

Low Visibility: The Fate of Air Traffic Control Privatization

By Max B. Sawicky*



Center for Economic and Policy Research
1611 Connecticut Ave. NW
Suite 400
Washington, DC 20009

tel: 202-293-5380
fax: 202-588-1356
www.cepr.net

* Max B. Sawicky is an economist and writer in Washington, D.C. The views in this paper should not be attributed to his employers, past or present.

Contents

Executive Summary 1

Introduction 3

The Shuster Principles 3

Privatization and Corporatization 5

Is Air Traffic Control a “Public Good”? 7

How Would a “Corporatized” ANSP Be Run “Like a Business”? 9

Will the Congress Protect a New ANSP From the Congress? 9

Who Will Pay the Piper? 11

Who Will Be in Charge? 11

Efficient Finance of an ANSP 12

The Quest for Service Improvements 15

Measuring ATC Productivity 17

Dilemmas of Accurate Cost Assignment 18

The Need for Technological Modernization 18

Selected Academic Literature Related to ATC Privatization 20

Selected Empirical Research 22

Conclusion 23

References 24

Executive Summary

This paper assesses plans to create an independent air traffic control corporation:

- 1) A private air traffic control system could not offer the normal benefit of a privatized system in a market context, since there is no competitive market for air traffic control services. Furthermore, it is difficult to envision even a modicum of competition over time, since the services involved are highly specialized. Even if the system turned out to be run poorly it is not likely that potential competitors would invest the resources necessary to develop the expertise so that they would be in a position to make a bid to take over the operation of the system.
- 2) The plan for an independent air traffic control operation also would not offer the benefit of shareholders seeking to increase profits by minimizing costs and maximizing efficiency, since there would be no shareholders in the proposals being discussed. In this situation, it is not clear how the incentives for top management would differ from what they are under the current system.
- 3) The current system already allows for the flexibility to outsource certain functions, when it is considered appropriate. For example, some air traffic control towers are privately run under the current system.

While the plans being considered don't seem to offer the benefits that could result from privatization (the possible downsides are not being noted here), they also do not offer obvious resolutions to the problems currently faced by the air traffic control system.

- 1) It will be important to determine if this new independent corporation would have the power to borrow, and if so whether the federal government would be liable for its obligations. If the corporation cannot borrow, the new system will face the same sort of problems raising the capital needed to finance long-term investment. If it can borrow, and the government is liable for its debt, then the government will be allowing a privately operated company to potentially accumulate substantial debt obligation for future taxpayers.

- 2) It is not clear if this new entity will have the freedom to set fees without interference from Congress or what the basis for determining fees would be. If the fees were based on the costs imposed on the system, then there would largely be a per plane fee as opposed to a per passenger fee. This sort of structure would lead to higher charges for private planes and small commuter planes and lower fees for larger planes.
- 3) The rules will have to determine both the obligations of this new corporation and also its freedom to alter the scope of its service. This means, for example, Congress will have to specify whether the new corporation is obligated to provide services for every city or town that wants to set up or add an airport. Furthermore, it will have to determine whether it can change its service subject to change in conditions, such as a fall in air traffic at a specific facility. Congress will have to decide whether it would allow an independent service to shut down a facility where the traffic was no longer sufficient to cover the cost of service.

Since the specifics of a proposal are not currently available, it is not possible to provide a comprehensive assessment of its merits. However, any such proposal will not offer many of the benefits often claimed by advocates of privatization. There also do not appear to be any obvious fixes to the problems faced by the current system as a result of going the route of limited privatization.

Introduction

Notwithstanding a creditable safety record, the Federal Aviation Administration is under fire for mismanagement, particularly in the field of technology modernization. The airline trade association “Airlines for America” (“A4A”) and its member carriers are calling for separation of the FAA’s air traffic control (“ATC”) operations into some kind of independent corporation.

The chairman of the Committee on Transportation and Infrastructure of the U.S. House of Representatives, Rep. Bill Shuster (R-PA), has announced his intention to offer a plan resting on some questionable principles, to be discussed below.

The appeals for reform typically reflect a yearning for system improvement, a lack of specifics, and a dearth of supporting arguments or data. Dorothy Robyn (2015) of the Brookings Institution noted that “a jaw-droppingly flawed variant on corporatization” has attracted support.

It is possible a new air navigation service provider (“ANSP”) could provide better service at reduced cost, but thus far no evidence for such a reform in the U.S. has been put forward, nor has any detailed plan been proposed.

The Shuster Principles

Last June, Bill Shuster, chairman of the House Transportation and Infrastructure Committee, proposed the following principles for FAA reform:

- *Providing a safe, efficient, modern aviation system;*
- *Benefiting passengers with fewer delays and greater reliability;*
- *Fostering innovation;*
- *Keeping America competitive in this vital economic sector.*

These are laudable *objectives* for reform, but in and of themselves they provide no guidance as to what sort of reform, if any, offers any promise. In previous speeches, Shuster has affirmed the “constitutional role” of the Federal government in financing infrastructure (Fitzgerald 2013).

In his speech, Shuster offered little in the way of support for his ideas. He reported that other countries have enacted a similar reform, and he claimed their service improved. Evidence in this vein is considered below.

As Cohen and Eimicke (2008) have noted, “While most government operations could be contracted out, that does not mean they should be contracted out.” Even granting that service under new systems in other countries improved, that does not mean the much larger U.S. system would be improved or could not make more progress under alternative arrangements.

It is true that in many other countries, ATC has been taken out of the realm of direct government control, in the sense of the FAA set-up (Poole 2003). Whether this trend is worth following is a different matter. Citation of models for public service provision in foreign countries tends to be selective. One does not, for instance, observe a clamor for similar trend-following in the case of U.S. health care.

