

infrastructure & FDI

More FDI is likely to occur in countries with good physical infrastructure such as bridges, ports, highways, etc. It also seems likely that there are some diminishing returns in infrastructure, at least in infrastructure of a specified type. The first bridge is more important than the second than the third ... than the hundredth, and so on. Therefore, especially for countries with poor infrastructure, investing in improvements in infrastructure may be important for attracting FDI. Nonetheless, some countries with poor infrastructure may be unattractive hosts for FDI for a variety of other reasons, and even substantial investments in infrastructure might not bring FDI pouring in. But all else equal, a country with more infrastructure would be expected to attract more FDI (as well as more domestic investment).

The positive effect of infrastructure on FDI has been found to be quite robust to time periods and countries considered, other control variables included, and the like. Examining the determinants of FDI into U.S. states for 1981-1983, Coughlin et al (1991) find that more extensive transportation infrastructures were associated with increased FDI. Wheeler and Mody (1992) find that infrastructure quality is an important variable for developing countries seeking to attract FDI from the United States, but is less important for developed countries that already have high quality infrastructures.

Using a self-reinforcing model of FDI, Cheng and Kwan (2000) find support for good infrastructure (density of roads) as a determinant of FDI into 29 Chinese regions from 1985 to 1995. The quality of the roads, however, did not seem to matter much: high-grade paved roads did not perform any better than all roads in determining which regions hosted the most FDI.

Infrastructure Broadly Defined

Fung et al (2005) examine whether hard infrastructure, in the form of more highways and railroads, or soft infrastructure, in the form of more transparent institutions and deeper reforms, leads to more FDI. Their analysis controls for other determinants of FDI such as regional market sizes, human capital, and tax policies. Their data is on FDI from the United States, Japan, Korea, Hong Kong, and Taiwan to regions of China. They find that soft infrastructure is a more important determinant of FDI than hard infrastructure.

Government infrastructure is used to refer to a country's political, institutional, and legal environment. It captures aspects of legislation, regulation, and legal systems that condition freedom of transacting, security of property rights, and transparency of government and legal processes (Globerman and Shapiro, 2003). Government infrastructure is an important determinant of both FDI inflows and outflows. Not only does government infrastructure attract FDI, but the proper conditions can also stimulate the creation of home-grown MNEs that invest abroad. The biggest gains from improving government infrastructure appear to arise for small developing countries – the benefits of further enhancements may be less for countries already enjoying good governance.

Globerman and Shapiro (2003) examine the effect of government infrastructure on both the probability that a country receives FDI and separately on the amount of FDI received (for countries receiving any FDI). They find that countries failing to achieve a minimum threshold of effective governance are unlikely to receive any US FDI. Thus, ineffective governments that fail to promote transparent markets and whose legal systems are not rooted in English law are apt to be excluded from FDI. A second analysis

examines the determinants of the amount of FDI, for those countries receiving FDI. They find government infrastructure, including aspects of the legal system, to be an important determinant of the amount of FDI received, for countries that do receive FDI.

As richer data becomes available, the influence of more types of institutions can be examined and for a wider range of countries. Given the likelihood that the impact of institutions on FDI drops off once a certain level has been achieved, most interest has focused on examining the role of institutions on FDI into developing countries. Most estimates suggest that institutions are very important. Improving institutional quality from a low level to a high level could have as much of an impact on FDI as if suddenly shared a border -- a big change. It may be important to properly control for the correlation between per capita GDP and FDI and for potential endogeneity of institutions. In addition to institutions affecting FDI, some researchers have argued that FDI affects institutions, as will be discussed below for the case of corruption.

Corruption

Corruption is the misuse of public power or authority for private gain. Corruption tends to arise when governments control access to markets, so naturally corruption can matter for FDI. Wei (2000) established corruption's deterrent effect on FDI. Using data on bilateral investment from twelve source countries to 45 host countries, Wei finds that an increase in the corruption level in the host country leads to a reduction in inward FDI. An increase in the corruption level from that of Singapore to that of Mexico is estimated to have the same effect of deterring inward FDI as raising the tax rate by fifty percent.

Additionally Wei finds that US investors are no more adverse to corruption than average for OECD investors.

Not just the level of corruption in a host country, but the degree to which it differs from the level in the source country, may matter for FDI. Habib and Zurawicki (2002) provide support for the negative impact on FDI of both the level of corruption in the host country and the absolute difference in the corruption level between the host and the source country. MNEs from a country with high degrees of corruption may be better able to deal with high levels of corruption in a host country than firms from a country with little corruption. The former firms are experienced in dealing with corruption, whereas the latter are accustomed to transparency. Of course, corruption may take many forms, and thus experience from one country may not fully translate to another. On the other hand, firms accustomed to dealing with bribery might be able to operate well in less corrupt environments, but even they may undergo some adjustment to the different environment. Especially when there is still some corruption, it may be hard for foreign firms to learn just where bribes are needed and where rules must be followed.

While many papers operate on the notion that corruption deters FDI, the opposite can be argued as well. In fast-growing countries with substantial bureaucracies, the ability of corruption to “grease the wheel” may be more important than the amount of the bribe required. In such situations, the bribe may be considered a small price to pay for cutting through many layers of red tape and speeding up approval. When weighing costs versus benefits, how big of a bribe is required must be compared to how much of an improvement in speed or likelihood of approval is gained. The terms “helping hand” versus “grabbing hand” corruption have been used to distinguish corruption that

positively affects FDI from that which negatively affects FDI (see Egger and Winner, 2006). The fact that FDI on the whole seems to deter FDI suggests that corruption does more grabbing than helping.

