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High-speed railroading

America’s system of rail freight is the world’s best. High-speed passenger trains could ruin it

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- Timekeeper

UNION STATION in Los Angeles has been restored as a fine example of the Art Deco architecture that typified California in the 1930s. It has served as a backdrop for many Hollywood films, from “Union Station” (naturally) to “Blade Runner” and “Star Trek: First Contact”. It was the last grand station to be built before America's passenger railways went into what you might call terminal decline.

Today it is a hub for Metrolink commuter trains and Amtrak services to faraway cities such as Chicago and Seattle. These trains have to pull in and then back out in a clumsy manoeuvre. But there are plans for through tracks in time to carry the high-speed services that California is desperate to have by 2020 under an ambitious $42 billion plan to connect San Diego, Los Angeles, San Francisco and Sacramento.

California's plans were given a boost by Barack Obama's stimulus package last year. This earmarks a lump sum of $8 billion, plus $1 billion a year, to help construct fast rail corridors around America (see map). Such lines are common in Europe, Japan and, increasingly, China, yet the only thing at all like them in America is Amtrak's Acela service from Boston via New York to Washington, DC. It rarely reaches its top speed of 150mph (240kph) and for much of the way manages little more than half that, because the track is not equipped for higher speeds. Acela, like virtually all trains run by publicly owned Amtrak, has to use tracks belonging to freight railways, whose trains trundle along at 50mph; passenger trains must stick below 80mph. Despite the excitement of railway buffs and the enthusiasm of environmentalists, high-speed rail in America is likely to mean a few more diesel-electric intercity trains at 110mph, not swish electric expresses going nearly twice as fast.

But the problem with America's plans for high-speed rail is not their modesty. It is that even this limited ambition risks messing up the successful freight railways. Their owners worry that the plans will demand expensive train-control technology that freight traffic could do without. They fear a reduction in the capacity available to freight. Most of all they fret that the spending of federal money on upgrading their tracks will lead the Federal Railroad Administration (FRA), the industry watchdog, to impose tough conditions on them and, in effect, to reintroduce regulation of their operations. Attempts at re-regulation have been made in Congress in recent years, in response to rising freight rates. “The freight railroads feel they are under attack,” says Don Phillips, a rail expert in Virginia.

America's railways are the mirror image of Europe's. Europe has an impressive and growing network of high-speed passenger links, many of them international, like the Thalys service between Paris and Brussels or the Eurostar connecting London to the French and Belgian capitals. These are successful—although once the (off-balance-sheet) costs of building the tracks are counted, they need subsidies of billions of dollars a year. But, outside Germany and Switzerland, Europe's freight rail services are a

fragmented, lossmaking mess. Repeated attempts to remove the technical and bureaucratic hurdles at national frontiers have come to nothing.

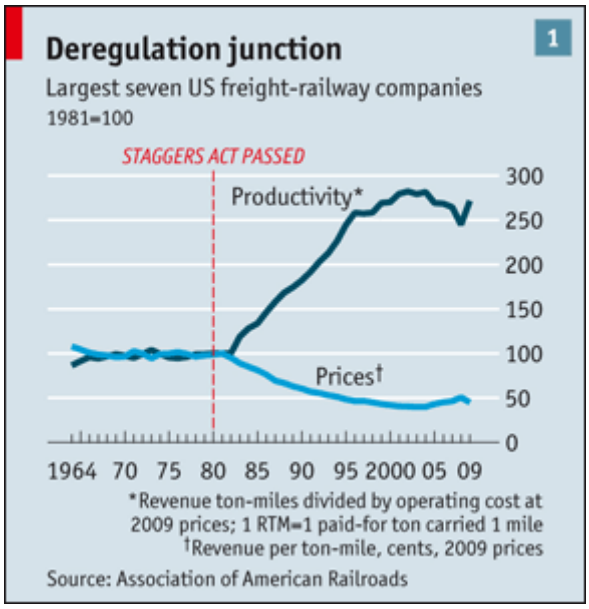
Staggering progress

Amtrak's passenger services are sparse compared with Europe's. But America's freight railways are one of the unsung transport successes of the past 30 years. They are universally recognised in the industry as the best in the world.