Shuster asserts that governance of the new ANSP would be “fair” and his proposal would meet Constitutional muster, though he could hardly admit otherwise. He advocates a financially self-sustaining organization, which as noted below is a flawed principle. He promises an organization removed from Congressional meddling, one that nevertheless must be designed and approved by Congress in the first place and overseen by the Congress after its establishment. Finally, he emphasizes that safety will be the “highest priority,” notwithstanding the fact that the FAA’s safety-related regulatory functions would be kept separate from the privatized ANSP.

The politicians in the Congress and the White House who control the FAA will always bring an admixture of public-spirited and narrow interests into governance. The desire to escape politics is visible in complaints about the FAA, among many areas of public policy. Of course, competing visions of how a freestanding agency would operate tend to reflect the assorted politics of various advocates.

Two questions will always remain:

- 1) How will politicians agree to isolate this important institution from their own influence? and
- 2) In that event, what sort of new politics would hold sway?

Absent answers to these questions, one can only speculate about the consequences of a radical reform.

Privatization and Corporatization

The most common argument for the provision of a service by a business firm, rather than a government, is that the profit motive will incentivize the firm to minimize costs and maximize benefits to consumers. Less often is it appreciated that this notion is founded in economic assumptions that may not be borne out in reality. Advocacy of a privatized ANSP quickly founders on two elementary economic facts.

First, ATC is a natural monopoly. There would be no competing ANSPs to drive the market for air traffic control to an efficient outcome. Airplanes would not be given a choice of different air controllers to guide a plane to safe landings.

While it is usually acknowledged that the ANSP will be a monopoly, it is less appreciated that its vendor(s) may also fit that description (Sclar 2003; Poole 2003). The reason is that an ANSP requires a significant, specialized technology base that does not lend itself to frequent turnover. The same is true for controllers. The technology vendor must invest in R&D and the “first-mover” whose bid is accepted will invest to a degree that tends to discourage future competitors. Transitions between systems and vendors would be prohibitively costly. Competitive forces cannot be expected on either side of this market.

Second, little of the discussion contemplates the creation of a for-profit organization taking over ATC (Robyn 2015). The only modern example of an independent for-profit ANSP is found in one country: the United Kingdom. The more common idea is some kind of “user cooperative.” The absence of the profit motive undercuts the usual arguments in favor of privatization. For better or worse, the incentives faced by managers of a separate ANSP would not necessarily differ from those of other public employees, nor from the current managers of the current system. It is likely that many would be the same people. There would be no stockholders driving managers to increase profits (although in truth, the extent of such effective pressure in the private sector itself is often lacking as well).

These factors in and of themselves do not obviate some kind of separation of air traffic control from the FAA, but they tend to push traditional privatization pro and con arguments into the background. Robert W. Poole, Jr. of the Reason Foundation, a long-standing champion of privatization, acknowledges (2003) that the potential advantages of outsourcing in the case of ATC do not apply. The question then becomes what sort of reorganization under the rubric of corporatization is envisioned; what are its major, distinctive advantages compared to existing arrangements.

The two most often-cited differences are the separation of the ANSP from Congressional control, thereby precluding meddlesome, politically-inspired micro-management and fiscal disruptions stemming from divided government and ideological polarization, and the ability of a self-sustaining, “off-budget” ANSP to finance its operations with user fees and borrowing.

Critiques of the FAA’s ATC cite burdensome rules pertaining to personnel and procurement, though the FAA’s own Inspector General in an otherwise scathing critique (Scovel 2014) notes that the FAA is not bound by “most Federal government personnel rules,” nor by Federal Acquisition Regulations governing procurement practice in the rest of the Federal government. Evidently the FAA has the legal wherewithal to operate free of “red tape” but it has failed to do so. Why? A guess of the answer is some combination of practical necessity and politics. How alternative arrangements might enable managers to surmount these obstacles is the relevant question.

It could be noted that as things stand the FAA already makes extensive use of private sector contractors. Half of its control towers are operated through contracts (Elias 2015). The contract towers have been found to operate with reduced labor costs and no adverse consequences for safety (OIG, 2012). The FAA also outsources some technology and flight service station operations. (The latter provide weather information and other services to general aviation.) Presumably, assuming the merits can be supported, incremental expansion of these practices is possible without more disruptive corporatization.

Presently, the nation’s ANSP is a Federal government agency that is financed by a combination of excise taxes and general revenue, led by the Executive Branch of the Federal government and accountable to the Congress. Control of the FAA rests on the Administration’s power to appoint its leaders and that of the Congress to determine taxes and appropriations.

The question that has yet to be answered in even minimal detail is how governance of a “corporatized” ANSP would be different. In particular:

- Who would be the ultimate principals of the ANSP, choosing its managers and formulating its tax policies? What incentives would they face?
- Would Congress surrender its control, particularly of taxes or borrowing, to an independent group of governors?
- Would the ANSP have the power to sell bonds in order to borrow money, independently of the Federal government? Would the Federal government be formal or *de facto* guarantors of these bonds? (The latter is generally acknowledged to be the case for other government-sponsored agencies, such as the Federal National Mortgage Association [Fannie Mae], some of whom got into serious difficulties in the wake of the housing bubble bursting.)
- Would the Congress permit an ANSP to accumulate a reserve fund for future purposes? An endemic problem in state and local finance is taxpayer opposition to “rainy-day funds” on the grounds that they reflect over-taxation or function as “political slush funds.”

In the absence of answers to questions such as this, proposals to privatize ANSP cannot be described as a “plan.”

Is Air Traffic Control a “Public Good”?

