Should the Transportation Output Be Included as Part of Coincident Indicators System?

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For presentation at

Third International Seminar on
Early Warning and Business Cycle Indicators

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Transportation and the Modern Economy

The Honorable Norman Mineta, Secretary of the U.S. Department of Transportation, visits the NYSE to announce a new economic indicator, the Transportation Services Index (TSI), and rings The Opening Bell (1/29/2004).

History Review

- U.S. DOC (1923), Dixon (1924)
  -- 1st President's Conference on Unemployment in 1921.
- Early NBER studies
  -- Burns and Mitchell (1946) and Hultgren (1948); Moore (1961), Babson's reports.
- Transportation Services Index (TSI)

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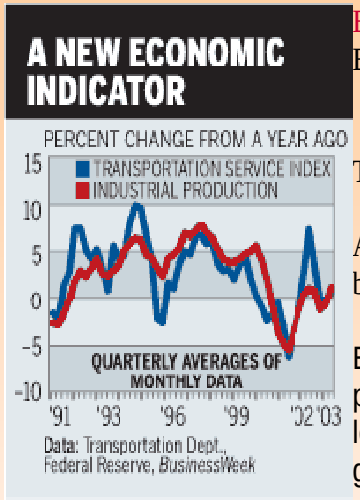

Economic Trends
By James Mehring

Trains, Planes, And Growth

A transportation index tracks business activity

Economists, investors, and policymakers are always looking for better ways to gauge current and future economic activity. Now the government is offering a brand-new tool.

On Mar. 10 the Transportation Dept. released the first report of its Transportation Services Index (TSI), a monthly measure that follows freight and passenger movements. Made up of eight components ranging from trucking tonnage to mass-transit ridership to petroleum pipeline transport, the December reading rose 1%, to a high of 118.5.

That gain is a good sign for the economy, according to the index' creator, **Kajal Lahiri**, an economics professor at the State University of New York at Albany.

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Trains, Planes, And Growth

Do Drugs Make A Dent?

A Gap In The Savings Rate

Wall Street Journal Front Page (March 15, 2010)

Vital Signs

Freight Transportation Services Index, change from a year earlier

Source: Bureau of Transportation Statistics

■ **More freight is on the move.** The Freight Transportation Services Index, which measures the combined amount of goods transported by truck, rail, air, pipeline and inland waterway in the U.S., was up 3.3% in January from the low it logged last May. However, the index was 1.3% below its January 2009 level and 14% below its January 2008 level.

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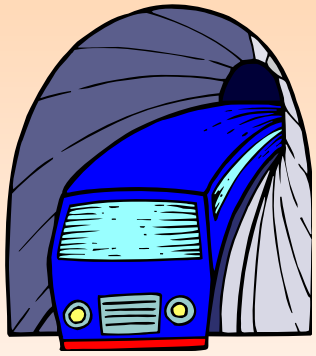
Our publications so far:

- 1).“Monthly Output Index for the U.S. Transportation Sector”, (with H. Stekler, P. Young and W.Yao), Journal of Transportation and Statistics, Vol. 6 (2/3), 2003, 1-41.
- 2). “The Predictive Power of an Experimental Transportation Output Index,” (with W. Yao), Applied Economic Letters, Vol. 11, 3, 2004, 149-152.
- 3).“Transportation Sector and the Aggregate Economy: Their Linkages at the Business Cycle Frequencies”, (with W.Yao), Transportation Research Record, National Academies, 103-111, 2004.
- 4).“A Dynamic Factor Model of the Coincident Indicators for the U.S. Transportation Sector,” Applied Economics Letters, (with W.Yao), 11, 595-600, 2004.
- 5).“Economic Indicators for the U.S. Transportation Sector” (with W.Yao), *Transportation Research – A*, 40, 2006, 872-887.

TSI: *Constituents*

- **Consistent with National Income and Product Account (NIPA) Satellite Model *(For-Hire Transportation)***
  Source: *North America Industry Classification System* (NAICS, 1997)



- **Others**

TSI: *Data Documentation*

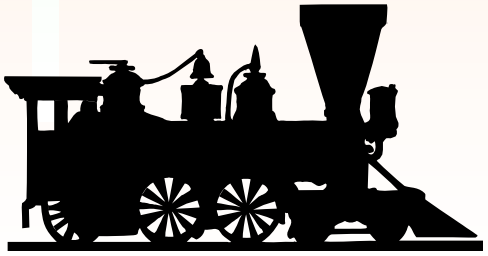
Subsectors	Total Transportation Services Output		Data Series	Original Data Source
	Freight Movement	Passenger Travel		
Airlines	Freight		Air RTM	U.S. BTS
		Passenger	Air RPM	U.S. BTS
Rail	Freight		Monthly Railroads Traffic	AAR
		Passenger	Rail RPM	U.S. FRA
Trucking	Freight		Tonnage Index	ATA
Waterway	Freight		Commerce Tonnage Indicator	U.S. Army Corps
Pipelines	Freight		Energy Movements Index	U.S. EIA
Transit		Passenger	Ridership	APTA

TSI: *Index Construction*

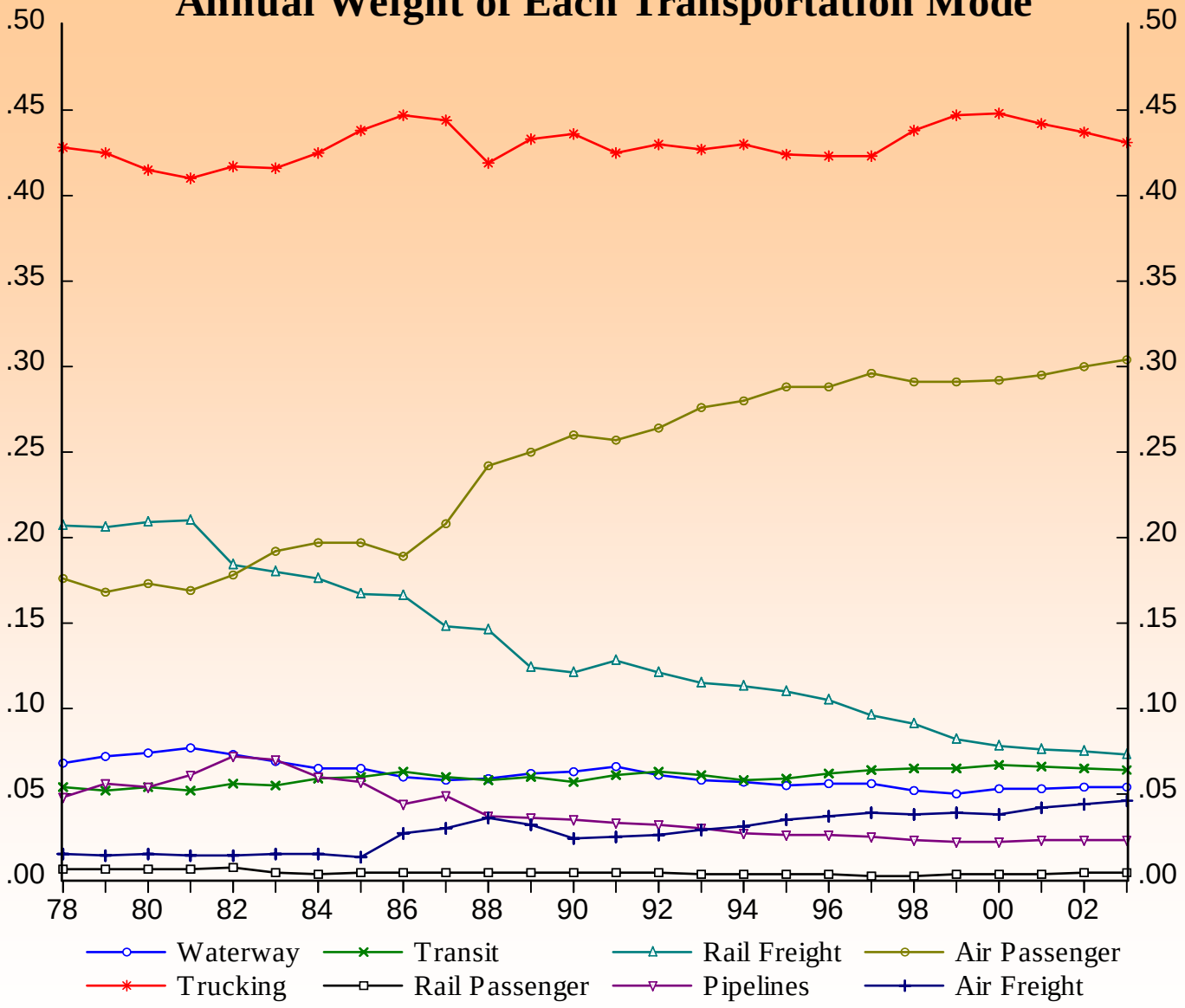
Chained Fisher-ideal index: annually weighted