Their good run started with deregulation at the end of Jimmy Carter's administration. Two years after the liberalisation of aviation gave rise to budget carriers and cheap fares, the freeing of rail freight, under the Staggers Rail Act of 1980, started a wave of consolidation and improvement. Staggers gave railways freedom to charge market rates, enter confidential contracts with shippers and run trains as they liked. They could close passenger and branch lines, as long as they preserved access for Amtrak services. They were allowed to sell lossmaking lines to new short-haul railroads. Regulation of freight rates by the Interstate Commerce Commission was removed for most cargoes, provided they could go by road.

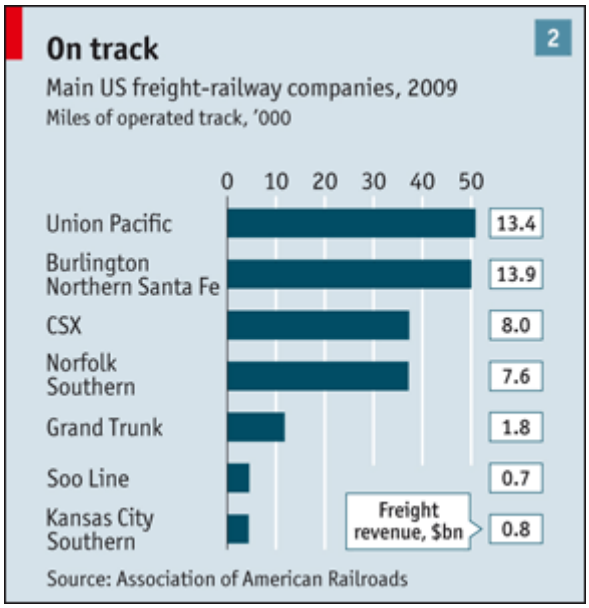
Before deregulation America's railways were going bust. The return on capital fell from a meagre 4.1% in the 1940s to less than 3% in the 1960s. In 1970 the collapse of the giant Penn Central caused a huge shock, including a financial crisis. By 1980 a fifth of rail mileage was owned by bankrupt firms. Rail's share of intercity freight had slumped to 35% from 75% in the 1920s. Tracks were neglected and fell into disrepair, leading to a downward spiral of speed restrictions and deteriorating service. The term “standing derailment” was coined to describe the toppling-over of stationary freight wagons when the track gave way beneath their wheels.

Several factors had combined to bring about this sorry state of affairs. Services and rates were tightly regulated. Companies were obliged to run passenger services that could not make a profit. And road haulage received a huge boost from the building of the interstate highway system, which began in the late 1950s. Although this was supposed to be financed by taxes on petrol and diesel, railmen saw it as a form of subsidy to a new competitor, the nationwide trucking industry. In a neat twist, the poor condition of today's highways and the lack of public money for repairs have tilted the competitive advantage back to a rejuvenated rail-freight industry.



Giving the railroads the freedom to run their business as they saw fit led to dramatic improvements. The first result was a sharp rise in traffic and productivity and fall in freight costs. Since 1981 productivity has risen by 172%, after years of stagnation. Adjusted for inflation, rates are down by 55% since 1981 (see chart 1). Rail's share of the freight market, measured in ton-miles, has risen steadily to 43%—about the highest in any rich country.

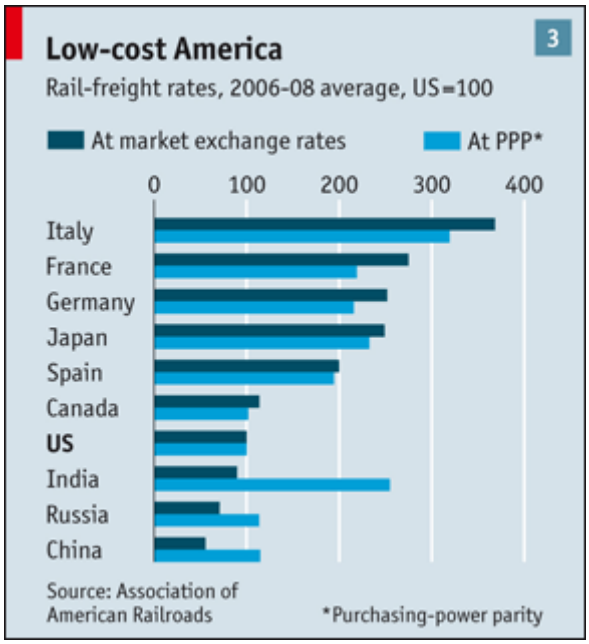
The $34 billion purchase last year by Warren Buffett's Berkshire Hathaway of Burlington Northern Santa Fe (BNSF), one of the seven main freight railways (see chart 2), opened many Americans' eyes to the industry's significance. That America's shrewdest investor should place his biggest bet on BNSF focused attention on how the country's railways have been quietly boosting the economy by sucking costs out of many supply chains.



