Aggregation Bias in International Business Cycles*

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Abstract

We study an international business cycle model with a global input-output network that encompasses a large class of international business cycle models to quantify the "aggregation bias" in cross-country shock spillover resulting from using an aggregated one-sector model. We show analytically that international shock spillover in a multi-sector model and an aggregated one-sector counterpart are generally different, and only the same under special parameterizations such as when sectoral shocks are identical. Quantitatively, using data for 20 countries between 1990 and 2009, we find that aggregation bias varies over time and, on average, results in about 25% lower international shock spillover, suggesting that an aggregate model tends to underestimate the role of foreign shocks in domestic economy.

JEL classification: E32, F31.

Keywords: International business cycles, trade linkages, volatility, comovement, input-output, aggregation bias, one-sector, multi-sector model, global value chain.

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