Tracing value-added and double counting in sales of foreign affiliates and domestic-owned companies

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The literature on trade in value-added (Johnson and Noguera, 2012; Koopman et al., 2014) as well as empirical datasets, such as the TiVA indicators released by OECD and WTO in 2013, have emphasised that gross trade flows do not adequately measure the income generated by trade in a world characterised by global supply chains where intermediate products are traded across countries. New accounting frameworks have been developed to identify the domestic value-added in gross exports and in final demand and to remove the double counting of intermediate inputs that cross international borders more than once. But trade is only one dimension in the activities of firms involved in global production. Some of these firms are multinational enterprises (MNEs) that rely on foreign affiliates to source inputs or produce abroad. According to UNCTAD (2013), 80% of global trade is co-ordinated by these MNEs (when including their armâ€™s length trade transactions as well as trade flows related to franchising, contract manufacturing and strategic alliances). The economic literature analysing activities of MNEs relies on the concept of sales of foreign affiliates, which is also a gross concept and includes some double counting with respect to foreign and domestic inputs. Somehow this concept has not yet been through the kind of â€˜TiVA revolutionâ€™ that has significantly changed the analysis of trade.

In this paper, we first propose a new accounting framework for the decomposition of value-added into domestic, foreign and double counting terms in domestic sales. In this framework, we show where the value-added double counting terms are derived from and give an explicit expression of domestic and foreign double counting terms based on the Inter-Country Input-Output (ICIO) tablesâ€™ Ghosh insight. This measurement can distinguish domestic sales from exports and can trace the value added and double counting in sales of foreign affiliates and domestic-owned enterprises. Then, we decompose GDP in the ICIO tables into four terms: (1) the domestic value-added which is exported and comes back, (2) the domestic value-added which does not participate in international trade, (3) the domestic value-added going through domestic transactions and ultimately absorbed in foreign countries and (4) the domestic value-added not going through domestic transactions and absorbed in foreign countries. The second term accounts for domestic sales while terms 1, 3 and 4 add up to a measure of domestic value-added in exports similar to Koopman, Wei and Wang (2014). There is still some overlap between value-added in exports and in domestic sales for two of these terms.

Based on this framework, we then calculate the value-added by foreign-owned and domestic-owned firms in exports and in domestic sales by using an Inter-Country Input-Output table split according to ownership. A separate paper introduces this new ICIO (Cadestin et al., 2017). Preliminary results suggest that there is much more double counting in sales of foreign affiliates than in exports and that more value-added is created through exports than through sales of foreign affiliates. In 2011, we find that 69% of world GDP consists in value added by domestic-owned firms in domestic sales, 17% in value added by domestic-owned firms in exports, 9% in value-added by foreign-owned firms in domestic sales and 5% in value-added by foreign-owned firms in exports. These findings are consistent with theories suggesting that only the most productive firms engage in exports and among them an even smaller number in FDI, based on a higher productivity cut-off (AntrÃ s and Helpman, 2004).