Coal is the biggest single cargo, accounting for 45% by volume and 23% by value. More than 70% of coal transport is by rail. As demand grows for the lower-sulphur coal

from the Powder River Basin in Wyoming, it has to travel farther. In response railroads have invested in more powerful locomotives to haul longer coal trains: since 1990 the average horsepower of their fleet has risen by 72%. Yet energy efficiency has also improved. Lighter, aluminium freight wagons, double-decker ones and more fuel-efficient locomotives have lifted the number of ton-miles per (American) gallon of fuel from 332 to 457—an improvement of 38%.

But the fastest-growing part of rail freight has been "intermodal" traffic: containers or truck trailers loaded on to flat railcars. The number of such shipments rose from 3m in 1980 to 12.3m in 2006, before the downturn caused a slight falling back. Behind this lies the tide of imports coming into the West Coast ports of Long Beach and Los Angeles. A special rail expressway for freight, the Alameda Corridor, was opened in 2002 to link the ports to the big national rail routes, bypassing the 200 level crossings (grade crossings, in America) on the original branch lines that used to cause huge traffic jams on the roads as mile-long freight trains rumbled across. The corridor, one of the biggest infrastructure projects in modern America, was completed on time and on budget for $2.4 billion by a public-private partnership considered by many to be a model for other rail schemes, such as California's proposed high-speed passenger line.



Despite lots of investment—amounting to $460 billion since 1980, and equivalent to 40% of revenues in recent years—capacity constraints and rising fuel costs pushed up freight rates from 2003 until the onset of recession, since when they have levelled off. This has caused unhappiness among some coal companies which have no alternative means of transport. Although most American rail corridors involve two railroads covering the same origin and destination points, in reality competition is limited. Usually one route is more direct than the other, and if a mining company has sidings and a branch line linked to one railroad it cannot quickly and easily switch to another. Even so, American rail freight is among the cheapest in the world, costing less than half as much as in Japan or Europe. After adjusting for differences in purchasing power it is cheaper even than in China (see chart 3).

But the past ten years have seen another source of growth, as interstate highways have become clogged in places and have shown the effects of a lack of investment. Since one freight train can carry as much as 280 lorries can, railways can help to limit the rise in road congestion. Trucking companies such as J.B. Hunt have come to see the advantage of putting trailers on flat wagons for long-haul and using roads only for local pickup and delivery. This move was also spurred, according to Mr Phillips, by a shortage of lorry drivers. He says that tougher drink-driving rules and social changes have shrunk the numbers of "good ole boy" truckers inured to a life on the road. Most hauliers now suffer labour turnover of 100% a year.

Freight railways' very success is starting to create difficulties for them. The Department of Transportation estimates that many are already exceeding their theoretical capacity and are congested. It estimates that lots more investment will be needed, because capacity will have to rise by nearly 90% to meet forecast demand by 2035. The investment bill could rise yet more because of a change in the pattern of trade: in 2014 the Panama Canal opens a second lane, doubling its capacity and allowing it to carry bigger container vessels and bulk ships. Coming through to Gulf of Mexico and East Coast ports, these vessels will increase the need for better rail links inland.

