AMTRAK SUBSIDIES AND TRANSPORTATION EXTERNALITIES

Gerard J. McCullough
University of Minnesota

It is not entirely clear why Congress voted to establish the National Railroad Passenger Corporation in 1970. The Declaration of Purpose (Sec. 101) of the Rail Passenger Service Act finds intercity passenger service "a necessary part of a balanced transportation system" and refers to the need "to end the congestion on our highways and the overcrowding of airways and airports." Participants in the legislative process have claimed that the underlying reason was to preserve essential freight service by ridding financially troubled Class I railroads of the burden of subsidizing passenger service.

Whatever the initial rationale, while Amtrak may have helped to facilitate the financial recovery of the freight railroads, it has not had a significant effect at a national level on air and highway congestion. In 1971 railroad passenger service accounted for 0.7 per cent of domestic intercity passenger miles(Eno Foundation, Transportation in America, 1995, p. 47). In 1994, after 25 years of subsidies to Amtrak, the market share was 0.6 percent (ibid). It is only along the Northeast Corridor between Boston, MA and Washington, DC, that rail has a noticeable share (about 6 percent) of intercity passenger-miles (FRA, High Speed Ground Transportation in America, 1996, Overview Report p. O-35.).

Thin ridership levels explain Amtrak's minimal impact on air and highway congestion, and also account for the financial difficulties which have plagued the corporation since its founding. The aim of the 1970 Act was that Amtrak become a "for profit" corporation, but Amtrak revenues have never been sufficient to cover costs. The US General Accounting Office has warned recently that, despite large annual federal subsidies for operating and capital, Amtrak is in danger of running out of cash in 1998 (Phyllis F. Scheinberg, "Amtrak's Financial Condition and Decisions Facing the Congress," US GAO, June 10, 1997).

The Clinton Administration has proposed an answer to the Amtrak financial crisis which would make the corporation eligible for funding from the national Highway Trust Fund. Title VIII of the proposed National Economic Crossroads Efficiency Act (NEXTEA) would provide $1.3 billion in operating subsidies and $2.5 billion in capital subsidies to Amtrak from the Highway Trust Fund over the next six years. The bill also would allow individual states to allocate shares of their National Highway System (NHS) funds and Surface Transportation Program (STP) funds to Amtrak.

The Clinton proposal would provide Amtrak with multi-year funding from a trust fund flush with cash from federal gasoline tax receipts. This gives Amtrak security and a longer planning horizon, but it also raises the question of non-user benefits in a pointed way. Intercity passenger rail service has the potential to reduce highway and airport congestion and highway-related air pollution and safety risk. Should highway users be required therefore to subsidize Amtrak? Should the Airport Trust Fund be used instead of (or in addition to) the Highway Trust Fund? Should the cost of subsidizing Amtrak be spread more broadly across all taxpayers? Or should Amtrak users themselves be required to cover the costs of the system?

The conclusion suggested in this note is that non-user benefits (externalities) do not provide a rationale for non-user subsidies to Amtrak. While intercity highway and air transportation do generate significant external costs in the form of congestion and pollution, the best means for government to deal with these external costs are regulation and pricing. Intercity rail service may play a significant role in intercity markets where congestion and pollution are properly controlled, but this does not justify subsidies to intercity passenger rail.

From a formal economic perspective, an externality is said to exist when the voluntary actions of one agent (firm or household) impose costs or benefits on another agent without that agent's consent. The classic example of a production externality is a steel mill located on a river upstream from a fishery. The mill produces steel for its customers and polluted water which affects fish production. Labor and intermediate goods impose internal costs faced by the mill and the fishery. Water pollution is an external cost faced by the fishery.

The problem is that there is no market for pollution, no mechanism which enables the fishery to bid against the steel mill for the use of unpolluted water. If (in this very hypothetical example) water pollution were the only pollution generated by the mill, and the fishery were the only agent affected by it, the external cost of the mill's activity would be the magnitude of lost fish production times the market price of fish.

Transportation services benefit their users but also involve significant external effects. One's use of a crowded highway imposes costs on other users and on society which do not figure into one's decision to use the highway. The external effects range from local, short-term impacts on congestion and on sound and air quality, to long-term, global effects on the atmosphere. The effects include include air pollution, water pollution, noise, accidents, land use impacts, and congestion.

The first effort by the US Department of Transportation to quantify these effects was Appendix E of the Federal Highway Administration's 1982 Highway Cost Allocation Study. Recent studies by the Transportation Research Board (1996) and the Federal Railroad Administration (1997) extend the FHWA methodology and provide detailed, corridor-by-corridor estimates of transportation externalities (TRB Paying Our Way (Special Report 246) and FRA High Speed Ground Transportation for America).