The best organization of air traffic control depends among other things on whether it should be classified as a “public good.” The two economic principles in question are whether the service can be denied to those who do not pay, and whether the service’s benefits go in part to those who do not directly make use of it. In the first case, where users can be obliged to pay for the service if they use it — in this case flying — there is no public good argument. In the second however, where the safety of those who fly is a profound concern of those who do not, the quality of “publicness” would apply.

Under proposed separation of an ANSP, the vital public interest in safety would remain with the FAA. The bifurcation of safety regulation and ATC operations puts the case for corporatization into question. Responsibility for safety regulation by the FAA could be hampered by the reality of a separate ANSP.

A related safety angle stems from considerations of national security. Protection of U.S. aviation from terrorist threats is an inherently governmental function, and this protection must be embedded in ongoing ATC operations (Sclar 2003).

Robyn (2015) and Poole (2003) suggest that self-regulation under current circumstances, where air traffic control and safety regulation are merged in the FAA, poses its own problems of accountability. Mitigating against this point is the excellent safety record of aviation under FAA auspices. There may be possible gains in efficiency under an independent ANSP, but safety does not seem to be high among currently alleged deficiencies.

It could also be surmised that separating safety regulation from operations raises questions of incentives. The regulatory and operational arms can blame problems on each other, on the grounds that each party lacks full control of the service. Regulators have an incentive to regulate irrespective of costs, while operators have an incentive to operate at reduced costs, with possible risks to safety. Sclar (2003) claims that economies in the Canadian system were based in part on reduced staff, with potential risks to safety. None of these possibilities are new or lack precedent in other arenas of government regulation. Incentive questions arise under proposed as well as current arrangements.

The FAA's Office of Inspector examined safety regulation in Canada, the United Kingdom, and Germany (2015), all countries with privatized arrangements like the one under consideration in the U.S. It did not find risks in the separation of safety regulation from ATC. It is possible that, given the extent of public concern about safety, and given the possible reaction to lapses that result in major calamities, safety would remain a priority under most plausible arrangements. Nobody in charge of any sort of ANSP would evade accountability in the event of a major disaster.

Poole (2003) suggests two further arguments for a separation of safety regulation from ATC operations. One is the ability of an independent ANSP to modernize its technology, making for improved safety. This goes to the problem of efficient procurement. It is not obvious that a corporatized ANSP would do better in this regard than the FAA.

The other is that a new ANSP could purchase liability insurance, implying an additional "layer of safety oversight." The FAA is fully capable of adding layers of oversight as well. When the government does this, it's disparaged as "bureaucracy" and "red tape." Where safety in a public facility is a leading priority, strong oversight by some means is inescapable.

How Would a “Corporatized” ANSP Be Run “Like a Business”?

As noted above, the *sine qua non* of a business in a competitive market is the pressure from competitors and the profit motive. These would both be absent in most models of a corporatized ANSP. Robyn (2015) suggests the ability to sell bonds to private investors is a hallmark of business management. By this definition, the Federal government is already run like a business.

Another analogy may be found in current cases of public utility regulation. Here again, unfortunately, there has been much to criticize from the standpoint of consumer well-being (Johnston 2013). Running like a business also raises the possibility of an ANSP dominated by the airlines (who of course are in business to make money), exploiting their control of a corporatized ANSP to shift costs from airlines to consumers, business aviation, and general aviation.

The FAA Office of the Inspector (2015) defines “running like a business” as generating its own revenue stream and making its own decisions. This is a simplistic, vague criterion that provides little guidance for reform.

The Congress is perfectly capable of providing funds for capital investment. It does so all the time, and it provides funds to the FAA for technology modernization as well. The case for a separate ANSP seems to rest on the idea that the Congress would permit the ANSP to do what it refused to allow it to do under its direct control.

Will the Congress Protect a New ANSP From the Congress?

One critique of current arrangements dwells on the instability of Congressional decisions on the Federal budget. It is well understood that such instability has been founded in divided government

and ideological polarization; as such, Federal government operations of all types are disrupted, across the board. Isolating one particular agency does not speak to the underlying problems.

Suggestions that such uncertainty can be escaped by a privatized entity depend on what sort of wall is constructed between the Congress and the ANSP, by the Congress itself. In any case, Congress is likely to demand accountability for the operations of the ANSP, especially regarding its funding.

Sustainability and stability will depend on revenues, in this case excise taxes paid by passengers, airline companies, and shippers. This raises the question, how stable are the proceeds of such taxes, and will these taxes be properly adjusted as new circumstances demand (GAO 2005).

A negative example may be found in the case of other Federal excise taxes. For instance, taxes on motor fuels for surface transportation have not been revised to keep pace with highway spending, the ostensible rationale for such taxes as a user fee. Nor do policy debates pertaining to motor fuels taxes reckon with the relevance of climate change, also pertinent in the case of excises that finance the FAA.

The contradictory push and pull from Congress is illustrated by the case of the U.S. Postal Service (USPS). The service is organized separately from the Federal government, but it remains subject to interference by the Congress. Congress desires it to be financially self-sustaining, but it has been prevented from taking money-saving measures, such as closing less-utilized local branches or moving into potentially profitable lines of business (Kettl 2015).

The separation of the ANSP from the remainder of the FAA would raise the question of how these separate entities interact, since the FAA would be charged with regulation of the ANSP. Brown et al (2014) report that in the Canadian case, settling of this relationship brought politics back into the ANSP governance, notwithstanding that corporatization was meant to reduce such interference.

Proposals that speak to these problems have yet to see the light of day. Existing appeals sink to the same level as Donald Trump's promise to "abolish Medicare and replace it with something terrific."

Criticism of the FAA by the Congress and others of the purported failures of reform to date (OIG 2016) are a little ironic, since the nature of these reforms was embodied in legislation enacted by the Congress. The new OIG report was released as this paper was being finalized for publication, so a full analysis is beyond our scope.

Who Will Pay the Piper?