In addition the freight railroads face a $15 billion bill for a new safety system to control trains on lines that also carry passengers or dangerous chemical cargoes. This system, Positive Train Control (PTC), is intended to stop or slow a train automatically if a driver goes too fast or passes a red signal. The bill to introduce PTC was signed by George Bush in 2008 only a month after a crash between a Metrolink commuter train and a Union Pacific freight train in California, causing 25 deaths and 135 injuries. The railway companies complain that only 3% of crashes are caused by the sort of human error that PTC is designed to avert and that claims that the system will improve efficiency on the network are unfounded. Whereas the FRA says that the new safety system will apply to only 65,000 miles (out of a total of over 140,000), the industry reckons it will cover more than half the network. The railways are seeking tax breaks and other subsidies to reduce the cost of complying.

Another looming threat is re-regulation. Fed up with increasing rates, customers, notably chemical, coal, agribusiness and utility companies, are complaining that these are evidence that the railroads are abusing their market power. The railroads retort that despite record traffic and profits, their return on investment since 2000 has been only 8%, which according to the Surface Transportation Board, another federal regulator, barely covers the cost of capital. They also say that freight rates are usually governed by what their competitors—ie, truckers—charge. When higher diesel costs put up trucking rates, the railways follow suit.

Politicians from West Virginia have been pushing a bill in Congress that threatens to re-regulate the railways. The industry seems confident it will not get through, but risks will remain: opposing PTC could play into the hands of those who wish to increase oversight. In his annual letter to shareholders in February Mr Buffett said that BNSF, like Berkshire Hathaway's electric utilities, required "wise regulators who will provide certainty about allowable returns so that we can confidently make the huge investments required to maintain, replace and expand the plant."

The emergence of express intercity rail services may cause the freight railways the biggest problem of all. The policy is not only laid down by the president but also often has enthusiastic support at state level. The railways can hardly oppose Mr Obama's plan to boost high-speed rail, but they are apprehensive about what it will mean for them.

The problem is not the creation of new corridors with trains rattling along at 150mph. Such lines, like those proposed in California or between Tampa and Orlando in Florida, would have their own track, separated from existing lines though on the same strip of land as a freight railway. The expertise to build and run these lies mainly in Europe and Japan, where engineering firms and the technology and consulting arms of national railways have been eyeing the American market eagerly.

The trouble for the freight railways is that almost all the planned new fast intercity services will run on their tracks. Combining slow freight and fast passenger trains is complicated. With some exceptions on Amtrak's Acela and North East corridor tracks, level crossings are attuned to limits of 50mph for freight and 80mph for passenger trains. But Mr Obama's plan boils down to running intercity passenger trains at 110mph on freight tracks. Add the fact that freight trains do not stick to a regular timetable, but run variable services at short notice to meet demand, and the scope for congestion grows.

Return of regulation

The freight railroads have learned to live with the limited Amtrak passenger services on their tracks. Occasionally they moan that Amtrak pays only about a fifth of the real cost

of this access. Some railmen calculate that this is equivalent to a subsidy of about $240m a year, on top of what Amtrak gets from the government. Freight-rail people regard this glumly as just part of the cost of doing business, but their spirits will hardly lift if the burden grows.

Their main complaint, however, is that one Amtrak passenger train at 110mph will remove the capacity to run six freight trains in any corridor. Nor do they believe claims that PTC, due to be in use by 2015, will increase capacity by allowing trains to run closer together in safety. So it will cost billions to adapt and upgrade the lines to accommodate both a big rise in freight traffic and an unprecedented burgeoning of intercity passenger services. Indeed, some of the money that the White House has earmarked will go on sidings where freight trains can be parked while intercity expresses speed by.

Federal and state grants will flow to the freight railroads to help them upgrade their lines for more and faster passenger trains. But already rows are breaking out over the strict guidelines the FRA will lay down about operations on the upgraded lines, such as guarantees of on-time performance with draconian penalties if they are breached and the payment of indemnities for accidents involving passenger trains. The railroads are also concerned that the federal government will be the final arbiter of how new capacity created with the federal funds will be allocated between passenger and freight traffic. And they are annoyed that there was little consultation before these rules were published.

There have been some heated meetings between freight-railroad managers and FRA officials. Henry Posner III, chairman of Iowa Interstate Railroad, ruefully notes that freight railroads, in the form of passengers and regulation, “are getting back things that caused trouble”.