS INSTITUTION

1775 Massachusetts Avenue NW, Washington, DC 20036  
[info@hamiltonproject.org](mailto:info@hamiltonproject.org) ■ 202.797.6279

Copyright © 2008 The Brookings Institution

## THE HAMILTON PROJECT ADVISORY COUNCIL

GEORGE A. AKERLOF  
Koshland Professor of  
Economics, University of  
California, Berkeley  
2001 Nobel Laureate in  
Economics

ROGER C. ALTMAN  
Chairman, Evercore Partners

HOWARD P. BERKOWITZ  
Managing Director, BlackRock  
Chief Executive Officer,  
BlackRock HPB Management

ALAN S. BLINDER  
Gordon S. Rentschler  
Memorial Professor of  
Economics,  
Princeton University

TIMOTHY C. COLLINS  
Senior Managing Director  
and Chief Executive Officer,  
Ripplewood Holdings, LLC

ROBERT E. CUMBY  
Professor of Economics,  
School of Foreign Service,  
Georgetown University

PETER A. DIAMOND  
Institute Professor,  
Massachusetts Institute  
of Technology

JOHN DOERR  
Partner, Kleiner Perkins  
Caufield & Byers

CHRISTOPHER EDLEY, JR.  
Dean and Professor, Boalt  
School of Law – University  
of California, Berkeley

BLAIR W. EFFRON  
Partner, Centerview  
Partners, LLC

HAROLD FORD  
Vice Chairman,  
Merrill Lynch

MARK T. GALLOGLY  
Managing Principal,  
Centerbridge Partners

MICHAEL D. GRANOFF  
Chief Executive Officer,  
Pomona Capital

GLENN H. HUTCHINS  
Founder and Managing  
Director, Silver Lake

JAMES A. JOHNSON  
Vice Chairman, Perseus, LLC  
and Former Chair, Brookings  
Board of Trustees

NANCY KILLEFER  
Senior Director,  
McKinsey & Co.

JACOB J. LEW  
Managing Director and  
Chief Operating Officer,  
Citigroup Global Wealth  
Management

ERIC MINDICH  
Chief Executive Officer,  
Eton Park Capital  
Management

SUZANNE NORA JOHNSON  
Senior Director and  
Former Vice Chairman,  
The Goldman Sachs  
Group, Inc.

RICHARD PERRY  
Chief Executive Officer,  
Perry Capital

STEVEN RATTNER  
Managing Principal,  
Quadangle Group, LLC

ROBERT REISCHAUER  
President, Urban Institute

ALICE M. RIVLIN  
Senior Fellow,  
The Brookings Institution  
and Director of the  
Brookings Washington  
Research Program

CECILIA E. ROUSE  
Professor of Economics  
and Public Affairs,  
Princeton University

ROBERT E. RUBIN  
Director and Chairman of  
the Executive Committee,  
Citigroup, Inc.

RALPH L. SCHLOSSTEIN  
President,  
BlackRock, Inc.

GENE SPERLING  
Senior Fellow for  
Economic Policy, Center  
for American Progress

THOMAS F. STEYER  
Senior Managing Partner,  
Farallon Capital  
Management

LAWRENCE H. SUMMERS  
Charles W. Eliot University  
Professor, Harvard University

LAURA D'ANDREA TYSON  
Professor, Haas School  
of Business, University of  
California, Berkeley

DANIEL B. ZWIRN  
Managing Partner,  
D.B. Zwirn & Co.

DOUGLAS W. ELMENDORF  
Director