In addition to the question of how corruption affects FDI there is also the question of how FDI might affect corruption. By the US Foreign Corrupt Practices Act of 1977, US firms are not allowed to bribe (or give gifts to) foreign governments to gain favor in contracts, so FDI from the United States might be expected to push toward less corruption. Kwok and Solomon (2006) propose three avenues through which MNEs may impact institutions in host countries. First, the regulatory pressure effect captures that foreign firms may be constrained to not pay bribes. Bribes may be against company norms, rules set by the source government, or conventions set by the global businesses community. Second, the demonstration effect is based on the notion that, similar to productivity, the tendency of MNEs to avoid corruption may spillover to other firms. When local firms deal with MNEs or hire some of their former workers, they can observe how business decisions are made in MNEs. The presence of MNEs should counter existing norms by demonstrating an alternative method of conducting business that can be more efficient. Finally, the professionalization effect relates to the likelihood that leaders (or future leaders) of host firms will acquire training in professional business practices (which discourage corrupt practices) and that these new practices will become socialized in younger generations.

One should recognize that the effect of corruption may be tough to separate from other aspects of government infrastructure such as bureaucracy, as corruption and bureaucracy tend to be linked (corruption arises to cut through the bureaucracy). In

addition to affecting whether a country receives FDI and how much FDI it receives, corruption could also impact the value foreign (or even domestic) firms are willing to pay when acquiring local firms. In general, corruption may be one of many dimensions a country may seek to improve upon in the hope of becoming a more attractive location for FDI.

Remaining Questions

More work needs to be done on how firms adapt to environments plagued by corruption. Some evidence suggests that more firms may opt for joint ventures in the face of corruption. A local partner may be more experienced at dealing with corruption and the host government in general. What other strategies do (or should) firms use when operating in a corrupt environment? Similar to joint ventures, are firms more likely to opt for acquiring a local firm over greenfield investment in corrupt environments? Is there evidence that firms adopt an expansion strategy in which experience in moderately corrupt countries helps prepare them to begin operations in more severely corrupt regimes? Do firms hire a larger proportion of local workers in more corrupt environments?

More work should also be done to address the variation in types of corruption. All corruption is not created equal. Are some forms of corruption more damaging to FDI than others? Some forms of corruption may act more like fixed costs, such as a bribe for approval to enter the market. Such corruption could be less distorting (as long as not prohibitive) than a bribe that is set in relation to number of employees, production or profits. What evidence is there that bigger or more profitable firms are expected to pay

larger bribes? In which situations are foreign firms especially exposed to corruption, and when are domestic firms just as bad off?

Kellenberg (2007) compares a policy of public input provision to a policy of subsidy incentives for attracting FDI. More analysis of this kind is needed, such as comparing a reduction in corruption or an improvement in government infrastructure to use of subsidies. One might like to know, due to corruption (alone), how much of a subsidy would Mexico have to pay to make it as attractive to FDI as Singapore? The next decade of research should bring us answers to such questions, and many more.

Further Reading

- Cheng, Leonard K., and Yum K. Kwan. 2000. "What are the Determinants of the Location of Foreign Direct Investment? The Chinese Experience." *Journal of International Economics* 51(2): 379-400. Evidence that good infrastructure, measured as density of all roads, matters for FDI into Chinese regions.
- Coughlin, Cletus C., Joseph V. Terza, and Vachira Arromdee. 1991. "State Characteristics and the Location of Foreign Direct Investment within the United States." *Review of Economics and Statistics* 73(4): 675-83. Finds that more extensive transportation infrastructures were associated with increased FDI into US states.
- Egger, Peter, and Hannes Winner. 2006. "How Corruption Influences Foreign Direct Investment: A Panel Data Approach." *Economic Development and Cultural Change* 54(2): 459-86. Argues corruption deters FDI in developing but not developed countries and that the importance of corruption has declined over time.

- Fung, K.C., Alicia Garcia-Herrero, Hitomi Iizaka, Alan Siu. 2005. "Hard or Soft? Institutional Reforms and Infrastructure Spending as Determinants of Foreign Direct Investment." *Japanese Economic Review* 56(4): 408-16. Demonstrates that soft infrastructure can be more important than hard infrastructure for attracting FDI to Chinese regions.
- Globerman, Steven, and Daniel Shapiro. 2003. "Governance Infrastructure and US Foreign Direct Investment." *Journal of International Business Studies* 34(1): 19-39. Finds government infrastructure matters for whether a country receives any FDI and also for the amount of FDI received.
- Habib, Mohsin, and Leon Zurawicki. 2002. "Corruption and Foreign Direct Investment." *Journal of International Business Studies* 33(2): 291-307. Considers both the level of corruption and the absolute difference in the levels across countries.
- Kellenberg, Derek K. 2007. "The Provision of Public Inputs and Foreign Direct Investment." *Contemporary Economic Policy* 25(2): 170-184. Compares investment in public infrastructure to subsidies as methods for attracting FDI.
- Kwok, Chuck C.Y., and Solomon Tadesse. 2006. "The MNC as an Agent of Change for Host-country Institutions: FDI and Corruption." *Journal of International Business Studies* 37(6): 767-85. Considers three avenues through which FDI can deter corruption.
- Wei, Shang-Jin. 2000. "How Taxing is Corruption on International Investors?" *Review of Economics and Statistics* 82(1): 1-11. Compares corruption to taxes as deterrents to FDI. Compares the deterrent effect of corruption to that of higher taxes, and

compares the response of FDI from the United States to corruption to that typical for the OECD.

Wheeler, David, and Ashoka Mody 1992. "International Investment Location Decisions: The Case of U.S. Firms." *Journal of International Economics* 33(1-2): 57-76.

Finds that the quality of infrastructure is quite important for US firms locating in developing countries, but not for developed country hosts.

Amy Glass

Department of Economics, Texas A&M University