Decomposition of gross exports into value-added exports at the bilateral level: an alternative gross exports accounting system

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In this paper we present an alternative accounting system of gross exports at the bilateral level in place of Koopman et al. (2014). First, we re-define bilateral value-added exports by elements of the value-added ratios, international Leontief inverse, and gross exports/imports based on Trefler and Zhu (2010). Second, we prove that our definition of bilateral value-added exports is mathematically equivalent to Johnson and Noguera (2012)â€™s value-added exports defined by elements of the value-added ratios, international Leontief inverse, and destination countryâ€™s final demand. Third, however, we demonstrate that we can bilaterally trace value-added and double counting in gross exports in a better manner if employing our definition of value-added exports in place of Johnson and Nogueraâ€™s definition. In particular, for a bilateral trade system with more than three countries we can clearly witness two parts of return-home and no-return in the foreign content of gross exports. We also provide empirical results or numerical examples for two-country (China and the rest of the world) and three-country (China, USA and the rest of the world), using aggregated World Input-Output Data, in order to enhance our alternative gross exports accounting system.