The Capital Effects of Information Voids in Emerging Markets

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August 24, 2015

Abstract

The absence of local public information about a host country's investment environment is an institutional void that plagues foreign investors in emerging markets, yet little existing research analyzes the precise nature of that information void or the heterogeneity in foreign investors' strategies to manage the lack of publicly-available investment-relevant information. This paper presents a 2x2 typology of information (local/global and public/private) to clarify the concept of information, and disaggregates foreign investors into what is commonly understood as the universe of private cross-border capital flows: direct investment (FDI), portfolio investment (FPI), and bank debt. We develop theory to predict variation in foreign investors' sensitivity to local public information voids, arguing that banks are least sensitive to information voids; FPI is moderately sensitive; and FDI is most sensitive. Using novel time-series cross-sectional data on local public information and capital flows to the 30 largest emerging markets from 1978 to 2012, we find preliminary evidence of the relative sensitivity of different investors to widening information voids.

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[†]Special thanks to Institute of International Finance (IIF) and the Credendo Group for data use and permissions; three anonymous reviewers and our editor Mona Makhjia for valuble comments; participants at Harvard Business School / *JIBS* Paper Development Workshop (2015), International Political Economy Society Annual Meeting (2013), and University of Southern California's Center for International Studies Faculty Workshop (2014) for helpful feedback. The conclusions of this paper are the responsibility of the authors.

INTRODUCTION

Countries with institutional voids suffer from "absent or unreliable sources of market information, uncertain regulatory environments, and inefficient judicial systems" (Khanna, Palepu, & Bullock, 2010: 16). These voids affect the costs of doing business (Henisz & Swaminathan, 2008) and shape the perceived riskiness of decision situations (Makhija & Stewart, 2002), including by informing firms' nonmarket strategy choices (Doh, Lawton, & Rajwani, 2010). In this paper we examine local public information voids, a type of institutional void generated from the absence of reliable public information about the host country investment climate. In emerging markets, such information voids are common. Government transparency is low, local economic data is limited and unreliable, and domestic press and analyst coverage is thin, making it difficult for investors to anticipate adverse policy change or future investment returns (Durnev, Errunza, & Molchanov, 2009; Gelos & Wei, 2002; Hollyer, Rosendorff, & Vreeland, 2014).

Following recent advances in financial economics (Albuquerque, Bauer, & Schneider, 2009; Bae, Ozoguz, Tan, & Wirjanto, 2012), and drawing on underlying insights in international business (Hermann, Kang, & You, 2014; Makhija & Stewart, 2002), we argue that information is characterized by both its content, local or global, and its availability, public or private. Local public information is widely available information specific to the host-country and its policies, preferences, and outcomes (e.g. reported GDP growth rate), whereas local private information is closely-held host-country information (e.g. early warning of corporate tax rate change). Global public information is commonly-held knowledge of international policies, trends, or outcomes, such as U.S. business cycles; global private information is proprietary knowledge of a similarly global nature, such as knowledge related to cutting-edge technology. While significant research in international business focuses on individual knowledge (Haas & Cummings, 2015; Makhija & Stewart, 2002; Minbaeva, Pederson, Bjorkman, Fey & Park, 2003), multinational experience and learning (Alcacer, Dezso, & Zhao, 2013; Chang, 1995; Johansen & Valne, 1977; Luo & Peng, 1999; Li & Meyer, 2008; Makino & Delios, 1996) and country corruption and transparency (DiRienzo, Das, Cort, & Burbridge, Jr., 2007; Jandick & Kali, 2009; Kwok & Tadesse, 2006), there exists an opportunity to provide clarity of concept about the *type* of information involved in investment decisions. The purpose of this paper is to provide an information typol-

ogy that will address the current theoretical limitation in the international business (IB) literature.

In doing so, we also aim to advance understanding of institutional voids. Developed by Tarun Khanna and Krishna Palepu to explain the experience of managers in emerging markets, the institutional voids theory provides an overarching framework for much of what's missing in new or underdeveloped markets. Institutional voids occur when the host-country "falls short to varying degrees in providing the institutions necessary to support basic business operations" (Khanna & Palepu, 1997). This is noteworthy in capital markets where such voids give rise to diminished (local public) information flows about the host economy (Makhija & Stewart, 2002), which discourages investment, absent investor strategies to overcome the voids. In this paper we explore the extent to which local public information voids deter foreign investment, and how investors can strategically respond to overcome information voids, specifically whether local private information can substitute for missing public information.

To analyze local public information voids in emerging markets, we conduct empirical tests using novel data on foreign investment into the thirty largest emerging markets from 1994 to 2012.[1] We disaggregate capital flows into three main segments: *direct equity* investment (FDI), typically multinational corporations with controlling (>10%) ownership positions in local companies; *portfolio equity* and *portfolio debt* investment, (FPI) i.e. shares (<10%) or corporate bonds of local companies purchased on local public exchanges; and *bank debt*, i.e. loans from financial institutions who lend to diverse local enterprises. These segments comprise what is commonly understood as the universe of private capital flows.[2]

To evaluate the sensitivity of each type of foreign investment to the availability of local public information, we employ two cutting-edge measures of the level of publicly available, investment relevant information. Our measure of government transparency, or top-down information, is drawn from new work in political science and is based on the completeness of government reporting of financial data and other information to the World Bank (Hollyer, et. al, 2014). Following the work of Chan and Hameed (2006), we construct our bottom-up measure of information based on the number of analysts providing firm-level information and active monitoring of the investment environment. These measures assess the availability of two key types of local public information and jointly proxy for the depth of the information voids facing foreign

investors.

This paper's contributions are thus threefold. First, we provide IB with an organizing paradigm for information theories to facilitate more precise characterization of existing findings and open pathways to new research. Second, we provide insights on the effects of and strategic responses to an important and prevalent institutional void, local public information voids in emerging markets. Third, by investigating the common universe of foreign investment flowing into emerging markets, instead of the traditional foreign-versus-local dichotomy or the FDI-only studies dominant in international business, we identify important heterogeneity across investor types with regard to their capabilities and thus strategies for managing institutional voids. This answers an earlier call in the field to learn more "about the type of foreign firms or behaviors best able to cope with institutional variation" (Henisz & Swaminathan, 2008: 537). It also provides a path forward for micro-studies examining additional types of investor heterogeneity with regard to capabilities for managing information voids.

The paper proceeds as follows. In Section 2, we build on the institutional void and information literatures to develop theory and derive testable hypotheses regarding the relationships between local public information voids and investor behavior. In Section 3, we test these hypotheses using time-series-cross-sectional data on local public information and capital flows for the thirty largest emerging markets. We conclude the paper with a discussion of our findings and implications for future research. The online appendix contains additional empirical models and details on the data.

THEORY

Institutional Voids

Institutional voids demarcate the absence of important market information and government functions. They occur across capital, product, and labor markets as well as in macro contexts, and affect an array of market institutions including information analyzers, transaction facilitators, regulators, and government institutions (Khanna, et al., 2010). To those firms caught in institutional voids, risks are elevated in ways that fundamentally alter business strategy. Indeed, institutional voids have "real and first order effects on business strategy" (Khanna, et al., 2010:

28) and can be "both roadblocks and opportunities" (Khanna, et al., 2010: 16).

Focusing on information, Makhija & Stewart (2002) find that institutional voids diminish information flows, thus deterring investment. As free markets increase (i.e., as freedom from government direction increases or as national context changes to more free national institutional framework), managers perceive that they possess more accountability, and thus managers are more comfortable with uncertainty, in large part because they possess power over decision outcomes, and this promotes more risk acceptance or a higher propensity to take risk. Formal and information institutions consequently provide information to decision-makers and also facilitate the flow of information for broader market-based activities such as investment.

Diminished flows of information, such as a scarcity or absence of reliable information about the host country investment climate, are what we refer to as an "information void". This is a type of institutional void particularly relevant to capital markets, which are known to be extremely information-sensitive (Bell, Filatotchev, & Rasheed, 2012). Emerging capital markets in particular experience pronounced information voids, or absences of relevant market information. Given limited government transparency, unreliable domestic data, and scarce third-party analysis (i.e., underdeveloped institutions), foreign investors possess asymmetric information about the nature of investing in the host country market (Broner, Didier, Eric, & Schmukler, 2013; Frankle & Schmukler, 1997; Hermann, Kang & You, 2014; Mariotti & Piscitello, 1995). But foreign investors likely experience information voids differently.

