Intra- and inter-firm US trade

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ARTICLE INFO	ABSTRACT
	Bivariate Tobit gravity regressions using 2000–2007 US trade data show that US-based firms take advantage of positive forces (e.g., economic freedom) operating in foreign markets more through affiliates than third parties. Likewise, transactions with affiliates are deterred a lot more by negative forces (e.g., distance). Additionally, trade flows are higher (lower) with non-OECD (OECD) countries that are more politically free. Decompositions of the Tobit effects and the predicted-to-actual trade ratios indicate a two-pronged strategy for policymakers: develop targeted policies to specific hurdles to intra-firm trade and work aggressively on increasing market access for US exports.

1. Introduction and background

Multinational enterprises (MNEs) play an important role in US trade. According to the data from the Bureau of the Census, almost a third of US exports and close to half of US imports in 2007 are among related parties.[1] Related-party trade has fluctuated around these shares since 1982, the earliest year for which these data are publicly available. Available data show that related-party trade is more concentrated and shares of related-party trade across countries vary widely. These observations are evident in Table 1. For example, in 2004–2007 the top 10 export markets make up 75% of US related-party exports while 70% of US related-party imports are from the top 10 import sources; corresponding rates for non-related party trade are lower at 59% and 63% for exports and imports, respectively. Among these top trade partners, in 2004–2007 the share of related-party exports ranges from 16% (China) to 46% (Mexico) while the share of related-party imports ranges from 26% (China) to 80% (Japan). Clearly, US foreign market penetration and sourcing are highly selective, and the dominant type of export market entry or import sourcing (related-versus non-related party trade) differ across markets.

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[1] Related-party exports are US parent company exports to their foreign affiliates or US affiliate exports to their foreign parents; related-party imports are US parent imports from their foreign affiliates or US affiliate imports from their foreign parents. Unfortunately, breakdowns for these components are not available. However, aggregate data from 1982 to 1994 show that US parent exports to their foreign affiliates is 20–30% of total US exports while US affiliate exports to their foreign parents fluctuated around 10%. US affiliate imports from their foreign parents ranged 20–25% of total US imports while US parent imports from their foreign affiliates ranged 15–25% (Zeile, 1997).

Table 1
Average US trade, related and non-related party trade shares for selected countries, 2000–2003 and 2004–2007.

Country	2000–2003 Average (mil. US$)	Share [a] Related (%)	Non-related (%)	Country	2004–2007 Average (mil. US$)	Share [a] Related (%)	Non-related (%)
A. US exports				**A. US exports**			
Canada	141,463	42.78	50.24	Canada	188,421	41.57	51.46
Mexico	85,352	39.83	48.15	Mexico	105,866	45.76	53.12
Japan	50,937	33.92	57.59	Japan	52,861	32.60	67.16
U. Kingdom	31,486	26.19	64.01	China	41,691	16.00	83.81
Germany	25,390	31.23	58.69	U. Kingdom	35,870	26.71	73.11
South Korea	21,661	12.01	79.85	Germany	34,014	36.38	63.50
China	18,637	13.48	80.20	South Korea	27,579	16.03	83.83
Netherlands	18,101	37.97	52.11	Netherlands	26,240	42.82	56.84
Taiwan	17,342	16.37	75.07	France	21,511	33.85	65.95
France	16,894	28.07	61.43	Taiwan	21,141	18.17	81.51
Total, top 10	427,263	34.53	56.55	Total, top 10	555,194	35.92	61.40
Share, top 10	67.58	76.89	63.44	Share, top 10	64.91	75.34	59.36
B. US imports				**B. US imports**			
Canada	202,257	45.07	47.93	Canada	270,556	47.78	43.34
Mexico	128,001	66.98	32.92	China	258,325	25.89	74.10
Japan	123,644	77.13	22.69	Mexico	175,129	59.23	40.75
China	117,753	20.46	79.52	Japan	135,029	80.49	19.49
Germany	57,729	68.90	30.88	Germany	80,789	65.26	34.68
U. Kingdom	36,909	55.60	43.99	U. Kingdom	46,537	62.41	37.51
South Korea	35,941	56.91	43.03	South Korea	43,577	60.96	39.04
Taiwan	33,086	21.89	78.10	Taiwan	34,814	26.16	73.83
France	25,567	45.69	54.18	Venezuela	32,529	45.30	54.47
Malaysia	23,732	67.53	32.46	France	32,203	52.37	47.60
Total, top 10	784,619	52.51	45.59	Total, top 10	1,109,488	50.26	47.55
Share, top 10	69.67	75.86	62.99	Share, top 10	67.04	70.17	63.11

Source of original data: US Bureau of the Census.
 [a] Note: Shares do not sum to 100% since these shares are average shares for 2000–2003 and 2004–2007 and total trade includes those with missing related- or non-related party information.

Firms enter foreign markets via trade, foreign direct investment (FDI), and/or licensing.[2] The entry mode choice depends on interactions among ownership, location, and internalization factors (Dunning, 1988). Firms possess firm-specific advantages that allow them to overcome the operational advantages of domestic firms in foreign markets (ownership). Since contract enforcement is costly, FDI is typically preferred over licensing (internalization). Ownership advantages and internalization considerations interact with location factors. Location-specific factors, such as the existence of well-developed institutions to protect property rights or the openness of the trade regime, affect bilateral FDI and trade flows.

Entry mode choice (trade versus FDI) is not the focus of this paper. Rather, the main task of this paper is to determine whether the determinants of related (i.e., FDI-based) and non-related (i.e., arm's-length) party trades differ (and to what extent do they vary) using the trade gravity equation. Current studies do not make this crucial distinction. The recent availability of related (intra-firm) and non-related (inter-firm) party trade data with country and product details starting in 2000 makes this possible. Distinguishing between these two types of trade flows is crucial as the reasons behind each may be different. And if they do differ significantly, policy responses to these flows may need to be distinct as well.

An added contribution of the paper is to consider both thick (liberty or democracy) and thin (property rights protection) definitions of institutional quality.[3] Most studies only use the thin definition thereby neglecting a salient feature of governance. Both dimensions play a role in the economic sphere: "stable, predictable laws encourage investment and growth" (thin definition); additionally, "expand people's 'capabilities' [by guaranteeing certain basic rights]… they will do things that help countries grow rich" (The Economist, 2008, p. 84).

Intra- and inter-firm trade flows may be correlated, so a two-equation seemingly unrelated regression (SUR) model is used. SUR regression accounts for unobserved trade partner characteristics that either enhance or deter both types of trade flows. Since US exports to and imports from many countries are zero at the 3-digit NAICS subsector level,[4] a bivariate Tobit regression model (Tobit SUR) is used in the empirical estimations. Results are mostly consistent with prior studies: Trade flows are higher to larger and economically freer markets; trade flows are larger to partners with a common language, and smaller to more distant trading partners.

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[2] A related literature looks at FDI modes of entry choice among new investment, mergers and acquisitions, and joint ventures (see e.g. Raff, Ryan, & Stahler, 2009).
[3] Two alternatives to property rights protection are also considered: freedom from corruption and overall economic freedom.
[4] For brevity, each 3-digit NAICS subsector will be referred to as products below.