There is taxpayer exposure on a number of counts under privatization or “corporatization,” all of which have sad precedents in the annals of U.S. public administration:

- If the new ANSP, necessarily a monopoly producer, controls excise taxes, a thirst for “empire building” could push taxes to excessive levels (Estache and Saussier 2014).
- If the ANSP gets into deep water by living beyond its means, some kind of bailout funded by general tax revenue might be required.
- If ANSP-issued debt becomes unserviceable, the Federal government might have to make good on it. In 2007, the OIG criticized an FAA proposal to obtain independent borrowing authority “presents serious risks.”
- Lack of excise revenue to fund other FAA functions might lead to increased demands on general revenue.

Who Will Be in Charge?

In the absence of competition and a profit motive, the organization of a new ANSP is the central question. The nature of the organization determines the incentives faced by the crucial players. It was already noted that a for-profit enterprise is not on the table. Two other models have been suggested by Robyn (2015):

- A government corporation. Somehow a new ANSP would be separate but connected. There are examples in other countries, but to say that is not to demonstrate that they are comparable cases to the unique U.S. system. The USPS example is a cautionary tale in this regard, as Robyn notes.

- A “user cooperative.” For Robyn, the “users” are the airlines. It might be expected that the users are the actual passengers and shippers, who are after all the consumers of air travel. The saving grace of airlines is that their interests and incentives would be relatively tangible. The interests of individuals plucked from the private sector could be less so. Robyn is optimistic that the Canadian model of public-spirited governance could be transplanted in the U.S., but hope is not a plan.

A more straightforward concern about such a cooperative lies in the interests of airlines themselves. They will be levying passengers and shippers for the cost of ANSP operations through excise taxes that are understood to be user fees. So it is a curious situation of treating passengers and shippers as users when it comes to finance, but not when it comes to control of the ANSP.

Any implication that the interests of airlines and passengers must coincide is open to dispute, not least by passengers themselves. Nor would the interests of general aviation and business aviation necessarily be served by an airline cartel that controlled ATC.

A more arcane but real concern is competition among airlines themselves that manifests in governance decisions. Different airlines have different degrees of presence in different airports, with different market shares in different routes. As DeGood (2015) notes, such disparate corporate interests could act out of discordant regional biases, including with regard to technology upgrades.

Vasig et al. (2014) suggest a variety of additional models in the case of airports that have less relevance to the U.S. debate on ATC, which appears to be boiling down to a choice between the status quo and some kind of corporatization.

Efficient Finance of an ANSP

A common sentiment in the air traffic control debate is the purported merits of a financially self-sufficient organization. Putting aside questions of who would be in charge, it should be considered what efficient finance means. Here, concerns about Congressional interference are set aside.

Presently, the FAA is funded with excise taxes and appropriations from general revenue. Its functions include regulation and research, as well as air traffic control.

Basic principles of public finance suggest the use of user fees for direct beneficiaries of public services, where such beneficiaries can be specifically designated and denied service if they choose not to pay such fees.

The “user pays” principle may be modified or discarded when users are determined by public policy to be indigent or otherwise entitled to some kind of public subsidy. This would not be relevant in the case of airlines, owners of private planes, or air passengers, with a possible exception motivated by concerns about universal service, discussed below.

The objective of user fees is to recover from users the direct costs they impose on a facility, or the costs of providing them with a service. The idea is to provide no more service than that for which users are willing to pay. In this sense, a user fee is like a market price.

There is currently controversy over whether the costs of the existing ANSP are efficiently allocated among direct beneficiaries. For instance, one issue is whether owners of private planes bear their fair share of costs: “fair” in the sense stipulated above, or the costs they impose on the system. In 2007, the OIG testified that “While airspace users pay for the system, the current financing mechanism bears little relationship to the services they actually use and whether they use them at busy or slack times.” It should be noted that costs vary by type of user, by their means of transportation, and by when services are obtained. For instance, to simplify the issue, if it costs the same to land a plane with 50 passengers as one with 200, in principle the latter should pay less on a per-passenger basis. In the same vein, the OIG noted that general aviation (smaller, private planes) may be bearing less than its share of costs. Corporatization in other countries was partly supported by increased charges to general aviation (GAO 2005).

What could be expected under the new governance of a privatized service? Insofar as governors of the new entity act out of narrow commercial interests, it would depend entirely on who was in charge and what rules, if any, would constrain their behavior.

The other basic principle that is undermined is the idea that the ANSP must be self-sustaining financially. There is no *a priori* case that the correct user fees (in the sense of economic efficiency) would provide the right amount of funding for an ANSP. The reason is that to some extent, a portion of the benefits of the ANSP do not flow directly to identifiable users who can be subject to user fees. To some extent, an ANSP is of general benefit to the nation and its economy. In economic jargon, it has the features of a public good. From this standpoint, part of its finance should come from general taxation, not just excise taxes or user fees. A freestanding ANSP solely reliant on user fees might take in either too much or too little revenue. Moreover, dependence on

user fees could distort its decision making in favor of ramping up revenue and neglecting functions providing more general benefits in the national interest.

The example of privatized “self-sustaining” ANSPs does not always apply here. The FAA (2015) reports that ANSPs in the United Kingdom, France, and Germany receive grants for capital investment. Earlier, Sclar (2003) reports that the United Kingdom ANSP required a government bailout.

As things stand, user fees associated with air travel have only a superficial connection to users’ actual costs. Taxing by passenger in the form of ticket taxes does not jibe with the costs of guiding aircraft, since the costs of ATC depends on aircraft, not their passenger counts. The requirement of preventing small planes from colliding is no less pressing than the need to protect larger planes. Taxing fuel, as is currently done, doesn’t fit costs either (Robyn 2015a). (The shortcoming is similar in surface transportation, where wear and tear on roads depends on the types and weights of vehicles more than gasoline or diesel fuel consumption.)