$$\frac{I_m^A}{I_{m-1}^A} = \sqrt{\frac{\sum I_m P_{y(m-6)}}{\sum I_{m-1} P_{y(m-6)}} * \frac{\sum I_m P_{y(m+6)}}{\sum I_{m-1} P_{y(m+6)}}},$$

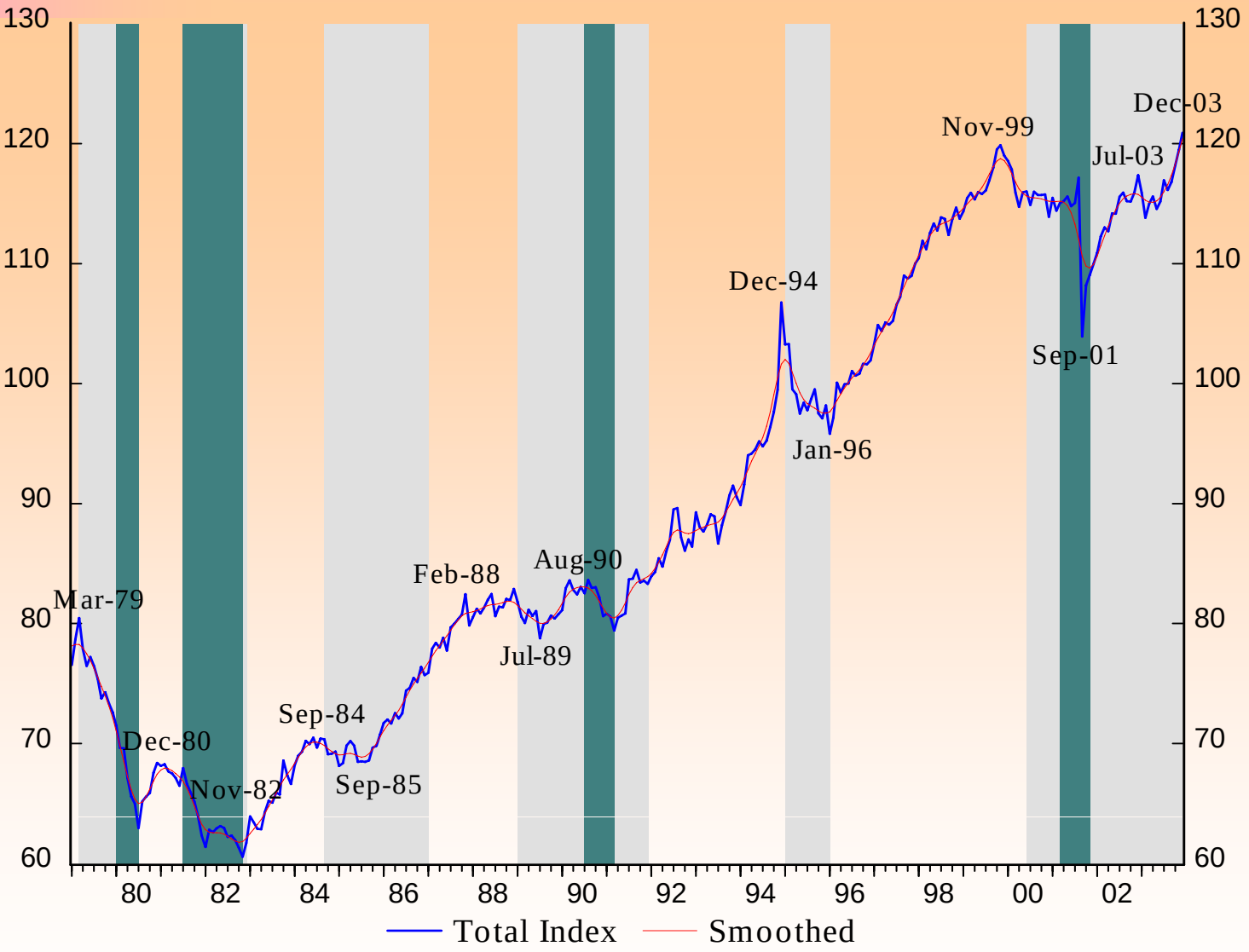
$$I_m^A = \frac{I_m^A}{I_{m-1}^A} \times \frac{I_{m-1}^A}{I_{m-2}^A} \times \cdots \times \frac{I_1^A}{I_0^A} \times 100$$