How then can we better understand the nature of these information voids and why some investors may be better able to manage the lack of publicly-available investment relevant information? Is some information different than other types of information?

Information Typology

We characterize information by both its content (local or global) and its availability (public or private) (Figure 1). Local information is host country specific, related to the local environment and proximate to the decisions at hand. Global information, on the other hand, is international, systemic, and distant to the decision-making context. Within local or global content, information is either public or private. Public information is widely available, common and shared amongst all parties, with unrestricted or communal properties. However, private information

is narrowly available; it's idiosyncratic with proprietary and confidential properties, and undisclosed to most parties.

[FIGURE 1 ABOUT HERE]

Implicitly, most international research at the country-level has focused on public information. "Push" theories of foreign investment argue that specific fiscal and monetary policies in advanced economies are the primary drivers of emerging market investment (Baek, 2006; Calvo, Leiderman & Reinhart, 1993; Fernandez-Arias, 1996; Ghosh, Qureshi, Kim, & Zalduendo, 2014). We characterize any public information such as mature economy interest rates and output growth that pushes capital out of home markets as *global public* information. "Pull" theories argue that host-country policies and factor endowments attract foreign investment across borders (De Vita & Kyaw, 2008; Ghosh & Ostry, 1993). In other words, investors are primarily pulled by *local public* information about the country's economic and political fundamentals, such as domestic output and GDP growth or other public, country-specific asset or risk indicators, including the quality of government institutions. This tension between "push" and "pull" theories of foreign investment derives from the assumed relative importance of different types of public information (Albuquerque, 2005; Fratscher, 2012; Koepke, 2015).

In IB research at the firm-level, we find the primary focus on *global private* information. Scholars theorize that firms, particularly the multinational corporation, possess proprietary information that originates, in most cases, from superior global knowledge and experience (Alcacer, Dezso, & Zhao, 2013; Chang, 1995; Driffield, Love, & Menghinello, 2010; Johansen & Valne, 1977; Makino & Delios, 1996; Li & Meyer, 2008; Luo & Peng, 1999). When such knowledge is jointly (a) generalizable, e.g. relevant across location contexts, and (b) proprietary or highly specific to the firms' knowledge set, our typology defines it as global private information. Such global private information has been found to explain about half of global trades and around one-third of U.S. investors' trades in international equity markets (Albuquerque, et al., 2009). A quintessential example is new technology developed in the home market that can be applied to investments in different host markets. In addition, global private information is the focal information concept employed in the FDI spillover literature (Altomonte & Pennings, 2009; Caves, 1974; Gorg et al, 2001; Meyer, 2009; Zhang, Li, Li, & Zhou, 2010).

Local private information is different and taps into the rich theory on political connections

and familiarity (Amore & Bennedsen, 2013; Brockman, Rui, & Zhou, 2013; Faccio, 2006; Fisman, 2001; Hillmann, et al., 1999; Johnson & Mitton, 2003; King, 2014; Pan, Teng, Supapol, Lu, Huang, & Wang, 2014). Firms who possess local private information have deep, location-specific knowledge about the host country, often an outcome of close, privileged access to political actors who determine policy. Such firms use their political connections to learn early about country-level policy changes or to change policy in their favor, with the goal to improve performance outcomes. Conventionally, scholars have considered local investors closer to the domestic market, thus providing locals a local private information advantage over foreign investors (Broner, et al., 2013; Gehrig, 1993; Portes & Rey, 2005) and giving foreigners a liability of foreignness (Eden & Miller, 2004; Mezias, 2002; Petersen & Pedersen, 2002; Zaheer, 1995), which is why some foreign investors partner with local firms. Implicitly, this stream characterizes "close" and connected investors as having better local private information than "far away" or less well-informed investors. Across all literatures, local private information is considered salient and valuable.

What the existing research demonstrates is that specific types of information are relevant in different contexts and applicable for only certain types of research questions. To the extent research findings conflict, disaggregating the concept of information may yield more nuanced insights that may resolve these apparent conflicts. In all cases, defining the precise nature of information, whether its local or global in content and publicly or privately available, provides greater clarity of concept.

Local Public Information Voids

For our analysis of host country information voids, we focus on local information, the first column of our 2x2 matrix (Figure 1). Foreign investors often - and notoriously in emerging markets - experience limited publicly-available investment-relevant information about the host country, a local public information void. Data on the country's economic growth and output or other key investment indicators, such as status-quo policy levels or the ruling government's policy preferences, may be missing or unreliable. The host government may lack transparency in reporting or disseminating fundamental data, which may itself be an outcome of weak or autocratic political institutions (Hollyer, et al., 2011, 2013). Third-party analysts may also be

scarce, providing non-credible or spotty research that fails to supplement the absence of government supplied public information. Such missing public information about the host country is a local public information void that affects the decision calculus of foreign investors (Makjiha & Stewart, 2002). As investors gain better access to information flows about the local investment climate, the void narrows; as information becomes even more scarce, the void widens.

Strategic responses to information voids

How can investors strategically respond to these local public information voids? Khanna, et. al. (2010) suggest that, to overcome the absence of market information or certainty, firms seek "local knowledge, privileged access to resources, or other capabilities that can *substitute* for missing market institutions" (53, emphasis added). In their general framework of strategic responses, firms can replicate or adapt, compete alone or collaborate, accept or attempt to change market context, and enter, wait or exit markets (Khanna, et al., 2010). Here, we focus on firms' replication/adaptation and entry/exit strategies in response to local public information voids. In our examination of the three types of foreign capital suppliers (FDI, FPI, and bank debt), we investigate how investors' information (replication/adaptation) and speed (entry/exit) strategies affect their sensitivity to such voids.

Information Strategies. Theory on institutional voids broadly recognizes an adaptation strategy, whereby investors "adapt business models, products, or organizations to institutional voids" (Khanna, et al., 2010: 41). In conditions of scarce local public information, foreign investors can adapt by seeking local *private* information that bridges the information void or replicates the absent public information. Whereas local public information about the host country's investment climate may be scarce, private information about the investment climate can make up for the missing public information, thus increasing the willingness of privately informed investors to invest in opaque or less transparent countries. In other words, acquiring local private information is a substitution strategy for local public information. The implication then is that local private information becomes increasingly (decreasingly) valuable as the local public information void widens (narrows).

Because the level of local private information is known to generally vary across suppliers of

capital (Jensen & Meckling, 1976), it is reasonable to anticipate variation in foreign capital suppliers' local private information in emerging capital markets. Some investors may have superior or privileged knowledge about whether the host government will decide to, for instance, expropriate, increase its foreign exchange regulations, or change its tax policies. To the extent private information is a substitute for public information, investors with local private information capabilities have a competitive advantage. This is an important distinction amongst classes of capital flows. Below we derive testable predictions regarding these cross-class variations between commercial banks, portfolio investors, and direct investors in relation to their information capabilities and thus strategies.[3]

Foreign commercial banks have both the experience and access required to manage local public information voids (Beim & Calomiris, 2001). Banks lend to multiple parties across the economy and across any one firms' capital structure. They have in-house dedicated lending officers with ongoing and information-intensive relationships to borrowers. Indeed, banks negotiate for control by structuring covenants and rights in the lending documents which mimic, albeit imperfectly, the information transparency granted a principal. Also, banks typically have a significant domestic presence in the investment host country, with local branches and long-standing domestic exposures in both local and foreign currency making them less foreign or "far away" (Portes & Rey, 2005). This provides them strategic knowledge of the country borne from deep and broad market experience (Sengupta, 2007) and multiple bargaining games with the host government and local borrowers (Calomiris & Haber, 2014). With that comes relationships with political and economic elites, notably those responsible for transfer and convertibility policies, who funnel high-level, non-public information or reveal policy preferences (Cohen, 1996; Faccio, 2006; Shambaugh, 2004). We argue that banks are politically connected firms, imitating locals' greater private information about market conditions and the political environment.