Privatized ANSPs are not immune to similarly flawed tax policies. Germany and the United Kingdom both tax passengers.

The other key financing question concerns investment. A long-standing problem in the Federal budget is inadequate public investment. One factor is the manner of accounting in Federal finance, where expenditures for investment are treated the same as for consumption. (“Consumption” in this context is spending that provides benefits confined to the present, as opposed to expenditures for durable capital goods that provide benefits in the future.)

A familiar nostrum is that government “should be run like a business.” The reality is that business firms of any scale do not treat capital expenditures the same way the Federal government does. Investment spending for plant and equipment is not treated as a current cost of operations. A lack of capital investment, for political reasons reflected in these accounting practices, plagues existing government entities, including the USPS, Amtrak, the Washington, D.C. metro system, and Federal programs pertaining to infrastructure and research in general. This does not bode well for technological modernization of U.S. air traffic control.

Under a “user pays” principle, capital spending should be financed by debt, the debt amortized over the useful life of the capital that is purchased, and debt service paid by user fees. In other words, because capital spending provides a stream of benefits in the future, it should be financed in part by

future users through their user fees. An independent ANSP barred from deficit finance would be burdening current users with payment for future services they may never access.

Alternatively, independent entities with borrowing power can mismanage their affairs and end up burdening the Federal government proper and taxpayers in general. One unfortunate outcome might be levying inadequate user fees in the present that shifted current costs to future taxpayers. This is far from an implausible possibility. It afflicts some pension funds operated by state and local governments, where for short-term political gain, some politicians have failed to make adequate contributions to fund future pension obligations.

The disposition of all of these issues depends on governance of a privatized ANSP, including its power to finance its own operations and investments.

The Quest for Service Improvements

Under the best of circumstances, productivity can be difficult to measure. Keeping in mind that service measurement does not reflect the safety record, some simple measures can be used to consider the FAA's performance in this regard.

The OIG (2014) reported that FAA spending increased by 95 percent between 1996 and 2012. Only in the footnote is it acknowledged that this number is not adjusted for inflation. When inflation is factored out, the increase is 41 percent. On an annual compounded basis, this means an increase of 2.2 percent. This is not out of line with the historic growth of the economy as a whole. A common measure of air traffic is "revenue passenger miles." Between 2000 and 2012, it increased from less than fifty billion to over seventy billion (DOT/BTS), roughly a forty percent increase in just a dozen years.

When it comes to personnel, the FAA has fewer employees (measured in what's called "full-time equivalents") today than in the late 90s, when the economy was much smaller and air travel was at a reduced level. Moreover, the number of controllers is basically flat for that same period of 1996 to 2012. The reduction in activities per controller since 2008 can be attributed to the recession (OIG 2014). Presumably the FAA, nor any ANSP, would be expected to expand or contract its skilled workforce along with the fluctuations in the business cycle. Over the long term, it would be expected that the need for controllers would grow.

The Government Accountability Office (2007) found that “Air traffic controller fatigue, which may result from regularly working overtime, continues to be a matter of concern for the National Transportation Safety Board (NTSB), which investigates transportation accidents, and other aviation stakeholders.” This suggests an inadequate number of controllers.

Under a corporatized ANSP, the same pool of skilled workers would be providing staff. Productivity improvement would depend on some kind of improved management. Chances are many of the managers would be the same people as well.

The OIG attributes the FAA’s failure to improve personnel policies to unionization of air traffic controllers. If eliminating collective bargaining is a goal of corporatization, it should be acknowledged up front. De-unionization could be expected to adversely affect employee hiring, retention, and morale.

Robyn (2015) charges that costs have increased 71 percent since 1997, while admitting that under the same system, they were “flat from 1984 to 1997.” This is curious. Why no increase for thirteen years, then a big increase, all under the same allegedly rotten institutional arrangement?

Can service under an independent ANSP bring reduced delays for passengers and cargo shipments? The usual conditions are that safety must not be compromised, and costs should be reduced.

An OIG report in 2014 criticized the FAA for failure to collect data that enable the productivity gains for most (84 percent) of its efficiency initiatives to be evaluated. This raises the question of what criticism of the FAA is based upon. If the FAA doesn’t measure its own “output,” then nobody else can either. Of course, this doesn’t speak well for the FAA. Whether a corporatized ANSP would do better, however, is an open question.

Presumably there is some normalization of service output to enable comparisons. This requires us to delve into the weeds of how services and costs are measured.

Measuring ATC Productivity

For business firms in the private sector, output can be measured in the value of sales relative to labor. Counting actual outputs can be more difficult in the case of services. Automobiles and haircuts can be counted. Time spent maintaining a database, for instance, can be counted, but the actual actions that go into such an occupation cannot. An extra layer of difficulty comes in many examples of public services, where services are not sold in a market.

In the case of ATC, productivity depends in part on traffic beyond the control of the ANSP. An analogy may be found in the case of two police officers directing traffic. One would not credit the officer at the busier intersection with being a better worker because more traffic was handled. Air travel fluctuates with the business cycle, since some of it is discretionary; it ebbs and flows along with the public's ability to buy trips.

Two measures of productivity discussed by OIG (2014) are “operations” or “instrument flight hours” guided by controllers. If controller compensation is included, these can be expressed as a dollar amount. To gauge productivity, it is only reasonable to consider trends over extended periods, if possible abstracting from changes in the economy.

The controller workforce was basically flat from 2000 to 2012 at around 15,000. This means a measurement of output is heavily dependent on traffic, beyond the influence of the ANSP. In terms of operations, output was 23 percent lower than in 2000 and fell by over 10 percent since 2008 (OIG 2014), the year of the Great Recession. From the latter drop, operations have yet to recover. Any measure of output from the jump-off point of 2008 can be misleading, since this was the beginning of a uniquely serious downturn in the U.S. economy.

