Abstract

We present econometric approaches for modeling freight demand trucks on a variety of facilities. Econometric models were developed for transactions data on specific facilities. These facilities were around the major metropolitan areas such as Chicago and New York and experiencing a significant amount of truck traffic. Our results suggests that even for traffic corridors that might be contained within a state, national level macroeconomic indicators work well and give empirically viable results.

Introduction

In this work we present our own results from different studies across widely differing facilities – particularly presenting evidence from the inventory based models and inventory / sales ratio models for forecasting truck traffic along a particular facility. Models were estimated on variety of facilities in Indiana and New York.

Summary Literature Review

Econometric models used to forecast freight demand have been widely used in the literature. Fite et al (2002) identify some leading indicators for truck load demand. Fite et al concluded that producer price index for construction materials and equipment yield some of the highest correlations. Econometric techniques have also been used by Lahiri & Yao (2004, 2006) use non-parametric as well as dynamic factor models to measure the current state of the transportation sector. Indicators included in the analysis were the transportation services index,
real aggregate payrolls in the transportation sector, real personal consumption expenditure on transportation and employment in the transportation sector. Leading indicators for the transportation sector were also identified.

In a slightly different approach (Novak et al 2005), econometric models were used along with income using spatial regression techniques. Spatial regression models were found to perform better than non-spatial models at the nationwide level.

In yet another strand of research (Vilain et al 2009) proposes a class of hybrid models that aim to combine econometric models with network models. Network models

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**Model Specifications**

Model specifications applied were

**Truck Traffic = f (gas, tolls, real inventories, industrial production, local employment)**

Developed models yield statistically significant results on inventories and industrial production. In other cases inventory sales ratios also are also statistically significant. Inventory sales ratios link the inventory management cycle to the retail cycle – an important driver of freight demand. Model backcasts are well within 5% (MAPE) errors and suggest that inventory based models are capture turning points in the data well.
Truck freight generation models work well when inventory cycles are included as part of the modeling specification. Inventory cycles capture changing needs of businesses and hence their...
demand for freight. Inventory variables reduce serial correlation for estimated models and produce good back-casting results.

References