Foreign direct investors, on the other hand, have significantly less local private information (e.g. Mariotti & Piscitello, 1995). Direct investors have principal information about their firm given their corporate control positions (Goldstein & Razin, 2006). They also have in-depth knowledge of their particular investment and, likely, significant global private information about their product or business line. These advantages add value. However, direct investors' *local* pri-

vate information is generally idiosyncratic and limited in scope to either to their firm or the relevant sector in which their firm operates. Moreover, while direct investors have the ability to develop relationships with political and economic elites (Henisz & Delios, 2004), that interaction is typically limited to the firm and sector in question and not multiple firms with multiple issues across multiple governmental actors (as is the case with banks who lend across multiple sectors to multiple parties). For all these reasons we expect that direct investors have access to less local private information than do private banks.

We theorize that portfolio debt and equity investors have the least local private information. With no direct control and no personal lending relationships to draw on, local information to portfolio investors is compromised relative to direct investors (Razin, et al., 1998) or banks. While any single portfolio investor might have experience investing in a particular country or, in the case of portfolio debt, some informational control positions in the bond covenants, portfolio flows are populated by large scale, broad, and even technical investors with limited on-the-ground knowledge. Often such investors manage diverse portfolios and choose investments based more on 'push' than 'pull' factors - indeed they often have significant global private information about, for instance, market benchmarks, future investment trends, and upcoming interest rate changes in advanced countries (Albuquerque, et al., 2009). But portfolio investors have neither the experience nor the access to relevant elites that would give them local private information on market and risk conditions in the host economy. Moreover, investing in portfolio debt and equity does not require repeat relationships with local political or economic elites. To buy the public stock or debt of a local company, portfolio investors are not required to gain operating concessions, business licenses, or building permits, or comply with any of the thousands of ongoing "doing business" regulations. In fact, portfolio debt and equity typically function without any domestic presence, short of an institutional prime broker that executes the trade. Thus their access to local private information is extremely limited.

In sum, we argue that there are important variations across classes of foreign investor with regard to their access to local private information. Private information is a close substitute to public information voids, and thus investors with local private information are less sensitive to local public information voids. Banks have private information; FDI has some private information; FPI has no private information. This makes banks competitively advantaged relative

to FDI and portfolio investors. When the host country investment climate changes, banks are aware of it via their private sources of information and can adapt their strategy appropriately, even if those changes are not reflected in local public information sources. However, in order to fully understand investors' sensitivity to local public information voids, we must understand not only whether investors have alternative private means of monitoring the investment climate, but also whether they have the ability to respond quickly to changes in that investment climate once they become aware of them.

[FIGURE 2 ABOUT HERE]

Entry/Exit strategies. In addition to developing private information capabilities in response to institutional voids, foreign investors can strategically enter/exit the market. In the same way that foreign investors vary in their ability to access private information, they also vary in how easy it is to remove (return) their foreign investment from a host country when they perceive an increase (decrease) in the attractiveness of the host country's investment environment. This ability to respond quickly, to be nimble to changes in the investment environment, is a function of investment liquidity; it is an observed, not theorized capability. Long-term, fixed investment assets are difficult to sell quickly in the face of political stress; shorter term, more liquid assets offer greater flexibility. Certainly there are important intraclass variations in investment tenors and exchange liquidity, but we maintain our focus on the variation that exists across classes of investor, which in the case of speed-of-response capabilities are both substantively large and empirically well documented.

Portfolio investors are most notable for the premium they place on asset liquidity. In fact, portfolio equity's liquidity constraint is the explicit tradeoff for the managerial efficiency that comes from direct ownership and control (Goldstein & Razin, 2006). Portfolio investors buy stocks or bonds with a targeted time horizon for the investment, potentially as short as an intraday trade or as long as ten years. On average, portfolio equity investors take shorter positions than do portfolio debt investors. When confronted with the premature or scheduled need to liquidate exposure, portfolio investors execute the sale of their debt or equity positions in open markets. Because portfolio equity markets are larger and deeper than public (or private) debt markets, equity investors have an important response advantage. This behavior is pro-

nounced by the "herding" behavior of portfolio equity investors, in which the pack follows the first-mover (e.g. Shleifer & Summers, 1990). Such ability to flee quickly in the face of noise or unfolding events has also been observed casually as evidenced in the empirical literature on "hot" capital (Calvo, Leiderman, & Reinhart, 1996; Kose, Prasad, Rogoff, & Wei, 2006; Prasad, Rogoff, Wei, & Kose, 2003; Reinhart & Reinhart, 2008). Liquidity is the compensating factor for portfolio investors' lack of private information. Faced with information voids, these investors have difficulty precisely monitoring changes in the host country investment climate, but once an actionable change is detected, they are able to respond very quickly.

Bank debt is also fairly nimble, able to quickly retreat if a country's risk level rises or surge inward in response to new opportunities. Specifically, if they perceive an adverse change to the investment climate, banks have the capability to halt loans in progress and cancel future borrowings. In certain circumstances banks also have the right to accelerate outstanding loans. While banks can be constrained by the nature of debt covenants and the liquidity of the secondary market - a similar constraint for portfolio debt - they are able to exit relatively promptly and react to shocks (Haber & Musacchio, 2013). When new information is received, banks can act on it quickly.

FDI, however, is a fixed investment that cannot easily or quickly change course. FDI is usually longer in tenor than bank debt or portfolio investment. This is one of the reasons FDI is so valuable to host economies (Ahlquist, 2006; Vernon, 1971). Yet FDI's relative illiquidity makes it more costly for direct investors to repatriate capital or exit the country when they perceive adverse policy changes pending or taking effect, such as the government contemplating restrictions on transferring or converting foreign currency into hard currency. Goldstein and Razin (2006) find that when direct investors are forced to sell prematurely, the price for FDI is materially lower than the price for comparable portfolio debt or equity. Put differently, the costs of expediting a sale or hard currency conversion for FDI are especially punitive. Similarly, new or expanded FDI can take time to implement and may be more costly if executed quickly. Our expectation then is that FDI reacts slowly to changes in the quality of the investment climate, even if direct investors receive information about those changes in a timely manner.

Figure 2 plots the relative position of FDI, FPI and bank debt with respect to information and exit capabilities and the associated information and exit strategies. Banks enjoy both privi-

leged access to private information and the ability to respond quickly to relevant developments in the host country; portfolio investors excel at rapid response, but have woefully limited access to local private information; while FDI has moderate access to local private information, but responds to new information quite slowly.

Faced with information voids, banks are well equipped. Their access local private information provides a close substitute for the missing local public information, and they are able to act on new information almost immediately when they receive it. At the other end of the spectrum, FDI's limited access to local private info, compounded by its inability to respond quickly to the private information it does have, leaves them very poorly positioned to manage information voids. To invest effectively, FDI needs reliable sources of both top-down and bottom-up public information, allowing them to make accurate long-term forecasts about the quality of the investment climate; in essence they need an information void not to exist. In the middle ground sits FPI. FPI shares, and even surpasses, banks' exit capabilities, but they don't have the information capabilities to match, and speed capabilities are a less complete substitute for the missing local public information. While banks and portfolio investors can both jump quickly when new information is received, if there is a wider information void, portfolio investors, who have less established channels 'on the ground', will be more likely to jump at false alarms, incurring substantial costs anywhere local public information is scarce or unreliable.

[FIGURE 3 ABOUT HERE]

Hypotheses. As articulated above, foreign investors' sensitivity to local public information is a function of both their level of private information and their ease of entry/exit (i.e. liquidity). The greater investors' information and speed capabilities and thus the more strategies available to manage information voids, the less sensitive to information voids they are. The net effect of Figure 2 is that banks are the least sensitive to information voids; FPI is moderately sensitive; and FDI is most sensitive. This leads to the following empirically testable hypotheses, which can be graphically represented in Figure 3:

> ***Hypothesis 1 - FDI:*** *More publicly-available investment-relevant information (e.g. narrowing of the local public information void) will have a* ***strong positive effect*** *on inward flows of FDI.*

Hypothesis 2 - FPI: *More publicly-available investment-relevant information (e.g. narrowing of the local public information void) will have a* ***positive effect*** *on inward flows of foreign portfolio equity and debt investment.*

Hypothesis 3 - Bank Debt: *More publicly-available investment-relevant information (e.g. narrowing of the local public information void) will have* ***little or no effect*** *on inward flows of bank debt.*

In sum, our theory suggests that we should see an impact of institutional information voids across foreign investment flows, and that these impacts will vary depending on foreign investors' strategic capabilities. While these hypotheses are specified at the level of aggregate flows, one alternative testing strategy would be to specify hypotheses at the firm level. We pause briefly here to highlight the advantages of aggregate flows data in terms of both external validity and policy relevance.