Annual Weight of Each Transportation Mode

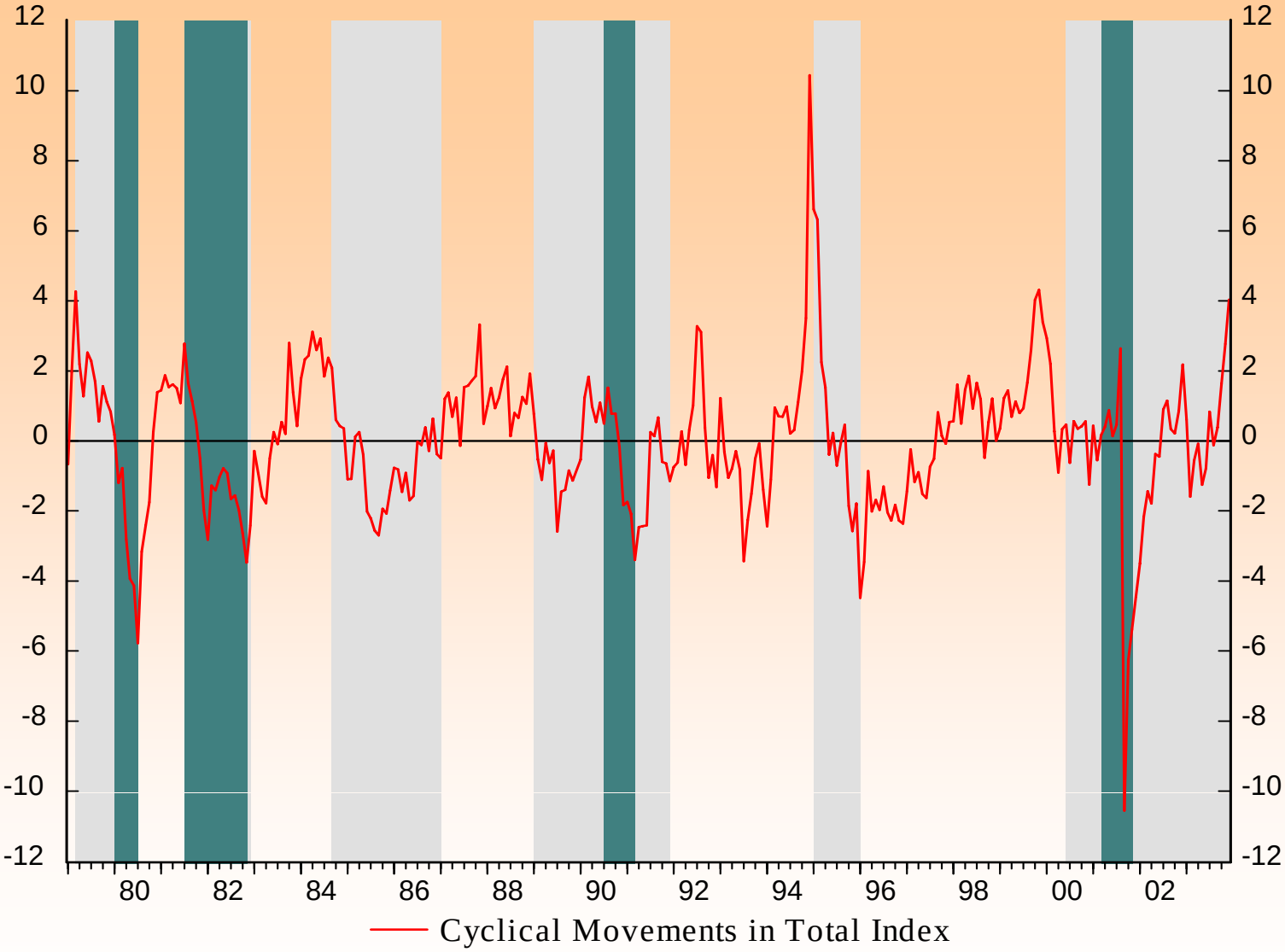


Transportation Services Index (Total) and U.S. Economic Cycles



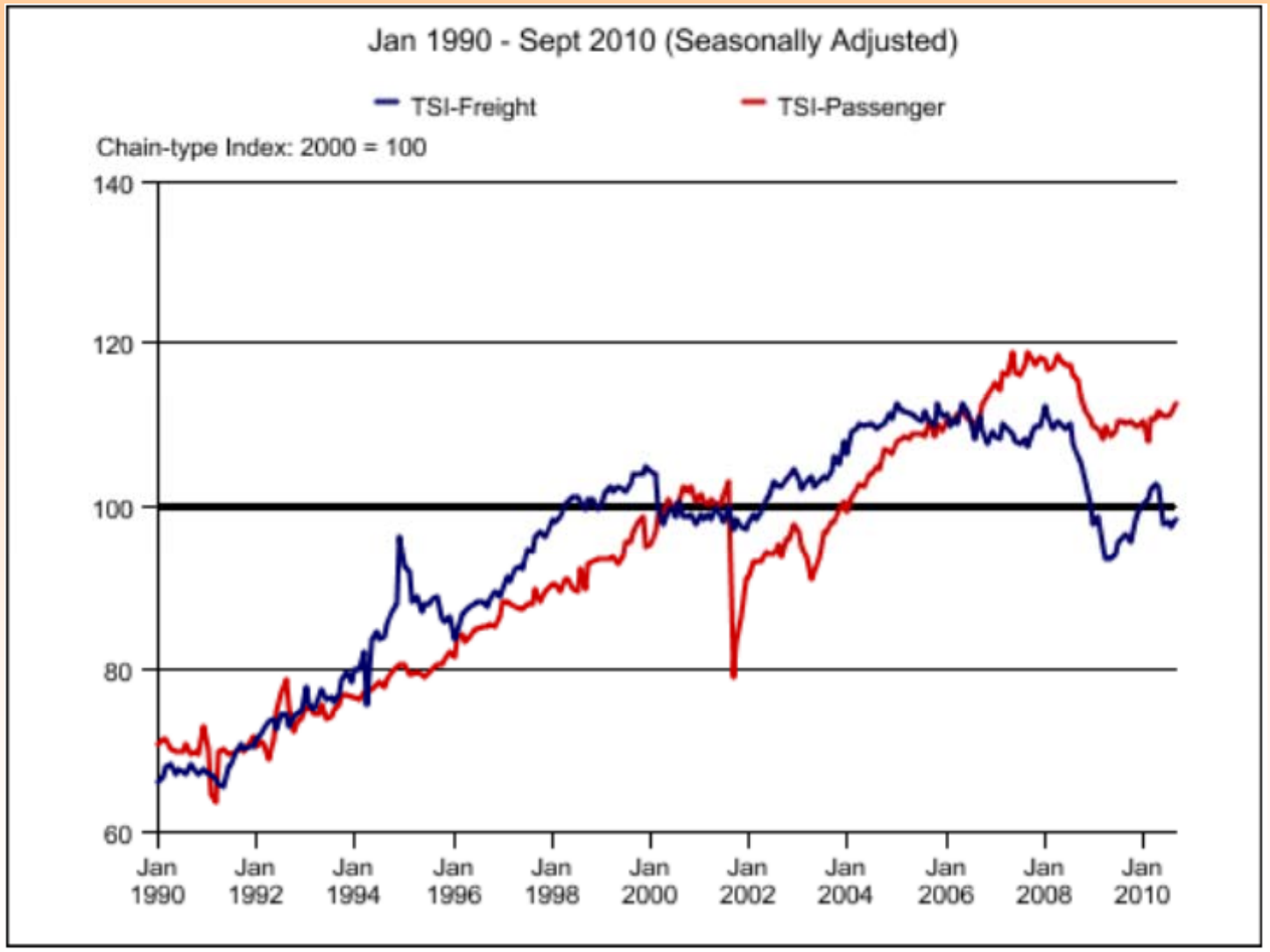
Note: Dark shaded areas represent the NBER-defined recessions for the U.S. economy; lightly shaded areas represent growth slowdowns for the U.S. economy.

