ELSEVIER
www.elsevier.com/locate/worlddev

CrossMark

World Development Vol. 84, pp. 206–218, 2016

http://dx.doi.org/10.1016/j.worlddev.2016.03.010

Aid for Trade and Greenfield Investment

HYUN-HOON LEE [a] and JOHN RIES [b,*]

[a] *Kangwon National University, Chuncheon, Republic of Korea*
[b] *University of British Columbia, Vancouver, Canada*

Summary. — The Aid for Trade (AfT) Initiative was launched in 2005 at the Hong Kong Ministerial Conference where high-income countries pledged to increase their AfT contributions to developing countries. AfT, comprised almost entirely of aid for trade-related infrastructure and building productive capacity, would promote growth by easing supply-side constraints and improving transportation, energy, and communication infrastructure. By lowering costs of operating in recipient countries, AfT may increase both trade and investment. Most research on the effects of AfT on international transactions focuses on trade. The sparse research on investment investigates aid and net foreign direct investment flows based on the international balance of payments. We contribute to the literature by assessing AfT effects on new greenfield investment.

Using bilateral data for 25 donor and 120 recipient countries for the period 2003–13, we find that bilateral AfT promotes greenfield investment. Our preferred specification includes bilateral and country-time fixed effects and employs the Poisson Pseudo-Maximum Likelihood (PPML) estimator. Robust effects emerge between the top five donors and more developed recipient countries, cases where aid flows are large. Thus, we see evidence that a critical level of aid is required to encourage greenfield investment. Both aid for infrastructure (particularly, transportation and energy) and building productive capacity are found to exert strong effects. To the extent that greenfield investment creates jobs and generates technology transfer, it appears that AfT is accomplishing its development objectives, at least with regard to the more advanced recipient countries.

Key words — Aid for Trade, greenfield investment

1. INTRODUCTION

Recognizing the importance of international trade as a valuable tool for facilitating economic growth and social development in developing countries, the World Trade Organization (WTO) member countries launched the Aid for Trade (AfT) Initiative at the Hong Kong Ministerial Conference in December 2005. AfT is comprised almost entirely of aid for trade-related infrastructure and building productive capacity. High-income member countries pledged to increase their AfT contributions for developing countries, particularly for least developed countries (LDCs), which were suffering from supply-side constraints and poor infrastructure. While the focus of AfT has been on its trade impact, it is likely to influence foreign investment as well. In this paper, we advance the understanding of the economic impact of AfT by considering its effects on new international investment in the form of greenfield projects.

We compile bilateral data for 25 donor and 120 recipient countries for the period 2003–13 in order to investigate the relationship between aid and international investment. We estimate the effects of bilateral AfT on counts and values of bilateral greenfield investment. Our specifications include both bilateral and time-varying country fixed effects. We estimate the relationship by applying the Poisson Pseudo-Maximum Likelihood (PPML) estimator. We find robust evidence that bilateral AfT increases bilateral greenfield investment. A falsification exercise provides only limited support for the proposition that causality runs in the other direction—investment causes additional aid.

The AfT Initiative marked the culmination of many years of great effort by multilateral agencies such as the United Nations, the WTO, and the Organization for Economic Cooperation and Development (OECD). A WTO task force identified AfT as comprising four categories: (1) technical assistance for trade policy and regulations; (2) trade-related infrastructure (transportation, communications, and energy); (3) productive capacity building (assistance for agriculture, manufacturing, trade development, banking, etc.); and (4) trade-related adjustment. Donor countries agreed to increase these types of aid. AfT is a subcomponent of Official Development Assistance (ODA) and is reported in the OECD's Creditor Reporting System (CRS).

AfT is expected to increase trade, thereby giving developing and least developed countries better access to foreign markets and goods. Another avenue through which AfT may promote economic development is foreign direct investment (FDI). There are a number of ways AfT promotes FDI. Aid targeted to improve infrastructure such as transportation, energy, and information technologies makes a recipient country more attractive to investors. It lowers the costs of selling to host-country consumers and of establishing export platforms or other links in the global production chain. Aid to develop productive capacity may be complementary to MNE investment. For example, aid for agricultural research may encourage investment in downstream food processing. The World Bank (2011) argues that aid may promote investment, stating "An important dimension of AfT support spans measures to make countries more attractive to foreign direct investment (FDI)" (page 13).

If AfT does promote investment in developing countries, there may indeed be a number of benefits to those countries. It is well established that multinationals are more productive and pay higher wages than domestic firms (Doms & Jensen,

* We thank three anonymous referees, seminar participants at the University of British Columbia, the University of Oregon, the University of Alberta, Korea University, and Okayama University for helpful comments. An earlier version of this paper was written while Lee was a visiting professor at Sauder School of Business, University of British Columbia. Final revision accepted: March 3, 2016.

1998; Huttunen, 2007). Many studies indicate that FDI provides increased productivity of domestic firms (important papers include Javorcik, 2004 and Haskel, Pereira, & Slaughter, 2007). Finally, Faber, Atkin, and Navarro (2015) find that multinational retail investment in Mexico has generated significant welfare increases, largely due to lower prices.