Any fully specified theory of investor behavior has testable implications at the level of aggregate flows because aggregate flows are simply the sum of individual investor decisions – individual-level effects aggregate up. A key advantage of data on aggregate flows is that they capture information across the entire population of interest (in this case, foreign investors in large emerging markets), yielding a high level of external validity. In contrast, any firm-level dataset is necessarily a sample, and often a non-random-sample, of the population of interest. In this case, measuring access to information directly would likely require original survey data, and in the context of emerging markets, manager-level surveys published in top business journals report response rates averaging 32% (Cycyota & Harrison, 2006). Thus, the typical survey-based dataset has information on only one third of the (randomly selected) sample, while two thirds of the firms are dropped from the analysis via a decidedly non-random process, sharply limiting external validity.

While the IB literature rightly focuses primarily on managerial implications, the field often produces knowledge of great value to policymakers as well, and nowhere is this more true that in the institutional voids literature. In this paper, by providing nuanced analysis of the relationship between information voids and global flows of capital, we are able to assist directly in data-driven policymaking in emerging markets (e.g. Gelos & Wei, 2002; Brandao-Marques, et al., 2013). Increasing government transparency has different impacts on different types of investment, and thus it may also have different implications for economic development. For ex-

ample, increasing transparency may be an effective tool for attracting direct investors, but less effective if a government seeks to attract bank debt. In other words, the top-down provision of local public information is a strategic tool, more appropriate for attracting some investors than others.

There are, of course, costs associated with aggregate data as well. Most importantly, we are able to examine only cross-class variation in investor strategies, while information on intra-class variation is lost. The ideal firm-level data would include direct measures of firms' access to private information, which would be valuable descriptively as well as providing a tool for predicting firm behavior in the face of information voids. Thus, we view firm-level testing as an important next step in this research agenda. However, testing the aggregate-flows hypotheses specified above offers a valuable first opportunity to put our theory at risk of falsification, and to connect cross-class variation in investor strategies to global patterns in the flow of foreign investment.

DATA AND RESULTS

We test these three hypotheses by analyzing the effects of information voids on net inflows of FDI, portfolio equity and debt, and bank debt in a sample of 30 large emerging markets from 1978-2012.[4]

Many cross-national studies draw their data on capital flows from the World Development Indicators (WDI), which do not distinguish between bank debt, portfolio debt, and portfolio equity investment and instead lump all non-direct private foreign investment together as foreign portfolio investment. We employ capital flows data from the Institute for International Finance (IIF), the private association of global banks and financial institutions, which makes this key disaggregation of private capital flows into FDI,[5] portfolio equity,[6], portfolio debt,[7] and bank debt[8] (IIF, 2014). In the analyses that follow, we pool portfolio equity and portfolio debt together because our predictions regarding these two flows are identical in these tests. The IIF tracks the 30 largest emerging market countries, which account for the vast majority of global capital flows to emerging markets.[9]

To test our hypotheses, we examine how the level of publicly available information about a

given market in year $t-1$ affects annual capital inflows in year t. We use a logged measure of each capital flow to deal with over-dispersion in the data. The raw data are net annual flows, and hence contain large numbers of negative values. To avoid dropping these values, we follow Kerner (2009) and calculate $ln\_investment = \pm ln|(investment + 1)|$.

We employ two measures of local public information to assess the severity of information voids: one of these measures, *government transparency* we draw from recent work by Hollyer, et al. (HRV) (2014) and, the other, *analyst coverage*, we create ourselves, following work by Chan and Hameed (2006).

Analyst coverage is based on the number firms in a particular host country that are covered by at least one analyst report, constructed using data from I/B/E/S international.[10] Chan and Hameed find that analyst coverage is positively associated with stock market synchronicity, indicating that, even though analysts write firm-specific reports, they serve primarily to provide market-wide information. Thus, *analyst coverage* captures an important bottom-up component of the public information available to investors.

The HRV measure treats transparency as a latent predictor of the reporting of data to the World Bank's World Development Indicators by host governments. HRV use a Bayesian item response theory model to generate an objective measure of government transparency based on binary measures of whether each of 240 variables is missing or present in the World Development Indicators (WDI): lower levels of missing data indicate higher levels of government transparency. World Bank staff exercise quality control over the WDI data, so non-missing values indicate not just that a government has reported information, but that the Bank deems the information credible. While the variables in the WDI cover a wide range of topics, HRV report that the variables with the highest discrimination factors – i.e. the variables that influence a country's transparency score most heavily – "overwhelmingly relate to trade and investment," which suggests that the HRV measure captures a critical top-down component of the information void facing foreign investors (2014: p. 11).

One key drawback of our analyst coverage measure, which we attend to carefully in the analysis, is that analyst coverage is likely caused by, as well as causes, investment.[11] To (partially) address this, we lag all independent variables by one year. In the online appendix we also demonstrate the robustness of our results to the inclusion of a lagged dependent variable

as a regressor.

Each of these new information measures has its limitations, but each captures a distinct and important type of information that is publicly available to potential investors. The two measures are only weakly correlated with one another $rho = -0.14$, indicating they are empirically, as well as theoretically, distinct. In the online appendix we also evaluate the robustness of our results to two alternative measures of local public information, one based on investment-related press coverage and the other an alternative calculation of analyst coverage.[12]

Data on GDP, GDP per capita, and trade (as a percentage of GDP) are taken from WDI. Data on bank deposits as a share of GDP come from the World Bank's World Financial Development Indicators, and we create our own (logged) count of the number of firms based in each host country that are listed on the New York Stock Exchange (NYSE). We use the Polity IV measure of democracy (Marshall & Jaggers, 2012), the Freedom House measure of civil liberties (Freedom House, 2013) and a transfer risk measure from the Credendo Group (Graham, Johnston, & Kingsley, 2015).

Summary statistics are provided in Table 1 while Table 2 shows the pairwise correlations between all independent variables.

[TABLES 1 & 2 ABOUT HERE]

Results

Our hypotheses predict that the availability of local public information has a positive effect on inflows of FDI and portfolio investment (FPI) but a negligible effect on inflows of bank debt. We estimate a series of linear panel regressions in which we use local public information (*analyst coverage* and *government transparency*) to predict these capital inflows. All models include country and year fixed effects. The country fixed effects control for the time-invariant portion of unobserved sources heterogeneity across countries, like language, culture, or geography. The year fixed-effects control for global shocks to the supply of foreign investment – such as the global financial crisis or trends in global interest rates – which are specific to a certain year or set of years.

We include democracy and respect for civil liberties as controls in the model because each may potentially affect both information availability and investment inflows. We also control for

the level of transfer risk and for a range of variables capturing macro-economic conditions in the investment host country.

[TABLE 3 ABOUT HERE]

Hypothesis 1 predicts that FDI is highly sensitive to the depth of information voids. Direct investors have local private information specific only to their firm and sector; they lack private information about other sectors, about the economy at large, and about the government. They also lack the speed capabilities to respond quickly to the new information they do receive. The results in Table 3 are consistent with this expectation: both measures of local public information are strong predictors of FDI. When local public information increases (decreases), FDI inflows increase (decrease) and the substantive effects are large. A one standard deviation increase (.72 unit) in analyst coverage leads to a 53% increase in FDI; a one-standard-deviation (2.5 unit) increase in transparency leads to a 55% increase.[13]

Portfolio investors we expect do not have local private information of any kind, but we do expect that they are able to use their speed capabilities as a partial substitute for missing local public information – they may not receive advance warning of pending changes in the investment climate, but they can respond quickly once the change becomes public knowledge. Thus, Hypothesis 2 predicts that flows of portfolio investment respond positively to both types of local public information as well, albeit likely not as strongly as FDI. Consistent with our theory, we estimate a positive and statistically significant effect of *government transparency*; however, our results for the analyst coverage measure are less strong. The estimated effect of *analyst coverage* is positive, but substantively small and statistically weak (Model 4).