Cyclical Movements in TSI (Total) and U.S. Economics Cycles

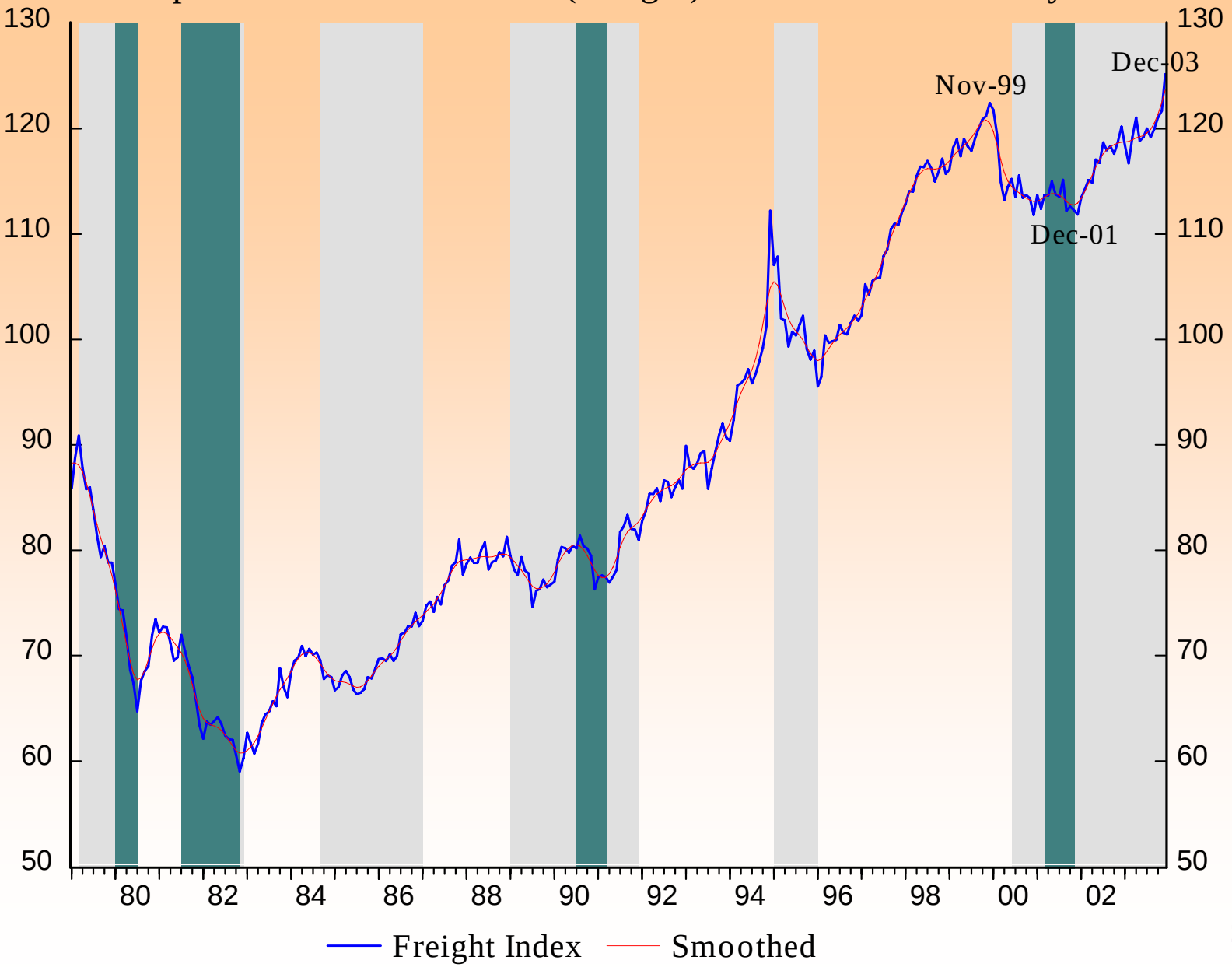


Cyclical movements are obtained as deviation from Hodrick-Prescott (JME, 1997) trend of TSI.

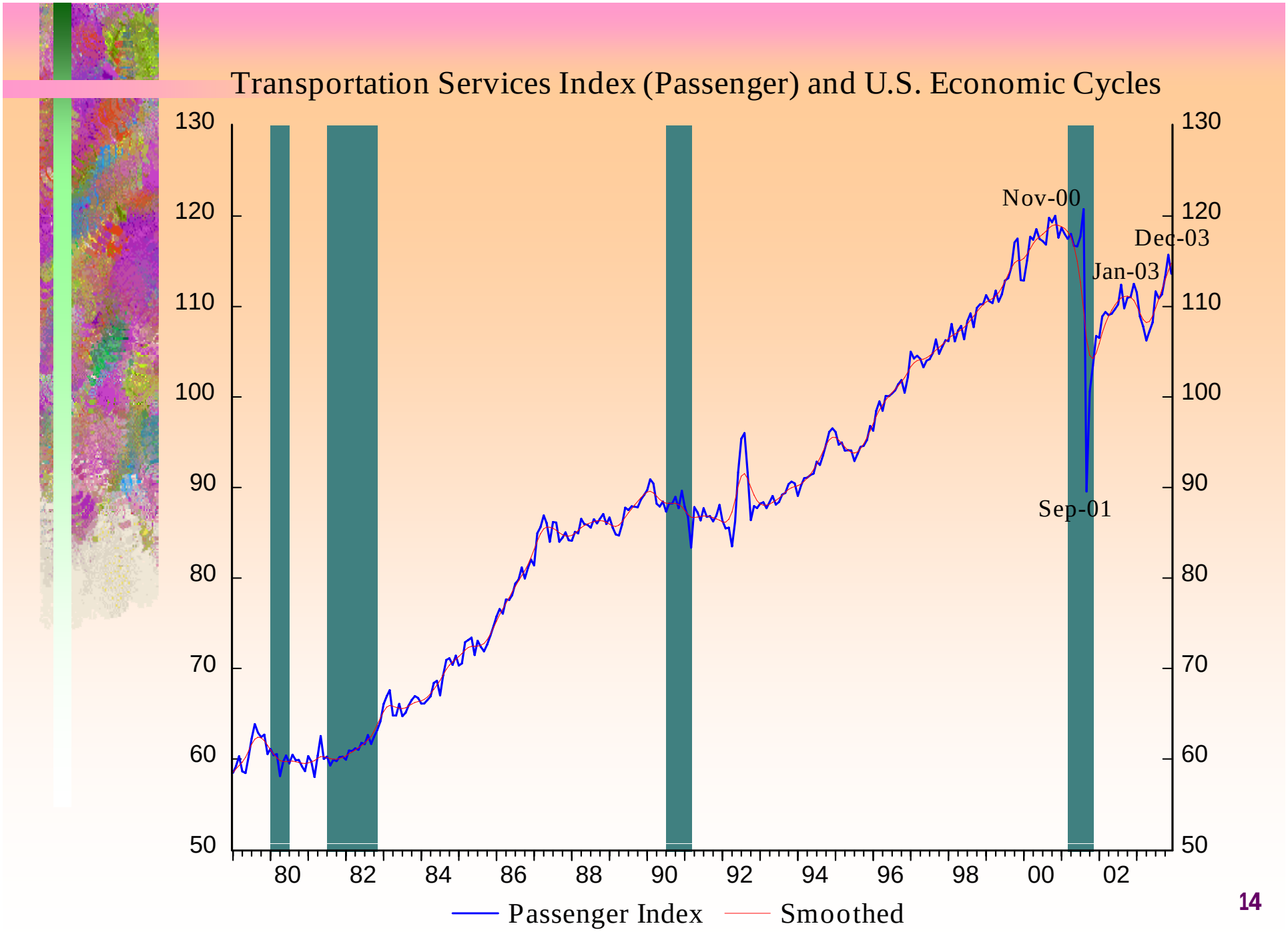
Transportation Services Index
(From U.S. DOT RITA website)



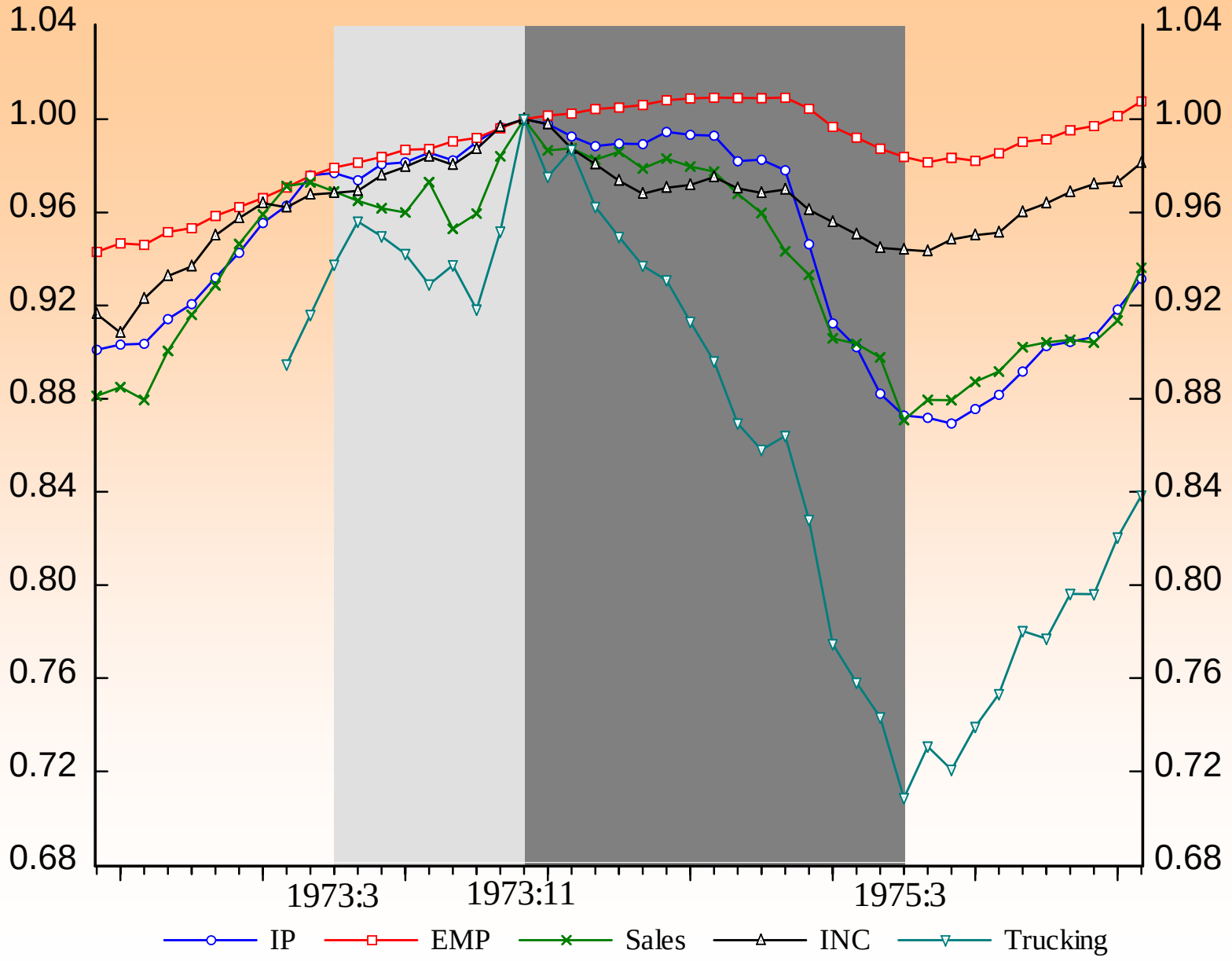
Transportation Services Index (Freight) and U.S. Economic Cycles