The FRA study, a Congressional-mandated analysis of two current and six proposed high-speed passenger corridors, recognizes two basic types of externalities relevant to intercity passenger rail. The first are congestion externalities resulting from crowding of highways and the national air system (NAS). The second are air pollution externalities resulting from automotive exhaust. The FRA estimates the external costs of congestion at $2,000 per plane-hour-delay for airline operators, $39.03 per passenger-hour-delay for airport users, and $10.88 per passenger-hour-delay for highway users. The estimated external costs of emissions range from $15 per ton for carbon dioxide to $26,400 per ton for nitrous oxide in non-attainment areas like California (FRA, op. cit., Draft Main Report, pp. 6-6, 6-7).

These external costs are counted as potential benefits in the FRA study, based on the potential diversion of airport and highway users onto the rail system. For example, on the Chicago Hub, a proposed high speed rail network linking Chicago with Detroit, Milwaukee and St. Louis, FRA predicts that upgraded, 110 mile-per-hour service train service would divert about 2.0 million highway and 2.5 million air trips per year. Over the projected 40-year life of the system, the Chicago Hub would save $623 million in aircraft delays, $1.16 billion in air passenger delays, $692 million in auto occupant delays, and $115 million in reduced emissions, according to the FRA (FRA, op. cit., Draft Main Report, Statistical Supplement, pp. 8-9)

These public benefits projections would play an important role in justifying investments in intercity rail passenger systems. For example, the FRA estimates that the Chicago Hub system would generate $1.8 billion in passenger revenues in its lifetime, but would cost $2.7 billion in capital investment and in operating and maintenance expenses (ibid). The projected $2.6 billion in public benefits are critical to the Chicago Hub project and to other potential corridors studied by the FRA. (The FRA has suggested that a broader measure of value be used to evaluate projects but this measure is more controversial than the external benefits measure. Treatment of the FRA's broader measure is beyond the scope of this note.)

The problem with using highway and airport costs to justify subsidies to passenger rail is that there are more direct and efficient means to correct externalities. In the hypothetical steel mill case, for example, a government agency could regulate the amount of pollution which the mill generates, or it could charge the mill a fee for polluting the water. The quantity constraint (or the fee) would be based on the value of fish production and would force the steel company to take the value of fish into account in its steel production decisions. Unless the fish were extremely valuable, it would not make sense to halt the mill's operation entirely. Nor would it make sense to use general tax revenues to subsidize the operation on inland steel mills. The efficient solution is to require the polluters themselves–in this case steel producers and consumers–to pay the full social cost of steel.

The same is true for air and highway externalities. There is an extensive set of control measures available which would force highway users to internalize the environmental costs of operating motor vehicles. These include direct emission fees, tradable permits, strict compulsory inspection and maintenance of emission control systems, mandatory use of low polluting vehicles, and compulsory scrappage of older vehicles. Similar measures are available to force air system and highway users to internalize the costs of congestion. These include highway tolls and parking charges, and airport landing fees and gate fees.

There are political difficulties in implementing these solutions because they require the polluters to pay the full costs of automobile and air congestion–and there are many polluters–but providing subsidies to Amtrak to reduce highway and air externalities presents serious practical and theoretical difficulties.

From a practical standpoint, for a subsidy to be effective there must be a relatively high cross elasticity between the mode which has a high social cost and the subsidized mode. The FRA's projections notwithstanding, Amtrak has not demonstrated its ability to compete effectively with air or highway modes in any major corridor except the Northeast Corridor.

On a more theoretical level, subsidies to competing modes are inefficient because they fail to target the amounts that individual transferees require to shift modes. The payments come in the form of large, undifferentiated subsidies for capital or for operations.

Where all of this leaves intercity passenger rail is hard to know. The current intercity market has been distorted for many decades by government failure to intervene effectively and to require users to pay the full costs of congestion and pollution. Studies by various economists have indicated that users of some portions of the National Highway System should be paying significantly higher amounts. A rational set of highway tolls might increase demand for intercity passenger rail. On the other hand, the Federal Aviation Administration's own cost allocation work suggests that commercial airline passengers are paying too much for air traffic control services. Reduced air traffic control fees might

lower airline ticket prices and reduce rail ridership.

In the final analysis, the question of whether passenger rail would play a role in properly priced intercity markets is an empirical question, which should be investigated, but which is well beyond the scope of this brief note. The prescription suggested for Amtrak though is to provide the highest level of service possible at the lowest possible cost in order to compete effectively in markets which are rationally priced. One would not expect access to the Highway Trust Fund to move Amtrak necessarily in this direction.