

Bayesian Estimation of Input-Output Tables for Russia

Topic: Econometric IO models

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Russian statistical system is under transition for almost two decades from Soviet type Material Product System to SNA. The main transitional break in methodology took place in 2004-2005 when Russian statistical agency "Rosstat" started reporting based on the new definition of economic sectors consistent with NACE, and stopped reporting using definition of activities inherited from the Soviet statistical system. This methodological break splits all industry level statistics into two periods with little consistency between each other. As a result, Rosstat stopped updating IOT in 2003, based on the only benchmark survey conducted in 1995. The next survey is scheduled for 2012 with expected publication of results in 2015 or later. Official backward estimation is not expected. Therefore Russian statistics will miss IOT at least from 2004 to 2010. Also quality of officially updated IOT from 1996 to 2003 based on 1995 benchmark is questionable.

The paper pursues two goals. First, to apply Bayesian statistics for updating IO tables for 1996-2004 period, i.e. within "old" definition of industries. Second, to estimate IOT for 2004-2010, in new definition of activities, based on national accounts and industries-level data. Both goals are experimental since as we know Bayesian statistics is not yet in common use here. However, we believe, that this approach has several advantages over R.A.S. and Maximum entropy methods. First, it is a natural and flexible way to incorporate any kind and amount of information either as a prior distribution or observable data. Second, Bayesian methods provide full density profile on estimated parameters with covariates. And third, from computational perspective minimizing highly dimensional function with hundreds of parameters, like the cross entropy measure, might be much harder than evaluation of posterior distribution using modern sampling algorithms, such as Markov Chain Monte Carlo methods. Comparison of performance of various methods will be provided.