We expect that foreign banks both have access to local private information and possess the ability to exit their investments quickly once adverse changes in the investment climate are detected. Thus, Hypothesis 3 predicts that banks are indifferent to the availability of local public information (i.e. to the depth of information voids). Consistent with this expectation, we fail to observe any statistically significant relationship between any of our information measures and bank debt. However, it is important to note that the estimated effects of both *government transparency* and *analyst coverage* are positive, indicating the possibility that this indifference is not complete.[14]

Endogeneity is a concern in this analysis. In particular it is possible that a country's current

investment stock affects both future flows of investment as well as government transparency and analyst coverage. We do not believe that a valid instrumental variable exists, but we do take several steps to reduce the risk that our results by this type of endogeneity. Across all models in Table 3, we lag all independent variables by one year to reduce the risk that our results are driven by reverse causation, and we include year fixed-effects to control for any influence of global economic trends or supply-side factors, such as U.S. interest rates, that might confound our results. In the online appendix, we add a lagged dependent variable as a regressor to create a dynamic linear panel model, and we see that this actually brings our results even more closely in line with theory.

In the online appendix, we also analyze two alternate measures of bottom-up local public information, investment-related press coverage and an alternative analyst coverage measure. These alternative measures underscore the robustness of our main results with regard to Hypotheses 1 and 3. In both cases we estimate positive effects of bottom-up local public information on FDI inflows, and weak negative effects on inflows of bank debt. In particular, these results increases our confidence that bank debt is truly indifferent to the availability of bottom-up local private information, and that the null result demonstrated in Table 3 is not driven simply by our inability to estimate bank debt with sufficient precision.

Unfortunately, these alternate information measures provide no support for Hypothesis 2. Like the analyst coverage measure used in Table 3, these alternative measures do not predict FPI flows well, and indeed perform somewhat worse than our main measure. Thus, we remain uncertain regarding the true relationship between bottom-up sources of local public information and FPI flows.

This uncertainty persists because our estimates of the effect of local information on FPI flows are imprecise, i.e the standard errors are large, making it difficult to reject the null hypothesis of "no effect." This imprecision in the estimates is driven by two compounding factors: 1) annual data loses much of the over-time variation in portfolio investment, which is very fast-moving; 2) much of the variance in FPI inflows into emerging markets is explained by "push" factors, like rates of return in developed economies, rather than "pull" factors like institutional voids (Keopke 2015). While some of these push factors are captured by the year dummies in the model, the effects of others remain in the error term. Thus, the relationship between FPI and

bottom-up source of public information remains an open area of empirical inquiry, one that is best pursued with either high-frequency data on flows or data at the investor- or deal-level.

While our focus is on the substantial variation that exists across classes of investor, we also acknowledge that interesting variation may exist within classes of investor, e.g. between different types of direct investor. In the online appendix we evaluate some of the intra-class variation within FDI, based on some assumptions regarding the types of direct investor that predominate in certain types of markets. While we find some variation across market types, public information has a positive effect on inward FDI flows across each subset of markets we examine, suggesting that the results we report in Table 3 are not driven by a narrow subset of direct investors – this appears to be a general effect across different types of direct investors.

Our results provide empirical support for our assertion that different classes of capital vary in their strategies for managing institutional voids. In particular, we show that direct investors are strongly sensitive to, and foreign banks largely indifferent to, the depth of information voids. We hope these results, and the new theory we have introduced, motivate the additional empirical research necessary to fully understand the degree to which portfolio investors are affected by information voids in host economies. We have identified important variation across investor types in their responses to these voids, but to achieve its aims, this article must be the first step, and not the last step, in this research agenda.

CONCLUSION AND FUTURE RESEARCH

Institutional voids have strong effects on investor performance in emerging markets, but these effects vary substantially across different classes of foreign investor. We examine one institutional void of particular relevance to capital markets, information voids, or the absence of reliable local public information about the host country. We present a theory of information that distinguishes between different types of information based on both content (local vs. global) and availability (public vs. private). We then identify two sets of capabilities – access to information and speed of exit – that determine investors' sensitivity to information voids. Private information is a near perfect substitute for local public information, while speed is an imperfect substitute. Investors with the ability to respond quickly when faced with new information can,

in part, make up for their failure to foresee changes in the investment climate (i.e. the lack of local public information) by responding quickly when those changes finally become apparent.

We present a typology of information that enables us to analyze the precise nature of information voids in emerging markets. We focus primarily on local public information, a type of information that differs both from the global private information under study in much of the literature on MNC's competitive advantages, and from the global public information that motivates "push" theories of foreign investment. By identifying variation in foreign investors' private information and speed capabilities we better understand their sensitivity to, and strategies for managing, information voids. Accordingly, our ability to distinguish amongst different kinds of information offers international business an organizing paradigm not just for theories of institutional voids but for the diverse theories of information, knowledge, and experience that exist across research streams.

We examine the full universe of global private capital flows, which we disaggregate into three components: FDI, FPI, and bank debt. Empirically we are able to show a clear distinction between the behavior of direct investors and foreign banks. Banks, armed with both superior access to local private information and excellent speed capabilities, are roughly indifferent to the depth of information voids; their ability to strategically substitute for missing local public information provides them with an important competitive advantage in these contexts. At the opposite end of the spectrum, FDI has both limited access to private information (i.e. access that is narrow in scope) and an inability to respond quickly when faced with new information. Thus, FDI is extremely sensitive to information voids, preferring to invest in climates where local public information if plentiful and long-term forecasts can be made with more accuracy.

FPI occupies a theoretical middle ground, possessing almost no access to local private information, but with sufficient speed capabilities to partially compensate for their ignorance. Because our theoretical expectations for FPI run toward the middle ground – expecting them to be less sensitive to information voids than FDI but more sensitive to FPI – our ability to confirm our theoretical expectations hinges on our ability to estimate inward flows of FPI with a high degree of precision. However, because FPI is both fast moving and driven more by push factors than by pull factors like institutional voids, precisely estimating the effect of information voids on FPI inflows is challenging. While we are able to confirm the sensitivity of FPI to the avail-

ability of top-down local public information (i.e. transparency), we are unable to reject the null hypothesis FPI is insensitive to voids in bottom-up local public information (i.e. analyst coverage and investment-related press coverage). Thus, the better effects of information voids on FPI remains an important area for future empirical investigation.

This project nevertheless has clear implications for both governments and investors. Our results show that increasing the level of publicly available information in a market will increase FDI. This is important because countries are hungry to reap the pro-development effects of FDI. Increasing transparency and the availability of information about the market should serve this end. Information voids matter!

However, governments who don't want to be transparent can still recruit foreign investment. Banks in particular have a competitive advantage in opaque and risky markets, and our results suggest they are largely undeterred by the presence of information voids. Thus, the depth of information voids affects not only the total volume of foreign capital flows that a country attracts, but also the **type** of capital that enters. This is critical because banks, portfolio investors, and direct investors each add different value to a host economy. FDI can add physical capital and employment, bank debt can provide financing for both foreign and domestic ventures, and portfolio investment offers domestic firms a larger pool of potential investors and lenders. Hence, as the mix of foreign investment shifts in response to changes in the availability of local public information, distributional consequences may follow, depending on who relies on the investment for employment, investment capital, and contributions to their production chain. Information voids have real and salient consequences.

Notes

[1]We focus both theoretically and empirically on emerging markets in which institutional voids are most relevant. We opt not to pool across emerging and developed economies because existing work as shown that the determinants of FDI in these two types of economy are distinct (e.g. Blonigen & Wang, 2004).

[2]We follow the World Bank and IMF's formal definition of capital flows and the Institute for International Finance's methodology for disaggregating cross-border capital flows.

[3]We acknowledge that within any one investment class there may be sizable variations in information capabilities between different investors; however, we focus on the variation across classes.

[4]The binding constraints on the sample are the country coverage of the IIF data and the time coverage of the data on transfer risk, which only goes back to 1994.