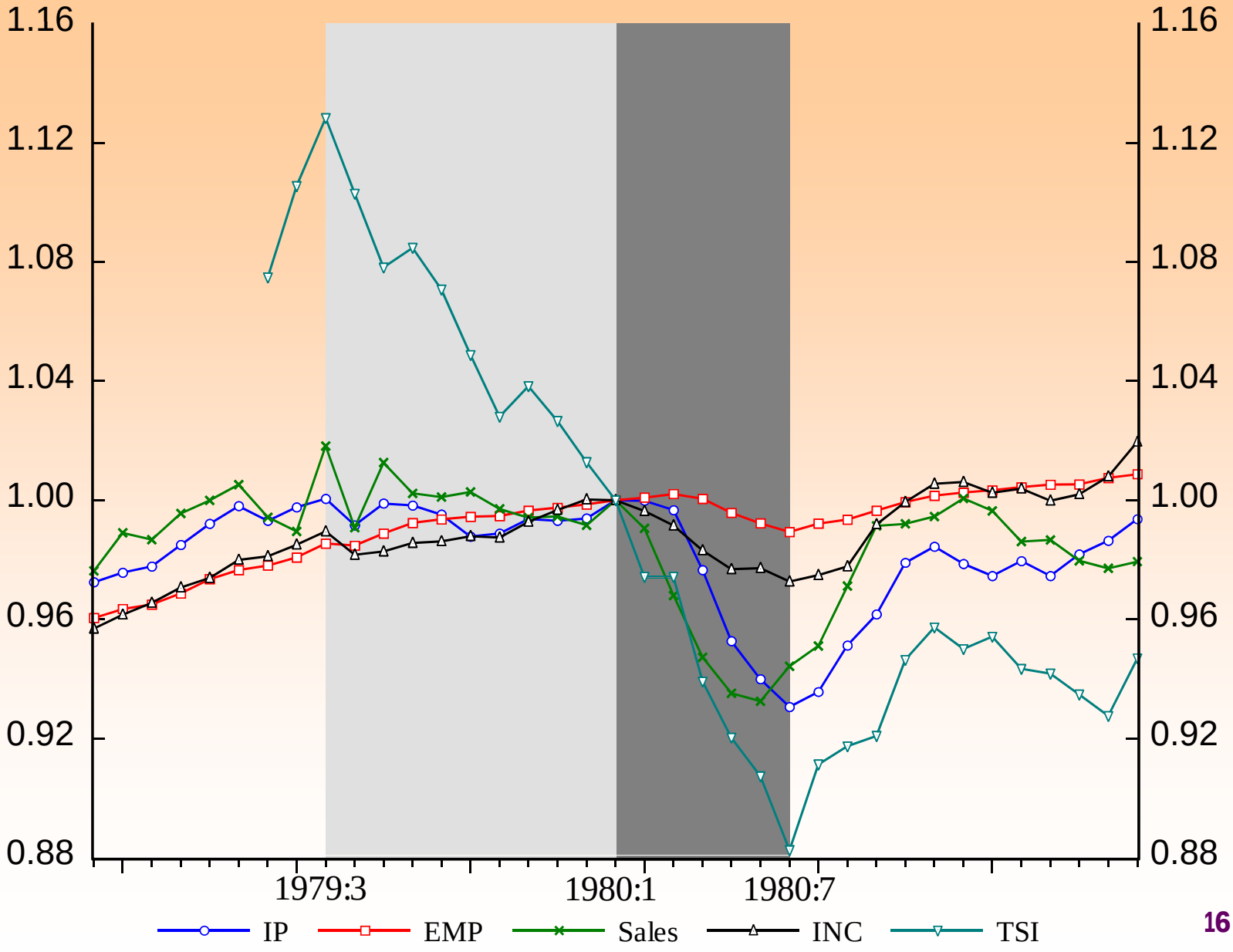
Transportation Services Index (Passenger) and U.S. Economic Cycles



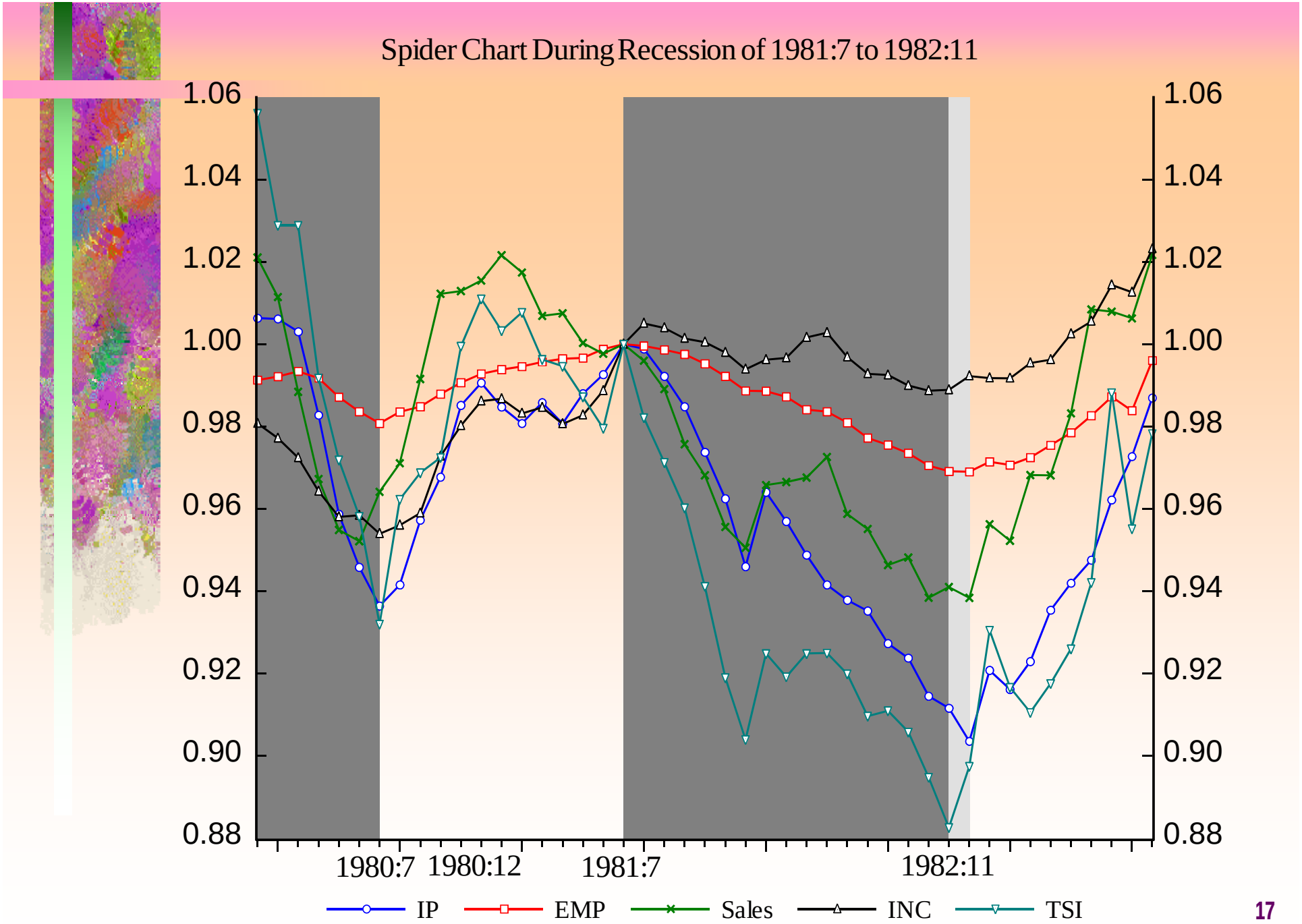
Spider Chart During Recession of 1973:11 to 1975:3



