

Disentangling the Effects of Geographic Proximity on Forex Social Trading Platforms

Research-in-Progress

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Abstract

Forex social trading is a nascent financial innovation that endows investors with opportunities to speculate on global currencies online by following and emulating investment strategies from savvy traders. Although social trading has been touted as a means of lowering distance barriers and facilitating interactions among investors, the geographical dispersion of forex markets confines traders' expertise to domestic currencies due to the cost of information gathering, thereby culminating in home bias behavior. Espousing geographic proximity theory, we endeavor to explore leading traders' home bias propensities on forex social trading platforms and uncover how such behaviors may affect their performance and their appeal to followers from afar. Furthermore, we strive to delve into the role of governmental transparency of currency issuers on reconciling followers' preference for profitable home-biased leading traders. In so doing, we quantify the influence of geographic proximity on leading traders' performance and followers' subscription tactics, which in turn yield insights into optimized emulative trading strategies for forex social trading.

Keywords: Geographic proximity, home bias behavior, forex social trading, governmental transparency

Introduction

Social trading platform offers an environment where leading traders engage in open transactions such that amateur investors (i.e., followers) can mimic these investment strategies (Berger et al. 2018; Dorfleitner et al. 2018; Glaser and Risius 2018). Although a diversity of financial instruments in the likes of binary options, commodities, cryptocurrencies, indices, and stocks have been traded on social trading platforms, Foreign Exchange (or Forex) trading is one of the most pervasive markets trading on these platforms (Dorfleitner et al. 2018). For example, ZuluTrade, one of the first social trading platforms boasts of USD \$8.6 billion trades in forex market (Glaser and Risius 2018). Forex is a global transaction market that allows traders to buy and sell a currency pair and speculate on the fluctuations of one currency relative to others (Hartmann 1999). Unlike other financial instruments, forex trading occurs around the clock and the value of each currency varies due to various socio-economic and

political factors associated with the currency issuing country (hereafter referred to as *currency issuer*) (Covrig and Melvin 2002). Past studies have alleged that traders' choice of and performance on traded currencies are dictated by the geographic proximity between their home country and currency issuers (Eichengreen et al. 2016; Melitz 2004). This is because closer geographic proximity between traders' home country and currency issuers grants better access to market information (John et al. 2008; El Ghouli et al. 2013). Specifically, the accessibility (Chakrabarti and Mitchell 2013) and information search cost (Leblang 2010) of a given capital market are shaped by investors' distance from the market (Chakrabarti and Mitchell 2013). In this sense, investors' portfolios tend to be home-biased (Ke et al. 2010; Lin and Viswanathan 2015) in that they are likely to comprise a higher portion of domestic or geographically vicinal assets (Oehler et al. 2008). Even though prior research has conceived home-biased investments as suboptimal, yet less risky decisions compared to more diversified options (Abid et al. 2014; Oehler et al. 2008), the emulative trading capability afforded by social trading platforms presents an opportunity for followers to harness home-biased investments as a source of market information.

By following traders who are deemed as being more knowledgeable about a given currency issuer on social trading platforms, followers can defray their information search cost on currencies for which they may not be familiar. In other words, social traders' choice of currencies not only affect their own trading performance, but it is also likely to have an impact on the geographic composition of their followers. Leveraging on the notion of geographic proximity to disentangle home-biased investment behavior, this study attempts to examine whether the distance between social traders' home country and the issuers of traded currencies would drive the profitability of their investment portfolio, and by extension, the geographic composition of their followers. Beyond the role of geographic proximity in governing accessibility to capital markets, past studies have also attested to how the level of governmental transparency of a currency issuer can shape traders' investment strategies (Oberlechner and Hocking 2004). Because a currency issuer which embraces transparency in information sharing information would lower the barrier for traders to acquire information about the currency (Bertot et al. 2010), we further take into account the moderating influence of governmental transparency on followers' inclination to emulate home-biased investments.

