

Foreign Direct Investment, Chicago: University of Chicago Press and NBER.

Comment

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Peter Petri and Michael Plummer have compiled a balanced and insightful survey article on the theoretical and empirical determinants of foreign direct investment (FDI). First, the authors offer a succinct organized review of the predominant competing theories of FDI and of the theoretical relationship between FDI and international trade. Regarding theoretical determinants of FDI, the authors note (though ineffectively at the subsection's conclusion) that Dunning summarizes the likely critical elements that FDI source firms should possess: an ownership advantage, an internalization advantage, and a locational advantage. The authors cite recent important works in the theory of multinationals that shed light on theoretical determinants of FDI, such as Helpman (1984) and Brainard (1993a,b, 1997), which provide conceptually sharp discussions of the important factors underlying multinational firm behavior.

Although overall quite thorough in their survey, the authors did omit discussing an important recent paper by Markusen and Venables (1995). Markusen and Venables present a two-country analytical model in which each country has one national firm and one multinational firm. National firms are distinguished (from multinationals) by producing all output in the base country, facing only one set of fixed plant costs and one set of fixed firm (i.e., headquarters) costs. Multinationals face fixed firm costs at home but fixed plant costs at home and abroad (the latter representing FDI). The foreign plant produces solely for the local market. Markusen and Venables show that, in equilibrium, multinational firms are more likely to exist when incomes are high, firm-level scale economies are high relative to plant-level scale economies, and transport costs and tariffs are high. For instance, when transport costs are high, the gains from exporting by taking advantage of plant economies of scale are eroded relative to producing and selling output locally (consistent with Brainard's work), and inter-

national trade is lower. This theoretical result suggests that international trade should be higher when fewer firms are multinational, in the absence of outsourcing (which is precluded in their model). This theoretical framework provides some justification for several empirical findings by Kawai and Urata in Chapter 8, this volume. Kawai and Urata, using a gravity equation empirical framework, find that international trade and distance are negatively related. FDI and distance are positively related; if FDI is prominent when multinationals exist, and multinationals are more likely to exist when transport costs are high, then distance and FDI should be positively correlated.

The authors here discuss the contribution of recent work by Brainard (1993a,b, 1997) as well. Brainard's papers are important in refining the relationship between theoretical and empirical determinants of multinational firm sales and investment. Using gravity equations, Brainard finds weak support for factor proportions differences to explain affiliate sales of multinational firms but strong support for proximity-concentration factors. She finds that freight factors have a strong dampening effect on trade flows, as typical gravity equation estimations find. However, freight factors have small or insignificant effects on affiliate sales. Furthermore, multinationals' export sales decrease with higher transport costs, but local sales are unaffected or, in some cases, increase. This is consistent with the empirical results of Kawai and Urata in the next chapter.

Empirical work by Petri and Plummer (1996), as well as the subsequent chapters in this volume by Kawai and Urata, Jai-Won Ryou, and Shang-Jin Wei, use the gravity equation as an econometric modeling tool for exploring: (1) the determinants of FDI, and (2) the relationship between trade flows and FDI flows. The gravity equation has been used much less frequently to model (foreign direct) investment flows in contrast to (merchandise) trade flows. The gravity equation's success in modeling trade flows has a long and rich history. General equilibrium models of international trade in Anderson (1979), Helpman and Krugman (1985), and Bergstrand (1985, 1989, 1990), discussed recently in Deardorff (1998), have provided rigorous theoretical rationales for the gravity equation's empirical success. However, a rigorous theoretical framework for using the gravity equation to model (foreign direct)

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investment flows is lacking at present, as noted in the comment of Kawai and Urata in this volume.

Yet the recent work by Brainard and by Markusen and Venables, already cited, suggests that the gravity equation is likely a useful empirical device for analyzing investment flows; a recent contribution in this dimension is Hufbauer, Lakdawalla, and Malani (1994). General equilibrium theories suggest that multinational firms are more likely to exist (and hence increase investment flows into new plants abroad) when countries are more similar in size. It is straightforward to show that bilateral flows are related multiplicatively to national output levels (as gravity equations represent) in the context of these models when the countries are more equally sized. Also, these recent theoretical models suggest that multinational firms (and hence FDI) are more likely to exist when transport costs are high. This is consistent with the gravity equations of investment flows reported in Kawai and Urata but is inconsistent with those reported in Ryou and in Wei.

Finally, recent anecdotal evidence suggests that multinational FDI flows to quite distant regions and countries (with commensurately high transport costs) are generally for the purpose of localizing production for local sales, tending to impede world trade. Multinational FDI flows to closer foreign countries (with commensurately low transport costs) are generally for shifting intermediate production abroad for later import and final distribution at home (i.e., outsourcing), tending to augment (intrafirm) international trade. Clearly, more research is warranted to establish more clearly the theoretical and empirical linkages between international trade, multinational sales, and foreign direct investment.

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