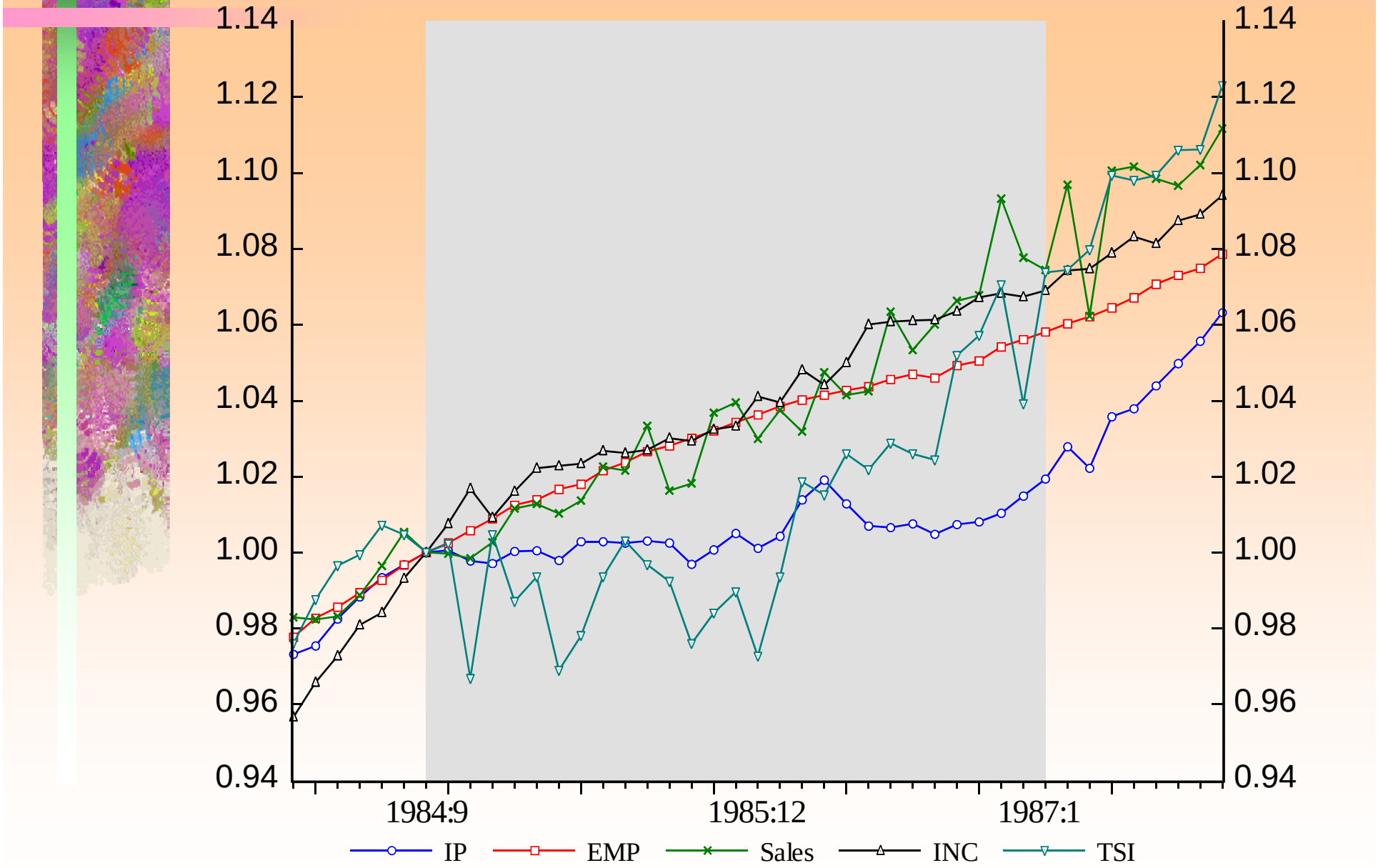
Spider Chart During Recession of 1980:1 to 1980:7



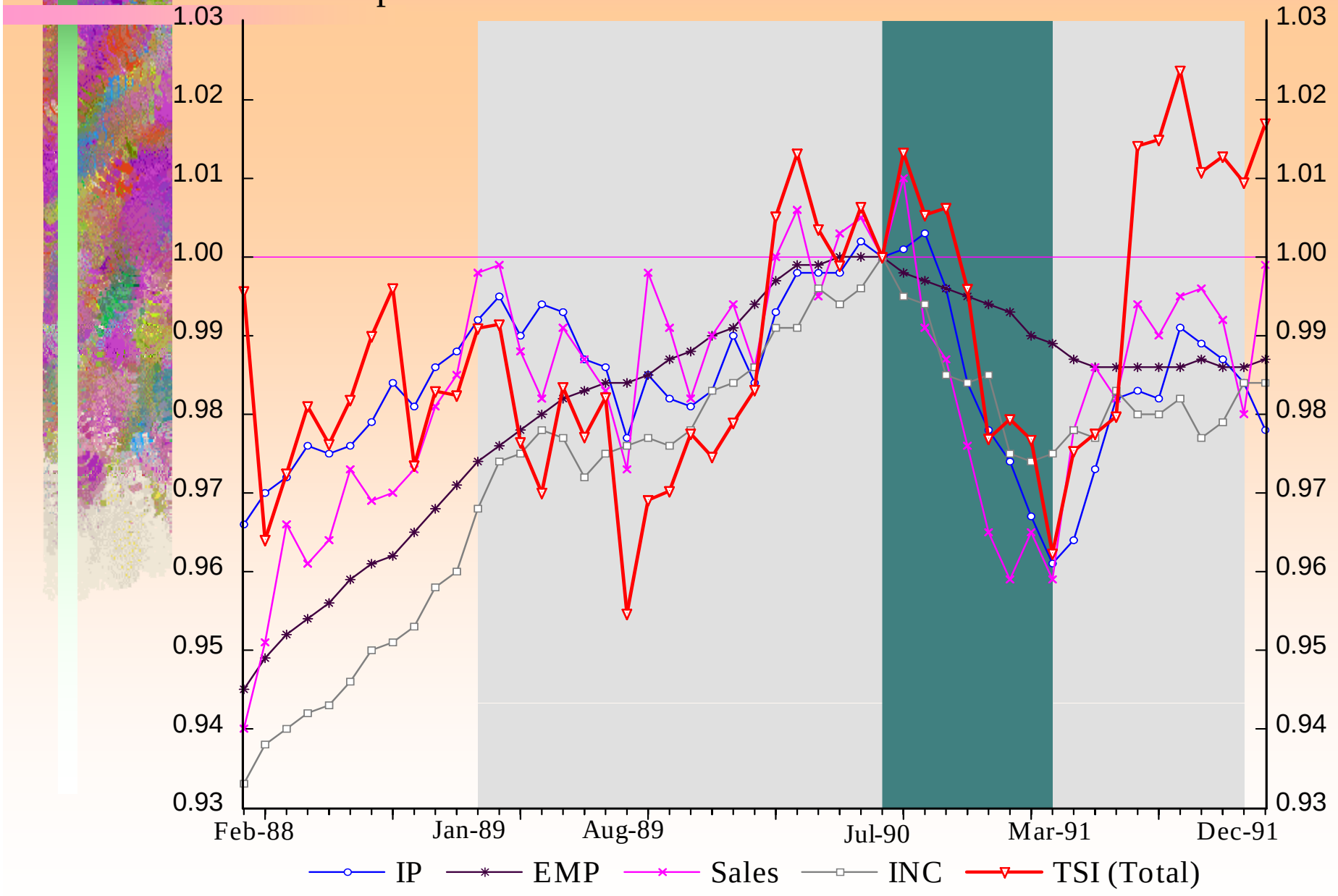
Spider Chart During Recession of 1981:7 to 1982:11



