

Changes in trade balances with the paradigm shift from gross to value added terms among BRICs, the USA, the EU and Japan

Topic: Trade and Value Chains

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In light of growing intermediate goods trade, we further develop theoretical and empirical research on the new concept of trade in value added (TiVA) that was provided by Johnson-Noguera and WTO-IDE. Using global and local equilibrium conditions of a global input-output model, we prove the fundamental theorem on the relationship between trade balances in value added and gross terms, developed by Stehrer, Benedetto and the author. That is to say, the total sum of a country (country r)'s trade balances with many countries (countries $1, 2, \dots, s, \dots, R$; $s \neq r$) in value added equals that in gross terms, namely the total sum of differentials between country r 's trade balances with country s in value added and gross terms equals zero: $(T_{va,r1} - T_{g,r1}) + \dots + (T_{va,rs} - T_{g,rs}) + \dots + (T_{va,rR} - T_{g,rR}) = 0$, where $T_{va,rs}$ and $T_{g,rs}$ denote country r 's trade balances with country s in value added and gross terms respectively. We examine this zero-sum theorem by using WIOD compiled by Groningen University. We consider an aggregated case with eight countries (BRICs, the EU, the USA, Japan and ROW) and 20 sectors for 2005 and 2010. The China-US, China-EU and China-Russia trade balances, and the China-Japan imbalance in value added for 2010 are respectively 20.8%, 35.4%, 28.3% and 22.5% smaller than those in gross terms, whereas the China-ROW imbalance in gross terms is largely improved with the paradigm shift from gross to value added terms due to large improvements in China's weak sectors of agriculture, mining, chemicals and oil products. In this paper, we also show alternative results by using IDE-BRICs input-output data without ROW and making corrections on an underestimation of the Russian mining's trade flow and value added ratio in WIOD.