Since 2008, the OIG reports that payroll costs per “air traffic activity” increased by 32 percent, once again ignoring inflation and length of time. A simple adjustment for the CPI reduces the increase to less than 7 percent. So the annual increase between 2008 and 2012 is about 1.6 percent.

Comparisons of productivity across nations are confounded by certain factors. For instance, if the general wage level of a country is higher, abstracting from the volume of air traffic, the cost per unit will be higher. As noted above, traffic levels cannot be dictated by the ANSP, and there are limits to

the practicality of adjusting ATC personnel to traffic levels. Varying technologies will also influence productivity differences.

Cost savings might be available under some kind of restructuring. To whom any such savings would redound remains an open question. Automobile owners have learned to not expect immediate and certain reductions in the price of gas at the pump when world oil prices fall.

Dilemmas of Accurate Cost Assignment

By the strict terms of economic efficiency, flights and those who benefit from them ought to bear the cost they impose on the system. Service to less-traveled locations that cost more, due to lack of scale economies and distance, should be charged accordingly. Charges that accurately reflect such costs could render some service prohibitively expensive (ICAOPA 1999).

This problem also arises in public utility regulation and the USPS, since it goes to the value of universal service. In other words, there is some value in inclusiveness that in every isolated instance might not be economical. Inclusiveness may require “cross-subsidies” (Sclar 2003), but cross-subsidies go against the grain of efficient user fees. In the current context, this raises the status of general aviation.

For better or worse, presently such matters are treated by the Congress. A privatized arrangement could imply a different world for general aviation, and not necessarily a more desirable one.

The Need for Technological Modernization

There is little disagreement that U.S. ATC would benefit from new technology. It currently relies on radar instead of the satellite-based systems used in other countries. While safe, it is vulnerable to criticisms on grounds of excessive flight delays and costs to users in terms of expense and lost time.

Among other objectives, privatization aims to free ATC from the existing political and legal constraints on technology procurement. As noted above the paradox of trying to separate control of a public service from politics is to somehow transcend politics.

Constraints on effective procurement that have been cited include reliance on annual Congressional appropriations, an unpredictable funding stream, “pay as you go” budgeting, the absence of capital budgeting practices, and the inability to issue its own debt (meaning, without approval by the Congress).

The FAA has undertaken large-scale modernization in the form of the “NextGen” program, a daunting endeavor. The OIG (2007) described it thusly:

“NextGen is expected to shift today’s ground-based air traffic control system to an aircraft-based system and to significantly enhance controller productivity through automation. This is a high-risk effort of unprecedented scope and complexity that also involves difficult policy questions as well as billion dollar investments by FAA (new systems) and airspace users (new avionics).”

While other countries’ practices in privatization and their advantage of new technology are often cited as evidence supporting a similar reform in the U.S., the FAA’s Office of Inspector General in its case studies of other countries (2015) noted that none of them had undertaken a similar technological transformation, in terms of scale. Rather, their changes were incremental and relied on contracting out to other companies.

In some lines of business, contracting economies can be gained by the use of competitive bidding. Competition depends on the buyer’s ability to substitute vendors and their services in order to drive down bids. ATC technology does not lend itself to this type of opportunity. Systems cannot be cavalierly swapped in and out to cut costs (Sclar 2003; Poole 2003). To the contrary, introducing complex technology requires painstaking development and long-term commitments by both sides of the transaction. In contracting of this sort, monopoly is a feature of the “sell-side” as well as the public agency “buy-side.”

Compared to the nations that have instituted privatized ANSP service, U.S. airspace is different in some crucial respects. First, it is much larger (Elias 2015). It handles more flights, and it includes a larger general aviation constituency (OIG 2015). In 2012, the U.S. had over 200,000 private planes, roughly twice as many as Canada, the United Kingdom, France and Germany combined. The disproportion in number of air traffic controllers and facilities is similar. The FAA (2015) reports that “The FAA controls 60 percent more IFR (instrument flight rule, a measure of service provided) flights than all 40 Eurocontrol ANSPs combined.” Scale is not the only difference either. The FAA conducts research beyond the scope of operations in other countries. There is little doubt that such research is a “public good.” However, if user fees become the sole provenance of a corporatized

ANSP, research becomes more vulnerable to Congressional disposition of discretionary spending. The same concern applies to airport infrastructure, which is also partly financed by user fees (DOT 2015). Other types of non-defense public investment that are in the same category, including R&D, have not fared well over recent decades.

Selected Academic Literature Related to ATC Privatization

As with most questions in economic policy, the merits of any particular measure hinges on the phrase, “it depends.” In the case of privatization, contingent factors include the institutions involved, enabling legislation, competitive forces, the nature of regulation, and the differences in ownerships before and after a restructuring (Guriev and Megginson 2005). There is no automatic answer, pro or con that any particular privatization is recommended on the merits. The uniqueness of particular projects and the variety of related influences makes comparisons difficult.

In the academic literature, privatization analyses may pertain to broad transformations in formerly communist countries or to developing countries. Privatized enterprises in many cases are those that are routinely viewed as belonging in the private sector in advanced industrial nations. Relevance to the ATC discussion in the U.S. is accordingly limited.

A review by Cavaliere and Scabrosetti (2008) finds that the chief motivations for privatization are reducing public debt, promoting financial market development, and increased efficiency. Much of the literature dwells on the nature of contracts embedded in privatization arrangements, but this sort of device has not been contemplated in the U.S. case.

