

RITA Bureau of Transportation Statistics

Transportation Trends in Focus

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The Freight Transportation Services Index as a Leading Economic Indicator

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The Bureau of Transportation Statistics' (BTS) freight Transportation Services Index (TSI) showed a decline a full year and a half prior to the start of the current recession. This downturn suggests the TSI may prove particularly useful as an indicator of economic downturns. Leading economic indicators identify and anticipate emerging turns in the current business cycle by historically turning downward before a recession or a slowdown in the economy and upward before an expansion or acceleration. According to BTS research¹, over the past three decades the freight TSI led slowdowns in the economy by an average of 4–5 months.

Box 1. What is the Transportation Services Index?

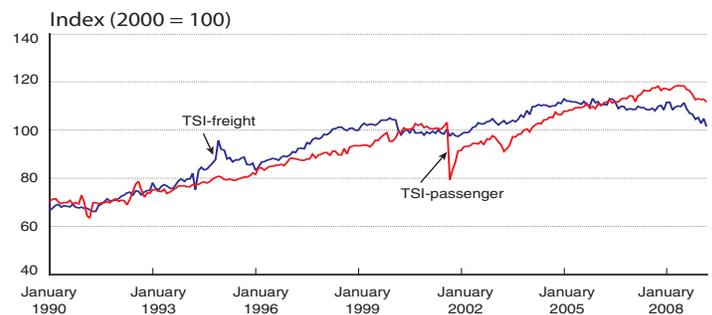
The TSI is represented by two indexes: freight transportation services (freight TSI) and passenger transportation services (passenger TSI). The TSI includes only domestic “for-hire” transportation operated on behalf of or by a company that provides transport services to an external company for a fee. Not included in the for-hire population is transportation in vehicles owned by private firms providing services to those firms or transportation provided by private individuals (e.g., trips in the family car).

The TSI is the broadest monthly measure of U.S. domestic transportation services (see box 1) and, as such, provides the best available current measure of these services. As an index, the TSI (shown in figure 1) reflects real monthly changes in freight and passenger transportation services in the United States.

Research on the history of the TSI (from 1979 through 2007) showed that the freight component of the TSI, which encompasses five modes of transportation (see box 2), demonstrated a strong leading relationship to the economy. When the accelerations and decelerations of the freight TSI are compared to the growth cycles of the economy, declines in the freight TSI led decelerations in the growth cycle.

¹ See http://www.bts.gov/publications/bts_technical_report/2007_12_21/index.html

Figure 1: Transportation Services Index, January 1990 – February 2009



SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, <http://www.bts.gov/xml/tsi/src/index>.

To determine whether or not the freight TSI turned down before the general economy turned down, BTS based its analysis on the National Bureau of Economic Research (NBER) determination that the current recession began in December 2007.² Figure 2 shows the turning points in the freight TSI after “smoothing” of the data. To see even more clearly the downturn in the freight index relative to the start of the 2007 recession, figure 3 provides only the more recent years of data (January 2000 to February 2009) against the December 2007 recession.

Three potential dates, shown in figure 3, could represent the point where the freight TSI began to decline: January 2005, November 2005, and May 2006. According to the rules employed in the original research³, the peak month would be May 2006, approximately 1 ½ years prior to the stated start of the current recession. The slowdown in the economy, as measured by the Industrial Production Index, was also dated to

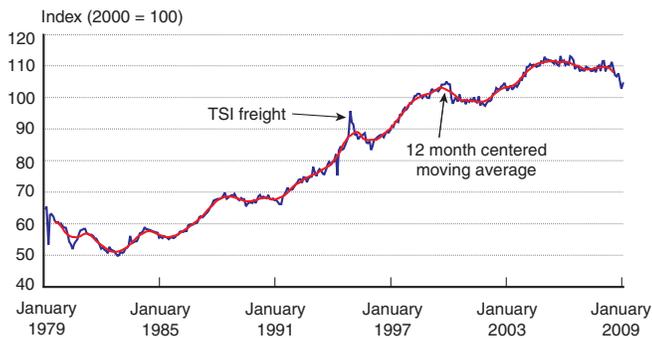
² See <http://www.nber.org/cycles/dec2008.pdf>.