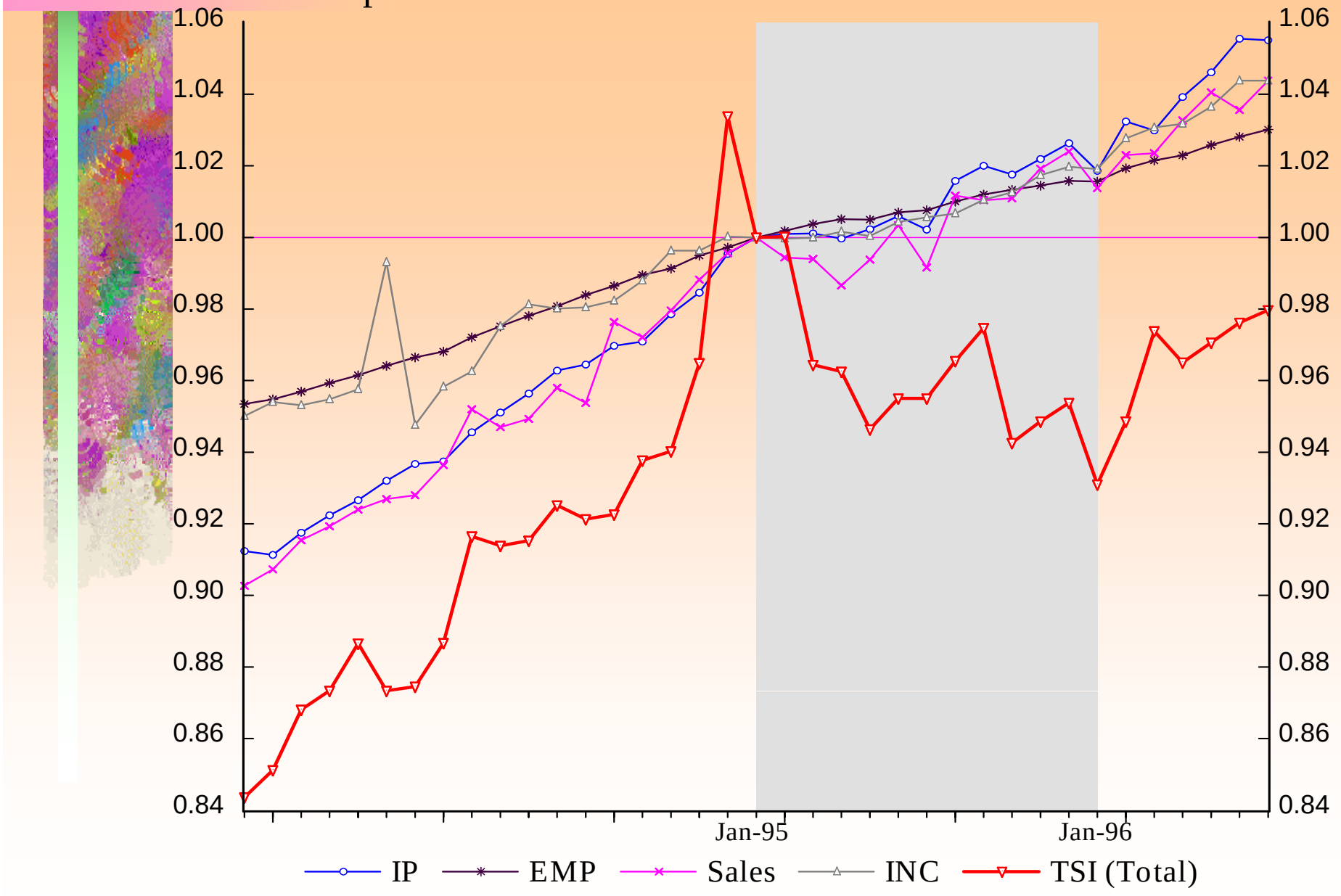
Spider Chart During Slowdown of 1984:9 to 1987:1



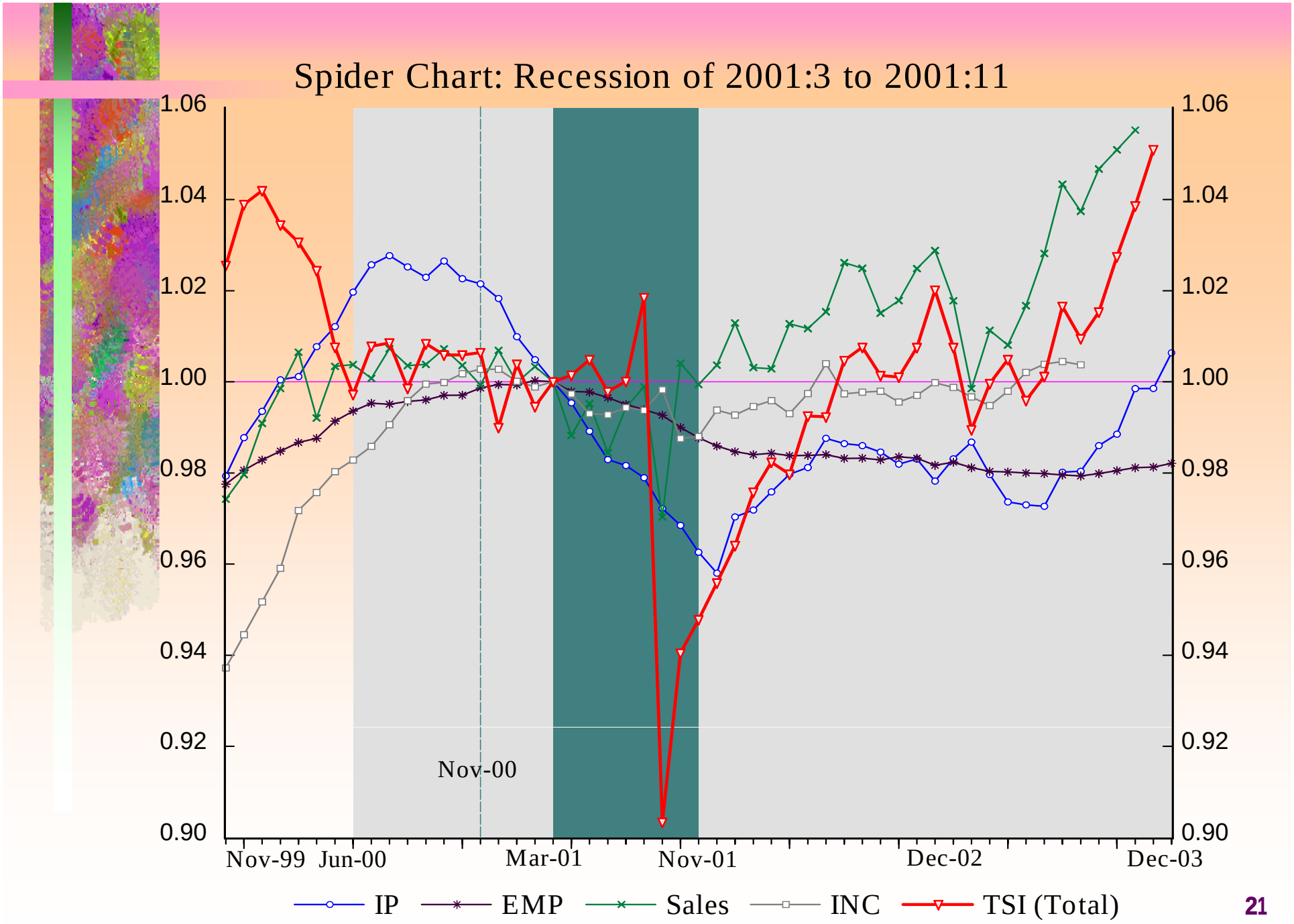
Spider Chart: Recession of 1990:7 to 1991:3

