

**ISIR Session at the ASSA Meetings  
Atlanta, Georgia  
January 3, 2010**

The ISIR session at the Allied Social Science Association Meetings in Atlanta, Georgia took place on January 3, 2010.

**Session Title: “Inventories, Investment and Aggregate Fluctuations”.**

**Session Organizer: Julia K. Thomas, Ohio State University**

**Session Chair: Aubhik Khan, Ohio State University.**

The following papers were presented at the session:

**Paper: “Input and Output Inventories in the UK”**

**Author: John D. Tsoukalas, University of Nottingham**

What is the role of inventories in UK manufacturing? A model is presented and estimated. The model considers separately finished goods and input (i.e., the sum of raw materials and work-in-progress) inventories. Structural parameters are estimated. The estimates permit inferences to be drawn on the role of inventories in cyclical frequencies. The results suggest that both types of inventories are used for production level (from demand shocks) and production cost (from cost shocks) smoothing. A small but significant negative relationship between inventories and the real interest rate is identified. This provides support for one of the textbook channels of the monetary transmission mechanism. Variance decompositions indicate that technology shocks are the dominant driving factor behind cyclical changes in inventories. These shocks account for over 35% of the forecast error variance at these frequencies.

**Paper: “The Cross-section of Firms over the Business Cycle: New Facts and a DSGE Exploration”**

**Authors: Ruediger Bachmann, University of Michigan  
Christian Bayer, University of Bonn**

Using a German firm-level data set, this paper is the first to jointly study the cyclical properties of the cross-sections of firm-level real value added and Solow residual innovations, as well as capital and employment adjustment. The paper finds two new business cycle facts: 1) The cross-section standard deviation of firm-level innovations in the Solow residual, value added and employment is robustly and significantly

countercyclical. 2) The cross-section standard deviation of firm-level investment is procyclical. The paper then shows that a heterogeneous-firm RBC model with quantitatively realistic countercyclically disperse innovations in the firm-level Solow residual and non-convex adjustment costs calibrated to the non-Gaussian features of the steady state investment rate distribution, produces investment dispersion that positively commoves with the cycle, with a correlation coefficient of 0.58 compared with 0.45 in the data. It is argued more generally that the cross-sectional business cycle dynamics impose tight empirical restrictions on structural parameters and stochastic properties of driving forces in heterogeneous-firm models, and are therefore paramount in the calibration of these models.

**Paper: “Seasonal Fluctuations and Inventory Behavior”**

**Authors: Satyajit Chatterjee, Federal Reserve Bank of Philadelphia**

**B. Ravikumar, University of Iowa**

**Pedro Silos, Federal Reserve Bank of Atlanta**

In aggregate data production and final sales are highly correlated at the seasonal frequency. As seasonal fluctuations are, to a first approximation, perfectly anticipated, the existence of convex costs of production would imply large variation in inventory holdings and a rather smooth production series at the seasonal frequencies. The counterfactual observation has been used as evidence against the neoclassical framework. In this paper we argue that looking at aggregate data to reach conclusions about the lack of production smoothing is somewhat misleading. The paper begins with the well-known observation that much of the value added in the US economy comes from producing services – which by definition are not storable- and not from producing goods. The value of final goods sold in the United States includes value added by different services employed along the distribution chain. The clearest case is the value added by the retail and transportation sectors in the high-selling season (Christmas). We then compare the pattern of production (we use employment as a proxy if we don't have production data) in the retail sector relative to the manufacturing sector: employment is very smooth in manufacturing and very volatile in retail. Moreover, we show that the correlations between production and sales at the disaggregated level – in different manufacturing industries - are much weaker than at the aggregate level. Finally, as an additional piece of evidence we find that across those same manufacturing industries the weaker the correlation between production and sales, the higher the (seasonal) variation in inventories.

The paper then builds a simple quantitative modeling framework to study these questions. It presents a two-sector equilibrium model in which one of the sectors uses capital and labor to produce an intermediate good. One can think of this sector as manufacturing. The intermediate good that this sector produces is used along with labor to produce a final good in a sector that one could identify with retail. The quantitative results are still preliminary but point to the model being roughly consistent with inventory, output, and sales behavior over the seasons observed in the data.

**Paper: “Estimating Firm-Level Risk”**  
**Author: Francois Gourio, Boston University**

There has been much interest recently in models of firm heterogeneity with idiosyncratic productivity shocks. However, there remains substantial disagreement on the persistence of the shocks faced by firms, with estimates ranging from a unit root to a nearly iid component. This paper uses the idea that investment reacts more to a permanent shock than to a transitory shock, to estimate a productivity shock process which has both permanent and transitory components. The methodology is applied to a panel from Compustat using a method of moment estimator. The estimates suggest an important role for permanent shocks. I study the implications of these estimates in a general equilibrium model of firm dynamics. Mistaking permanent shocks for persistent shocks can lead to incorrect inferences regarding, for instance, the effect of a friction on aggregate productivity. As an application of this methodology, I also study the trends and cycles in firm-level volatility.