In the grand scheme of the U.S. Federal budget, ATC is never cited as an important driver of deficits and debt. Usually, it is the extent of growth of health care spending and the failure to maintain adequate tax revenue. In some privatizations, the public sector gets a one-time revenue boost from the sale of public assets (not necessarily on good terms), but no such transaction is foreseeable for the U.S. ANSP. It is possible that if ATC is operated at reduced cost, some commensurate reduction in Federal deficits would be attainable.

Since no transition of ATC to any sort of public corporation (one whose ownership shares are held by private sector firms and individuals) is contemplated, financial markets are irrelevant as well. That leaves the objective of improved efficiency.

As noted above, efficiency is ordinarily hoped for when competitive forces and the profit motive are in play. These do not apply in the ATC case either. One is reduced to comparing alternative types of public sector arrangements, the reform version of which has yet to take effect or even be described in any detail. In this sense, the proposed changes in ATC governance are more a problem in public administration than in economic analysis.

Research on the specifics of air traffic control privatization is also limited. There is material on privatization of airports or control towers, but not much on ATC systems in particular. In the U.S. case, one is concerned with a national system that services the greatest workload of air traffic in the world.

It is possible that improved ATC efficiency could expand the economy and invigorate the stock market, though the size of the effects would be nearly impossible to verify. Findings on efficiency effects in past research have been ambiguous (Cavaliere and Scabrosetti 2008; Estache and Saussier 2014). In fact, this has been case when more tangible competitive forces and profit motives are in play. The lack of such factors in the case of ATC underlines the uncertain possibility of improvements. One distinction is between a transition that involves competitive factors and one that entails an ownership change. Either, both, or neither could be important in altering efficiency outcomes. In the ATC case, only what could be loosely described as an ownership change is in question.

One economic matter that does pertain to the ATC question goes to the costs of funding risky, large-scale technology investments. The NextGen effort fits this description. In the private sector, such investments raise the specter of bankruptcy and increase the risk premia associated with the investment (Sappington and Stiglitz 1987). The same investment in the public sector does not raise the same risks. The Federal government will always be able to borrow more cheaply than any private firm, regardless of how well the FAA is run. This might not prove to be the case for a corporatized ANSP that sold bonds to finance its investment. The added costs for such an ANSP could find their way into the costs borne by consumers, airlines, and general aviation. The tax status of these bonds would also have to be resolved (Elias 2015).

The other cost of ATC is labor. Evidence has been cited that under privatization or corporatization, labor compensation can be reduced (OIG 2013). This is properly a matter of public policy and

politics, since such compensation can be decided in the public sector no less than the private sector, nor in the quasi-private setting of a corporatized ANSP. Schleifer and Vishny (1994 cited in Cavaliere and Scabrosetti) found that economies in staffing will not necessarily result from privatization. It should be noted that reduced staffing or compensation are not necessarily desirable, since there could be adverse effects on employee qualifications, labor turnover, morale, safety, and productivity.

Selected Empirical Research

Elias (2015) notes a variety of models exist for ANSP governance, but evidence as to which is superior is lacking:

“There does not appear to be conclusive evidence that any of these models is either superior or inferior to others or to existing government-run air traffic services, including FAA, with respect to productivity, cost effectiveness, service quality, and safety and security.”

While the choice among models may not be clear-cut, the feasibility of corporatized ANSPs, albeit in smaller systems in other countries, has been confirmed by GAO (2005).

Vasig et al. (2014) compared the efficiency of airports in the U.S., the United Kingdom, and Latin American countries. They found that the presence of competitive factors was more salient than ownership structure. In the case of U.S. ATC and its associated lack of competition, their findings underline the doubt that applies to corporatization.

Poole (2003) is devoted to efforts to debunk Sclar (2003). It resorts to repeated arguments from authority, as well as appeals to the existence of privatizations in other, much smaller nations. It makes numerous factual claims but fails to document them.

Conclusion

Air traffic control corporatization in the U.S. is not an impossible proposition, but a successful restructuring depends on a myriad of details concerning governance, tax policy, procurement, and regulation. Competing interests may steer new arrangements into directions that are inefficient, threaten safety, or expose the Federal government to increased costs. The usual advantages thought to be brought by privatization — the pressure of competition and the profit incentive — do not apply. It is instead a problem of reorganizing the provision of a governmental function. The answers are not obvious. At this point in the public debate regarding U.S. air traffic control, “corporatization” is an empty box.

References

- Adams, Anthony W. 2005. "The Effects of Air Traffic Control Privatization on Operating Cost and Flight Safety." *Journal of Aviation/ Aerospace Research*, Article 8, Number 3, Volume 14.
- Brown, Dan, Tom Berry, Steve Welman, and E.J. Spear. 2014. "CAA International Structures." McLean, VA: The MITRE Corporation.
- Cavaliere, Alberto and Simona Scabrosetti. 2008. "Privatization and Efficiency: From Principals and Agents to Political Economy." *Journal of Economic Surveys*, 2008.
- Cohen, Steven A. and William Eimicke. 2008. "The Responsible Contract Manager: Protecting the Public Interest in an Outsourced World." Washington, D.C.: Georgetown University Press.
- DeGood, Kevin. 2015. "4 Essential Questions About Air Traffic Control Privatization." Washington, D.C.: Center for American Progress.
- Elias, Bart. 2015. "Air Traffic Inc.: Considerations Regarding the Corporatization of Air Traffic Control." Washington, D.C.: Congressional Research Service. R43844.
- Eno Center for Transportation. 2015. "Principles for Air Traffic Control Reform." Washington, D.C.: Eno Center for Transportation.
- Estache, Antonio and Stéphane Saussier. 2014. "Public-Private Partnerships: A Short Assessment." Paris, France: Chaire Economie des Partenariats Public-Privé Institut d'Administration des Entreprises.
- Federal Aviation Administration. 2015. "Agency Comments on the Office of Inspector General report." Washington, D.C.: Federal Aviation Administration.
- Fitzgerald, Thomas. 2013. "Shuster uses sales skills for transportation funding." *philly.com*. http://articles.philly.com/2013-07-17/news/40614777_1_shuster-gop-house-house-democrats.
- Gagnon, Pierre. 2015. "Privatization of Airports: the Canadian Model." Montréal, Canada: Aéroports de Montréal.
- Government Accountability Office. 2005. "AIR TRAFFIC CONTROL: Characteristics and Performance of Selected International Air Navigation Service Providers and Lessons Learned from Their Commercialization." Washington, D.C.: Government Accountability Office. GAO-05-769.