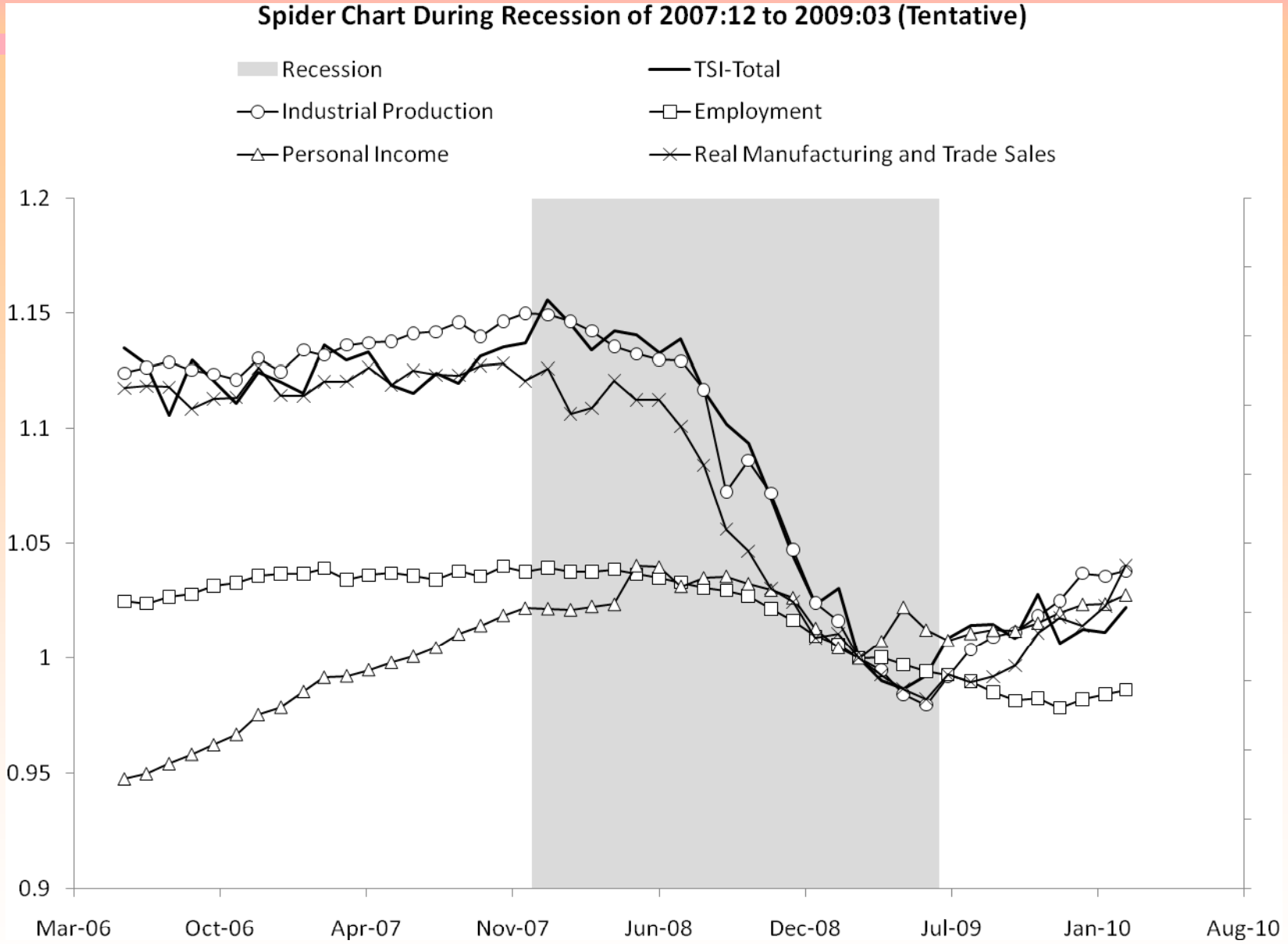


Spider Chart: Slowdown of 1995:1 to 1996:1



Spider Chart: Recession of 2001:3 to 2001:11



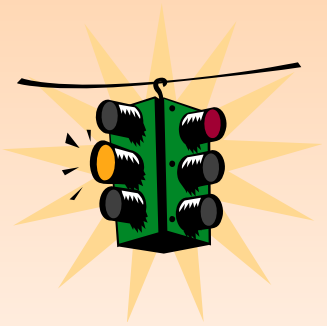

Spider Chart During Recession of 2007:12 to 2009:03 (Tentative)
Recession
TSI-Total
Industrial Production
Employment
Personal Income
Real Manufacturing and Trade Sales
1.2
1.15
1.1
1.05
1
0.95
0.9
Mar-06
Oct-06
Apr-07
Nov-07
Jun-08
Dec-08
Jul-09
Jan-10
Aug-10

Summary

NBER Chronologies of Economy				Business Cycle Chronology of TSI		Lead and Lag of Transportation Vs.			
Recessions		Growth Cycle				Recessions of Economy		Growth Cycle of Economy	
P	T	P	T	P	T	P	T	P	T
-	Jul-80	-	Jul-80	-	Jul-80	-	0	-	0
Jul-81	Nov-82	Jul-81	Dec-82	Feb-81	Oct-82	-5	0	-5	-2
-	-	Sep-84	Jan-87	Aug-84	Sep-85	-	-	-1	-16
Jul-90	Mar-91	Jan-89	Dec-91	Feb-88	Mar-91	-29	0	-11	-9
-	-	Jan-95	Jan-96	Dec-94	Jul-95	-	-	-1	-6
Mar-01	Nov-01	Jun-00	-	Nov-99	Sep-01	-16	-2	-7	-
Mean						-17	-0.5	-5	-7
Median						-16	0	-5	-6

Conclusions

- TSI is roughly coincident with the onset of growth slowdowns, and recoveries from recessions .
- TSI outperforms other coincident indicators in dating troughs of U.S. business cycles.



- TSI, although giving early signals to the start of recession, is still very useful in dating peaks when combined with one of the two broad measures (EMP or INC).
- TSI (Total and Freight) leads the onset of recessions and recoveries from growth slowdowns with consistent regularity.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