[5]Net flows of direct equity capital, including reinvestment of earnings on direct equity; at least 10% controlling stake.

[6]Net inflows of portfolio equity capital, including reinvestment of earnings on portfolio equity investment; less than 10% stake.

[7]Net external financing provided by all other private creditors: flows from non-bank sources into bond markets, as well as deposits in local banks by nonresidents other than banks. Includes credit by suppliers (excluding credits guaranteed or insured under credit programs of creditor governments), identified private placements of debt securities, and other financial securities issued in local or foreign currencies. Also includes estimated interest payments due but not paid, and estimated payments flows with private creditors other than commercial banks resulting from discounted debt transactions.

[8]Net disbursement from commercial banks (excluding credits guaranteed or insured under credit programs of creditor governments); generally includes bond purchases by commercial banks.

[9]Argentina, Brazil, Bulgaria, Chile, China, Colombia, Czech Republic, Ecuador, Egypt, Hungary, India, Indonesia, Korea, Lebanon, Malaysia, Mexico, Morocco, Nigeria, Peru, Philippines, Poland, Romania, Russia, Saudi Arabia, South Africa, Thailand, Turkey, Ukraine, United Arab Emirates, Venezuela.

[10]We scale the number of covered firms by GDP and then take the log. We thank an anonymous reviewer for suggesting we scale the measure by GDP.

[11]This may be true, to a lesser degree, of the HRV measure as well.

[12]As in the main results reported for analyst coverage, we observe a clear distinction between FDI inflows, which are quite sensitive to press coverage, and bank debt, which is insensitive. Counter to our theoretical expectations, however, we estimate a weak negative effect of press coverage on FPI inflows.

[13]Based on Table 3, Models 1 and 2.

[14]This is particularly true with regard to transparency. It is possible, with the right combination of control variables, to estimate a positive relationship between transparency and bank debt flows that is statistically significant.

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Tables and Figures

	Local	Global
Public	Widely-available or common information about host-country policies, preferences, or outcomes (e.g. GDP growth rate)	Widely-available or common information about international policies, trends, or outcomes (e.g. U.S. interest rates)
Private	Closely-held or proprietary information about host-country policies, preferences, or outcomes (e.g. confidential information obtained via political connections)	Closely-held or proprietary information about international policies, trends, or outcomes (e.g. information regarding new technologies)

Figure 1: Typology of information

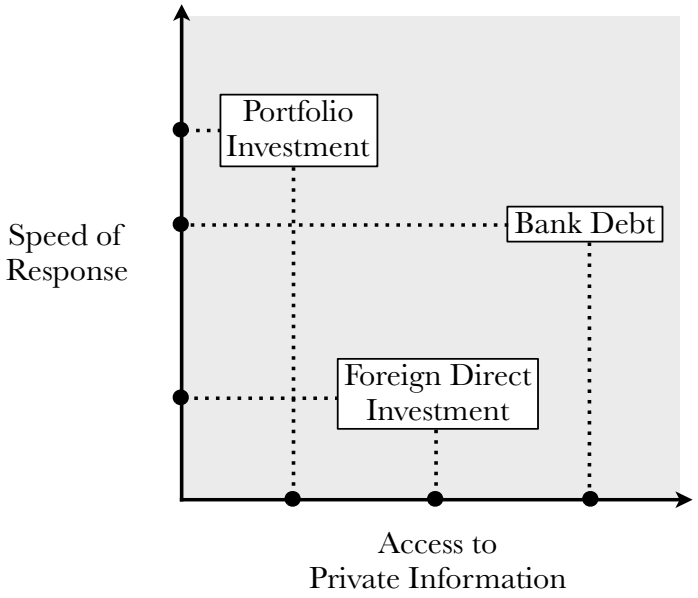

Figure 2: Summary of investor types. A classification of foreign investors by their access to local private information (horizontal axis) and their ease of entry/exit (vertical axis).

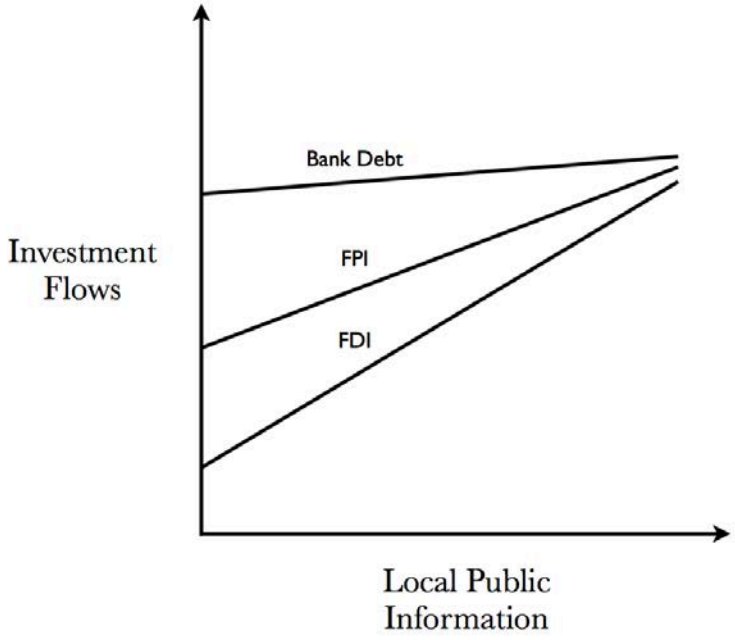

Figure 3: Relationship between local public information and different foreign investment flows.

Table 1: Summary Statistics: Data in Levels

Variable	**Mean**	**Std. Dev.**	**Min.**	**Max.**	**N**
Portfolio Equity Inflows (Millions of USD)	1207.12	4978.035	-33623	42861	825
Portfolio Equity Inflows (log)	2.486	5.022	-10.423	10.666	825
Portfolio Debt Inflows (Millions of USD)	3016.829	7587.022	-14769	72372	910
Portfolio Debt Inflows (log)	3.766	5.837	-9.6	11.19	910
FDI Inflows (Millions of USD)	6385.068	19733.722	-2702	279762	851
FDI Inflows (logged)	6.964	2.629	-7.902	12.542	851
Bank Debt Inflows (Millions of USD)	2143.907	8297.755	-48165	88073	906
Bank Debt Inflows (log)	2.581	6.795	-10.782	11.386	906
Government Transparency (HRV)	2.108	2.504	-10.87	9.981	868
Analyst Coverage	0.993	0.723	0.005	3.151	448
Trade (% of GDP)	62.021	35.592	9.102	220.407	936
GDP Growth	3.752	6.301	-43.546	46.572	1011
GDP Per Capita (log)	8.153	1.047	5.273	11.314	1015
Transfer Risk	3.796	1.577	1	7	549
Democracy [Polity IV]	2.482	6.887	-10	10	1006
Civil Liberties [Freedom House]	0.528	0.248	0	1	920
NYSE Listings (log)	0.692	1.06	0	4.489	713
Year	1995	10.104	1978	2012	1085

Table 2: Cross-Correlation of Independent Variables

Variables	HRV	Analyst	Trade	Growth	GDP PC	TRisk	Dem	CivLib	NYSE
Transparency	1.000								
Analyst Coverage	-0.138	1.000							
Trade (% of GDP)	0.199	0.482	1.000						
GDP Growth	0.066	-0.030	0.032	1.000					
GDP Per Cap (log)	0.117	-0.183	0.290	-0.069	1.000				
Transfer Risk	-0.220	-0.320	-0.354	-0.143	-0.366	1.000			
Democracy	0.543	0.052	0.031	-0.079	0.035	0.093	1.000		
Civil Liberties	0.561	-0.029	0.007	-0.096	0.134	-0.097	0.799	1.000	
NYSE Listings (log)	0.136	-0.073	-0.331	0.114	-0.018	-0.065	0.109	0.106	1.000