Most research on the effects of aid on international transactions has focused on trade. The earliest published gravity-based empirical work on aid and trade is Wagner (2003), who finds that aid increased donor exports to recipient countries during the period 1970–90. More recent work considers the effects of AfT and its components on trade.[1] Cali and te Velde (2011) study country-level exports for 99 countries over the period 2002–07 and find that aid for "economic infrastructure" is associated with greater recipient-country exports (aid for "productive capacity" has no significant effect on exports). Vijil and Wagner (2012) use a cross section of 88 countries to also compile evidence that infrastructure AfT promotes trade. Helble, Mann, and Wilson (2012) consider bilateral trade for the period 1990–05 in a gravity framework and find that total AfT (the sum of aid across all donors) increased both recipient exports and imports. Ferro, Portugal-Perez, and Wilson (2014) show that service sector aid promotes downstream manufacturing exports. Linking input–output information to trade and aid data for 132 countries over the period 2002–08, they find that the interaction between service aid and service input intensity of a manufacturing sector enters positively in regression specifications that control for country-year, country-sector, and sector-year fixed effects.[2]

There exists much less research on aid and foreign direct investment. Harms and Lutz (2006) find that the overall effect of foreign aid on the sum of foreign direct and portfolio equity investment was close to zero during the 1990s and, surprisingly, the effect was significantly positive for countries in which foreign investors faced a substantial regulatory burden. Selaya and Sunesen (2012) consider flows of FDI to 99 countries using data averaged over five-year intervals during the period 1970–2001. Their dependent variable is FDI inflows per capita and aid variables are also normalized by population. Their preferred estimation methods are different forms of the Generalized Method of Moments (GMM). They find that aid for social and economic infrastructure is "complementary" in that it is associated with more FDI, while aid for productive capacity deters investment.[3] Bhavan, Xu, and Zhong (2011) employ a similar framework to Selaya and Sunesen but limit their analysis to Bangladesh, Pakistan, India, and Sri Lanka. They claim that infrastructure aid promotes FDI but the negative squared term appears to dominate the direct (unsquared) aid term, indicating a negative relationship. Donabauer, Meyer, and Nunnenkamp (2014) consider multilateral FDI flows scaled by GDP as the dependent variable to assess the influence of aid and an index of physical infrastructure. To account for dependencies between three structural equations on the allocation of sector-specific aid, the determinants of infrastructure, and the determinants of FDI, they employ 3SLS and find strong evidence that aid for infrastructure had a strong direct effect on FDI during the period 1990–2010.

Other papers use bilateral data to investigate the relationship of aid and foreign investment for specific donor countries. Kimura and Todo (2009) use system GMM to evaluate the relationship between FDI and aid by considering five donor countries and 98 recipient countries over the period 1990–2002. Their dependent variable is the log of bilateral FDI and they evaluate aggregate and bilateral aid, sometimes split between "infrastructure" and "non-infrastructure".[4] The effects of aid on FDI are always insignificant, aside from a marginally significant positive impact of Japanese infrastructure aid on Japanese investment in recipient countries, which they term a "vanguard effect". Kang, Lee, and Park (2011) extend Kimura and Todo to show that among seven donor countries, Korea joins Japan as the only countries where aid seems to promote bilateral FDI based on 1980–2003 data.

We contribute to the literature on aid and foreign investment in a number of dimensions. First, unlike other studies on aid and FDI, we employ greenfield FDI data recently available from fDi Intelligence. Most studies use net FDI flows based on the international balance of payments (BoP). These data include cross-border equity flows as well as changes in retained earnings. FDI flows may imperfectly reflect new greenfield investment (and job creation) for two reasons. First, capital financing new plants may partly be raised in the host market (see Marin & Schnitzer, 2011). Second, retained earnings can be directed into government bonds or other passive investments. In addition, in specifications that use the log of FDI inflows such as Kimura and Todo (2009), the treatment of negative and zero or missing FDI flows poses a challenge for estimation. Counts and values of new greenfield investment do not contain negative values. In contrast to Selaya and Sunesen (2012), who use a semi-log specification (FDI flows scaled by population and logged right-hand-side variables), we handle zeros with the Poisson Pseudo-Maximum Likelihood (PPML) estimator proposed by Santos Silva and Tenreyro (2006). We also employ a larger sample of countries and investigate the subcategories of AfT in greater detail. Finally, our period of study, 2003–13, corresponds to an increase in AfT due to commitments under the AfT Initiative.

The next section briefly describes the AfT and greenfield data used in our study. We identify the empirical specifications in Section 3. The empirical results are presented in Section 4 along with their interpretations. The concluding section summarizes the results and discusses their implications.

2. DATA

(a) *Aid for Trade*

The OECD manages the CRS that contains flows of ODA. Flows are recorded as aid commitments and disbursements. We employ data on disbursements because commitments are not always fulfilled and there may be long lags before the funds are disbursed.[5] The OECD identifies Aid for Trade as comprising the following categories and asks donors to specify the aid falling under each category:[6]

(1) Trade-related infrastructure (INF): transport and storage (210), communications (220), and energy generation and supply (230).
(2) Building productive capacity (BPC): banking and financial services (240), business and other services (250), agriculture (311), forestry (312), fishing (313), industry (321), mineral resources and mining (322), and tourism (332).
(3) Trade policy regulations and trade-related adjustment (TPR): trade policies and regulations (331).

For our sample of 25 donors and 120 recipients for the period 2003–13,[7] the annual average of total disbursements of ODA and AfT was US$50.7 billion and US$11.1 billion, respectively. Figure 1 shows the trends of ODA, AfT, and aid other than AfT (non-AfT) for our sample. We observe a steady increase in AfT over the period. Overall ODA dips in 2007, reflecting a decrease in non-AfT. Figure 2 displays