³ See “Appendix B: Bry and Boschan Procedure” in U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *Transportation Services Index and the Economy*, TR-002, December 2007.

Box 2. Components of the Freight Transportation Services Index

Mode	Source	Measure
Trucking	American Trucking Associations (ATA)	Truck tonnage index
Air	BTS and carrier websites	Revenue freight ton-miles
Rail	Association of American Railroads (AAR)	Carloads & Intermodal units
	Federal Railroad Administration (FRA)	Quarterly ton-miles
Water	U.S. Army Corps of Engineers (USACE)	Tonnage of inbound waterborne trade
Pipeline	Energy Information Administration (EIA)	Thousands of barrels of pipeline movement

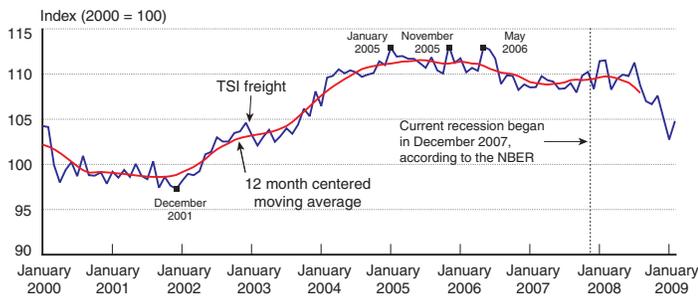
Figure 2: Freight TSI, actual and smoothed, July 1979 to February 2009



KEY: TSI = Transportation Services Index

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, <http://www.bts.gov/xml/tsi/src/index.html> and special tabulations as of May 2009.

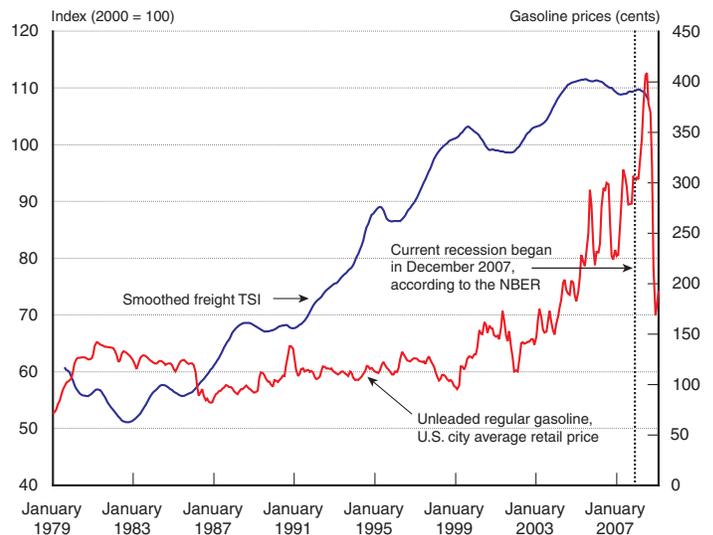
Figure 3: Freight TSI, actual and smoothed, January 2000 to February 2009



KEY: NBER = National Bureau of Economic Research; TSI = Transportation Services Index

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, <http://www.bts.gov/xml/tsi/src/index.html> and special tabulations as of May 2009.

Figure 4: Freight TSI and Unleaded Regular Gasoline, U.S. City Average Retail Price, July 1979 to February 2009



KEY: NBER = National Bureau of Economic Research; TSI = Transportation Services Index

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, <http://www.bts.gov/xml/tsi/src/index.html> and U.S. Department of Energy, Energy Information Administration, Monthly Energy Report, <http://www.eia.doe.gov/mer/prices.html>.

gasoline prices. The peaks of fuel prices in 2006 appear to coincide with the initial downturn in the smoothed freight TSI. The research indicates the current recession was preceded by a downturn in the freight TSI, thereby signifying the TSI's usefulness as a leading indicator. ☺

start in December 2007. As noted in the past research, over a three decade period, the freight TSI lead slow-downs by an average of 4 – 5 months, with a range of 1–7 months. Possible explanations for the 1 ½ year lead time include the rising cost of fuel that occurred in 2005 and 2006 and unique aspects of the current recession, such as its magnitude and the housing and financial crisis that preceded it. Figure 4 shows the relationship between the freight TSI and monthly average retail