Table 3: Information and Capital Flows

	DV = Direct Investment		DV = Portfolio Investment		DV = Bank Debt	
	(1)	(2)	(3)	(4)	(5)	(6)
Government Transparency (HRV)	0.217**		0.724*		0.529	
	(0.068)		(0.276)		(0.588)	
Analyst Coverage		0.728*		0.197		0.396
		(0.268)		(1.126)		(1.457)
Trade (% of GDP)	0.002	0.002	-0.021	0.000	-0.026	-0.037
	(0.017)	(0.015)	(0.030)	(0.035)	(0.037)	(0.042)
GDP Growth	0.001	-0.004	0.020	0.047	0.254*	0.378*
	(0.017)	(0.020)	(0.082)	(0.087)	(0.115)	(0.137)
GDP Per Capita (logged)	1.062	0.890	4.318$^{\tau}$	2.848	1.009	3.848
	(0.671)	(0.580)	(2.216)	(2.109)	(4.143)	(2.944)
Transfer Risk	-0.178	-0.145	-1.250*	-1.768**	-1.713**	-2.009**
	(0.110)	(0.108)	(0.509)	(0.600)	(0.482)	(0.545)
Democracy	0.039	0.060	-0.051	-0.062	0.212	0.469**
	(0.033)	(0.039)	(0.135)	(0.152)	(0.184)	(0.168)
NYSE Listings (log)	0.360	0.378	-0.925	-0.943	1.015	1.324
	(0.301)	(0.324)	(0.607)	(0.792)	(0.688)	(0.900)
Civil Liberties	1.081	1.315	4.375	5.721	-6.176	-7.268
	(1.103)	(1.350)	(4.047)	(4.178)	(5.652)	(6.262)
Constant	-1.268	-0.678	-26.923	-13.624	0.981	-23.277
	(5.257)	(4.793)	(18.137)	(16.692)	(34.094)	(24.258)
Observations	430	381	430	381	430	381
R^2	0.162	0.137	0.164	0.175	0.216	0.327

Standard errors in parentheses
Sample = thirty largest emerging markets.
All models include country and year fixed effects and all independent variables are lagged one year.
$^{\tau}$ $p < 0.10$, * $p < 0.05$, ** $p < .01$

ONLINE APPENDIX

This is the online appendix to accompany the article, "The Capital Effects of Information Voids in Emerging Markets." It includes the proofs related to this model, and a range of robustness tests and empirical extensions related to the hypotheses tested in the main paper.

Additional Empirical Analysis and Discussion

Alternative Measures of Information

In the body of the paper we use *analyst coverage* and *government transparency* as our primary measures of local public information. Here, we present results using two alternative measures of bottom-up public information. *Investment press coverage* is a (logged) count of the number of investment related articles published in English about a country in a given year. We use LexisNexis to search all major English-language news publications and conduct a keyword search for "investment," restricted by country and date. This measure captures the degree to which investment-related information is available to investors through the press: this is the essence of what we refer to when we say "local public information." We also analyze *analyst coverage (unscaled)*, which is simply the logged number I/B/E/S analysts covering each country in a given year. This measure accounts neither for redundancy (multiple analysts covering the same firm), nor is it scaled by the GDP of the host country. Thus, we feel this measure is somewhat inferior to the specification in the body of the paper, but it does match the methodology used by Chan and Hameed (2006), and it provides an additional opportunity to test the sensitivity of our core results.

Theoretically, we expect *investment press coverage* and *Analyst Coverage (unscaled)* to operate in a very similar manner as *analyst coverage*. Both provide bottom-up, economy-wide information to investors about the state of the host country investment climate, helping reduce the severity of the information void they face. Thus, we expect both measures to have a positive affect on FDI and portfolio investment and no effect on bank debt.

One of the weaknesses of the Lexis-Nexis measure is that articles regarding investment may be more common when investment stocks are larger – the business press will devote more cov-

erage to host countries about which more foreign investors are interested. Fortunately, this risk is somewhat mitigated by the fact that we are capturing both positive and negative news stories: the number of stories is endogenous to the stock of investment, but it shouldn't be affected whether recent changes in the investment climate are good or bad. As with the analysis in the paper, we lag all independent variables one year and this substantially mitigates the risk that any positive correlations we observe between investment inflows and press coverage are driven by this type of endogeneity.

The results in Table A1 are similar to those presented in Table 3 in the body of the paper in that we see a clear separation, and indeed even a clearer separation here, between the behavior of FDI and Bank Debt. Consistent with H1 and H3, we estimate a positive and statistically significant effect of investment press coverage on inward FDI flows and a weak, negative relationship between press coverage and Bank Debt. The results for the unscaled analyst coverage measure are very similar, though the effect on FDI is not quite statistically significant ($p = .059$).

These results are not supportive, however, of H2, which predicts that FPI should have a strong positive relationship to the availability of local public information. Instead, we estimate a weak negative relationship for both measures. As discussed in the body of the paper, we thus remain uncertain regarding the true nature of the relationship between FPI and the supply of bottom-up local public information.

Alternative Specifications

The primary specifications of the information models, i.e. those presented in Table 3 in the body of the paper, are linear models with all independent variables lagged by one year. Table A2 presents models identical to these, but with a lagged dependent variable included as a regressor. We should note that, while inclusion of both unit fixed effects and a lagged dependent variable can cause Hurwicz (Nickel) bias in short panels, this risk falls quickly as T increases (e.g. Beck & Katz, 2011). In the models in Table 3 we average 15 observations per unit, a threshold at which it is unlikely that Hurwicz bias affects our results.[A1]

The results in Table A2 are similar to those inTable 3 in the body of the paper, and indeed even more closely aligned with theory. Consistent with H1 and the results in Table 3, both mea-

Table A1: Information and Capital Flows: Alternative Measures of Information

	DV = Direct Investment		DV = Portfolio Investment		DV = Bank Debt	
	(1)	(2)	(3)	(4)	(5)	(6)
Press Coverage	0.655*		-1.134		-0.705	
	(0.250)		(0.886)		(1.457)	
Analyst Coverage (unscaled)		0.389$^{\tau}$		-0.209		0.145
		(0.205)		(0.609)		(0.640)
Trade (% of GDP)	0.002	0.001	-0.019	0.002	-0.028	-0.037
	(0.015)	(0.015)	(0.029)	(0.035)	(0.032)	(0.043)
GDP Growth	-0.001	0.002	0.043	0.039	0.277*	0.380**
	(0.016)	(0.016)	(0.073)	(0.089)	(0.100)	(0.132)
GDP Per Capita (logged)	1.392$^{\tau}$	0.713	4.508$^{\tau}$	3.228	0.679	3.842
	(0.733)	(0.656)	(2.286)	(2.297)	(3.944)	(2.947)
Transfer Risk	-0.204$^{\tau}$	-0.144	-1.216*	-1.803**	-1.772**	-2.016**
	(0.114)	(0.099)	(0.514)	(0.609)	(0.484)	(0.537)
Democracy	0.037	0.051	-0.022	-0.064	0.259	0.464**
	(0.027)	(0.036)	(0.129)	(0.144)	(0.175)	(0.162)
NYSE Listings (log)	0.259	0.363	-0.850	-0.798	1.289$^{\tau}$	1.347
	(0.278)	(0.283)	(0.674)	(0.739)	(0.688)	(0.838)
Civil Liberties	1.291	1.201	3.626	5.569	-6.828	-7.356
	(1.010)	(1.304)	(3.651)	(4.157)	(5.212)	(6.349)
Constant	-4.367	-0.101	-25.306	-15.662	5.873	-23.429
	(5.732)	(4.770)	(18.775)	(17.659)	(32.719)	(24.346)
Observations	446	381	446	381	446	381
R^2	0.166	0.137	0.158	0.175	0.233	0.327

Standard errors in parentheses

Sample = thirty largest emerging markets.

All models include country and year fixed effects and all independent variables are lagged one year.