- Government Accountability Office. 2007. "AVIATION RUNWAY AND RAMP SAFETY: Sustained Efforts to Address Leadership, Technology, and Other Challenges Needed to Reduce Accidents and Incidents." Washington, D.C.: Government Accountability Office. GAO-08-29.
- Guriev, Sergei and William Megginson. 2005. "Privatization: What Have We Learned?" Presented at ABCDE conference, St. Petersburg.
- Institute for Governance of Private and Public Organizations. 2014. "The Governance of Canadian Airports: Issues and Recommendations." Montréal, Canada: Institute for Governance of Private and Public Organizations.
- International Council of Aircraft Owner and Pilot Associations (ICAOPA). 1999. "Privatization Statement." Frederick, MD: ICAOPA.
- Johnston, David Cay. 2013. "The Fine Print: How Big Companies Use 'Plain English' to Rob You Blind." Portfolio/Penguin.
- Kettl, Donald F. 2015. "Ten Secret Truths About Government Incompetence: What you can learn from the management mistakes of Obama and Bush." The Washington Monthly. http://www.washingtonmonthly.com/magazine/januaryfebruary_2015/features/ten_secret_truths_about_govern053468.php?page=all.
- Office of the Inspector General (OIG) and Federal Aviation Administration. 2007. "FAA's Financing Proposal." Washington, D.C.: Committee on Transportation and Infrastructure, Subcommittee on Aviation, U.S. House of Representatives.
- Office of the Inspector General (OIG) and Federal Aviation Administration. 2012. "Contract Towers Continue to Provide Cost-Effective and Safe Air Traffic, but Improved Oversight of the Program is Needed." Washington, D.C.: Office of the Inspector General (OIG) and Federal Aviation Administration. Report AV-2013-009.
- Office of the Inspector General (OIG) and Federal Aviation Administration. 2014. "FAA Lacks the Metrics and Data Needed to Accurately Measure the Outcomes of its Controller Productivity Initiatives." Washington, D.C.: Office of the Inspector General (OIG) and Federal Aviation Administration. Report Number: AV-2014-062.
- Office of the Inspector General (OIG) and Federal Aviation Administration. 2015. "There Are Significant Differences Between FAA and Foreign Countries' Processes for Operating Air Navigation Systems." Washington, D.C.: Office of the Inspector General (OIG) and Federal Aviation Administration. Report Number: AV-2015-084.
- Office of the Inspector General (OIG) and Federal Aviation Administration. 2016. "FAA Reforms Have Not Achieved Expected Cost, Efficiency, and Modernization Outcomes." Washington, D.C.: Office of the Inspector General (OIG) and Federal Aviation Administration. Report Number: AV-2016-015.

- Oster, Clinton V., Jr. 2015. "Cited Problems with the Current Air Traffic Control System and Concerns about Changing the Organizational Structure." Bloomington, IN: Indiana University.
- Poole, Robert W. Jr.. 2003. "Why an Air Traffic Control Corporation Makes Sense: Response to the NATCA White Paper." Washington, D.C.: The Reason Foundation.
- Robyn, Dorothy. 2015. "Hearing on 'Options for FAA Air Traffic Control Reform.'" Washington, D.C.: Subcommittee on Aviation, Committee on Transportation and Infrastructure.
- Robyn, Dorothy. 2015. "Alternative governance models for the air traffic control system: A user cooperative versus a government corporation." Washington, D.C.: The Brookings Institution. <http://www.brookings.edu/blogs/fixgov/posts/2015/04/06-faa-user-cooperative-government-corporation-robyn>.
- Robyn, Dorothy. 2015. "It's time to corporatize air traffic control (the right way)." Washington, D.C.: The Brookings Institution. <http://www.brookings.edu/blogs/fixgov/posts/2015/09/28-corporatize-air-traffic-control-robyn>.
- Sclar, Elliott. 2003. "Pitfalls of Air Traffic Control Privatization." Omaha, NE: The HDR Management Consulting Group.
- Scovel, Calvin L. III. 2014. "Status of FAA's Efforts to Operate and Modernize the National Airspace System." Washington, D.C.: Committee on Transportation and Infrastructure United States House of Representatives. Testimony.
- Shuster, Bill. 2015. Prepared Remarks. Aero Club of Washington. http://transportation.house.gov/uploadedfiles/aero_club_speech.pdf.
- U.S. Department of Transportation (DOT). 2015. "Budget Estimates, Fiscal Year 2016, Federal Aviation Administration." Washington, D.C.: DOT.
- U.S. Department of Transportation, Bureau of Transportation Statistics (DOT/BTS). 2016. "Airline Revenue Passenger Miles. Washington, D.C: DOT/BTS. <http://www.transtats.bts.gov/osea/seasonaladjustment/?PageVar=RPM>.
- Vasig, Bijan, G. Rod Erfani, and Brian W. Sherman. 2014. "Airport Performance and Ownership Structure: Evidence from the United Kingdom, United States, and Latin America." *Journal of Aviation Technology and Engineering*, Vol 4, No 1, pp 40–49.