$^{\tau}$ $p < 0.10$, * $p < 0.05$, ** $p < .01$

Table A2: Adding a Lagged DV as a Regressor

	DV = Direct Investment		DV = Portfolio Investment		DV = Bank Debt	
	(1)	(2)	(3)	(4)	(5)	(6)
Government Transparency (HRV)	0.225**		0.624*		0.292	
	(0.070)		(0.249)		(0.511)	
Analyst Coverage		0.780*		0.201		0.169
		(0.315)		(1.135)		(1.238)
Trade (% of GDP)	0.002	0.003	-0.021	0.000	-0.017	-0.031
	(0.016)	(0.016)	(0.029)	(0.035)	(0.034)	(0.039)
GDP Growth	-0.000	-0.003	0.026	0.049	0.194$^{\tau}$	0.321*
	(0.016)	(0.020)	(0.084)	(0.085)	(0.098)	(0.124)
GDP Per Capita (logged)	1.080	0.914	4.290$^{\tau}$	2.895	-0.197	2.832
	(0.672)	(0.614)	(2.238)	(2.248)	(3.705)	(2.813)
Transfer Risk	-0.177	-0.147	-1.307*	-1.786**	-1.300*	-1.659**
	(0.112)	(0.113)	(0.514)	(0.629)	(0.492)	(0.555)
Democracy	0.034	0.066	-0.024	-0.067	0.263	0.469**
	(0.033)	(0.046)	(0.152)	(0.163)	(0.164)	(0.154)
NYSE Listings (log)	0.371	0.395	-1.010	-0.956	1.080$^{\tau}$	1.379$^{\tau}$
	(0.303)	(0.341)	(0.632)	(0.837)	(0.568)	(0.792)
Civil Liberties	1.080	1.359	4.389	5.811	-6.451	-7.342
	(1.097)	(1.397)	(4.110)	(4.403)	(4.999)	(5.627)
FDI (lagged)	0.020	-0.045				
	(0.060)	(0.050)				
FPI (lagged)			0.018	-0.009		
			(0.046)	(0.055)		
Bank Debt (lagged)					0.197**	0.144*
					(0.053)	(0.057)
Constant	-1.573	-0.650	-26.487	-13.900	9.225	-16.121
	(5.099)	(5.024)	(18.145)	(17.494)	(30.517)	(23.218)
Observations	427	381	427	381	429	381
R^2	0.160	0.138	0.166	0.175	0.243	0.340

Standard errors in parentheses
Sample = thirty largest emerging markets.
All models include country and year fixed effects and all independent variables are lagged one year.
$^{\tau}$ $p < 0.10$, * $p < 0.05$, ** $p < .01$

sures of local public information are strong predictors of FDI flows. Also similar to Table 3, we estimate a positive relationship between local public information and FPI, but only the transparency result is statistically significant. Lastly, consistent with H3, we estimate weak positive relationships between local public information and bank debt. In Table A3, the estimated effect of transparency on Bank Debt is substantively large but imprecisely estimated – here the result is substantively smaller, bringing the results more closely in line with theory.

It is noteworthy that it is only bank debt for which the lagged dependent variable is a strong predictor of current investment flows (once economic trends and conditions are controlled for). Thus it is only bank debt for which we see substantial changes in the coefficients of interest between Table 3 in the paper (without the lagged DV) and Table A4 here. The coefficients for information variables get smaller in all bank debt models, thus coming closer into line with our prediction of no effect.

Intra-class variation within FDI

While the focus in our paper is on variation across different classes of foreign investor, we acknowledge that there exists important variation within these classes as well. The strongest and most robust empirical results are those confirming H1 and demonstrating a strong positive relationship between FDI and local public information. In this section we address the possibility that the effects of information we observe for FDI flows may be driven by variation across different types of direct investors. Given the aggregate nature of our data on FDI, we do not have the ability to subset the flows directly according to firm characteristics, but we can address variation in the composition of FDI flows that we believe exists across different types of host countries.

In particular, we address the possibility that market-seeking FDI may be relatively insensitive to present levels of publicly available information. Even a market-seeking firm that lacks local private information may enter a country with low levels of public information if the market is sufficiently large and/or the market is protected by sufficiently high tariffs that exporting into that market is difficult. In Table A6 we reproduce Models 1 & 2 from Table 3, but interact our information measures with a series of three dummy variables capturing market size and trade barriers. *Large Market* takes a value of one if a country has an above-median market size,

as measured by log GDP; *Closed Market* takes a value of one if a country has above-median barriers to trade, as measured by average MFN applied tariff rates (World Bank, 2011); *Large Closed Market* takes a value of one if both *Large Market* and *Closed Market* are one.

Government transparency has a statistically significant positive effect on FDI inflows in countries with small, open, and small open markets, and a smaller, but still positive (and still statistically significant) effect on FDI inflows into large, closed, and large closed markets. *Analyst coverage* also has a positive effect in small, open, and small open markets, but actually has a slightly larger positive effect in large, closed, and large closed markets. This provides some suggestive, though not conclusive evidence, that market seeking FDI may be less sensitive than other FDI to the level of transparency in the host country, while simultaneously being more sensitive to analyst coverage.

Of substantive importance for our purposes is simply the finding that, while there is some variation across different types of host countries in the sensitivity of direct investors to information, the estimated effects remain positive across all subsets of host-countries. The positive effect of transparency is statistically significant in all subsets of countries. The positive effect of analyst coverage is not statistically significant in small economies or small open economies, but it is statistically significant in large economies, in open or closed economies, and in large closed economies.

Table A3: Information and FDI: Intra-Class Variation

	(1)	(2)	(3)	(4)	(5)	(6)
Government Transparency (HRV)	0.224**	0.299**	0.232**			
	(0.074)	(0.061)	(0.069)			
Large Market * Transparency	-0.010					
	(0.117)					
Closed Market * Transparency		-0.148*				
		(0.068)				
Large Closed Market * Transparency			-0.016			
			(0.067)			
Analyst Coverage				0.488	0.646*	0.583$^{\tau}$
				(0.360)	(0.292)	(0.325)
Large Market * Analyst				0.610		
				(0.441)		
Closed Market * Analyst					0.202	
					(0.201)	
Large Closed Market * Analyst						0.808
						(0.498)
Large Market (Log of GDP)	-1.012			-1.167$^{\tau}$		
	(0.876)			(0.652)		
Closed Market		0.423			-0.284	
		(0.327)			(0.257)	
Large Closed Market			-0.199			-0.656
			(0.415)			(0.481)
Trade (% of GDP)	0.003	0.003	0.002	0.003	0.002	0.001
	(0.017)	(0.016)	(0.017)	(0.015)	(0.015)	(0.015)
GDP Growth	0.002	-0.004	0.001	-0.004	-0.003	0.000
	(0.017)	(0.018)	(0.017)	(0.020)	(0.019)	(0.019)
GDP Per Capita (logged)	1.280$^{\tau}$	1.170	1.097	0.981	0.868	0.821
	(0.717)	(0.723)	(0.661)	(0.716)	(0.610)	(0.701)
Transfer Risk	-0.182$^{\tau}$	-0.189	-0.185	-0.129	-0.146	-0.103
	(0.106)	(0.111)	(0.116)	(0.101)	(0.111)	(0.112)
Democracy [Polity IV]	0.043	0.036	0.037	0.064	0.052	0.058
	(0.036)	(0.034)	(0.033)	(0.041)	(0.040)	(0.037)
Civil Liberties [Freedom House]	1.227	1.234	1.112	1.625	1.445	1.568
	(1.150)	(1.049)	(1.098)	(1.439)	(1.352)	(1.364)
NYSE Listings (log)	0.349	0.330	0.360	0.359	0.349	0.310
	(0.277)	(0.292)	(0.294)	(0.297)	(0.328)	(0.300)
Constant	-2.725	-2.429	-1.505	-1.247	-0.364	-0.173
	(5.715)	(5.810)	(5.240)	(6.020)	(5.022)	(5.797)
Observations	430	430	430	381	381	381
R^2	0.169	0.169	0.163	0.147	0.138	0.143

Standard errors in parentheses
Sample = thirty largest emerging markets.
All models include country and year fixed effects and all independent variables are lagged one year.
$^{\tau}$ $p < 0.10$, * $p < 0.05$, ** $p < .01$

Notes

[A1]We have examined the possibility of systems GMM estimation, but even when we limit the number of lags used as instruments, we still end up with a number of instruments in excess of the number of observations, and the models fail a Sargan test of over-identification. Thus, we prefer the simpler linear models, which have the added advantage of being more transparent in their assumptions.

References

1. Beck, N., & Katz, J. 2011. Modeling dynamics in time-series-cross-section political economy data. Annual Review of Political Science, 14: 331-52