We synthesize extant literature on geographic proximity, home bias behavior, and governmental transparency (Ke et al. 2010; Lin and Viswanathan 2015) to unravel traders' performance from trading in geographically proximate currencies and its effect on followers in the context of forex social trading. Particularly, we endeavor to: (1) scrutinize traders' propensity to invest in geographically proximate currencies; (2) elucidate how home-biased investments could determine traders' performance and the geographical composition of their followers, as well as; (3) explicate how the governmental transparency of a currency issuer can alter followers' preferences for traders who are profitable on the focal currency.

Theory Development and Hypotheses Formulation

We draw on geographic proximity theory and home bias behavior to advance a research model (see Figure 1) that sheds light on how social traders' propensity to invest in geographically proximate currencies determine their performance, and ultimately entice more followers who are geographically distant from the issuers of these currencies. Additionally, we illuminate the moderating influence of governmental transparency in regulating the composition of distant followers for home-biased traders.

Forex Social Trading

Social trading is a digital financial investment platform infused with social networking elements (Kromidha and Li 2019). A distinctive feature of social trading is 'emulative trading' whereby platform participants could select and automatically emulate others' trading strategies (Berger et al. 2018; Glaser and Risius 2018; Kromidha and Li 2019). While participants of social trading platforms are scattered across the world, they could be divided into two main groups, namely leading traders and followers (Dorfleitner et al. 2018). Leading traders, who possess financial knowledge and trading experience, are providers of trade signals on social trading platforms. Leading traders' entire trading history and

performance are not only displayed prominently on such platforms, they can also share investment strategies and engage in social interactions with other platform participants. In turn, followers, who lack financial knowledge, market information, and trading skills, usually pay attention to the trade signals of leading traders and emulate the latter’s investment strategies through technologies capabilities afforded by these social trading platforms.

Forex trading is one of the most predominant markets operating on social trading platforms. The forex market is the largest transaction market worldwide (Menkhoff et al. 2016; Stosic et al. 2016), trading round the clock with global liquidity and a massive trading volume (Stošić et al., 2015). Forex trading is geographically dispersed (Stošić et al. 2015). Unlike stock exchanges or single commodity markets, forex trading centers on currency pairs from multiple countries. The first currency of a currency pair is the base currency and the second is the quote currency (ISO 4217, 2008). For instance, USD/CAD is a currency pair: USD is the base currency issued by the United States whereas CAD is the quote currency issued by Canada. Because geographic location can cause market information asymmetry in global transactions, it naturally dictates the investments strategies of leading traders and their choice of traded currencies (Leblang 2010; Lin and Viswanathan 2015).

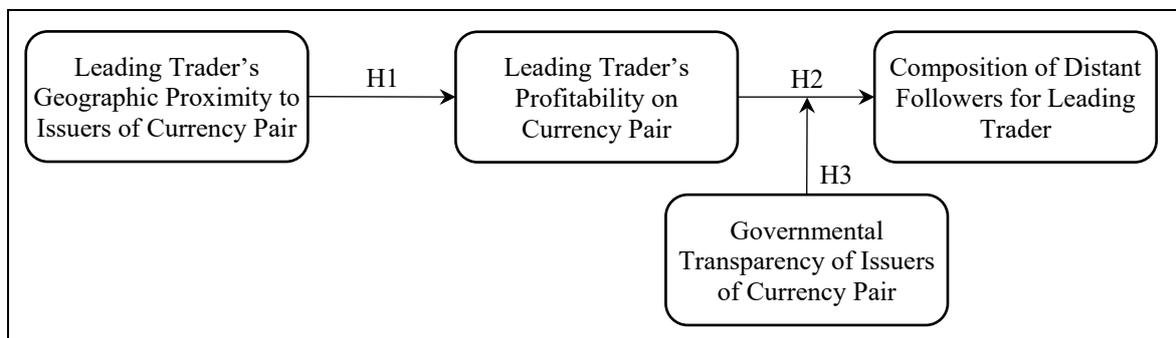


Figure 1. Research Model

Geographic Proximity and Home Bias Behavior in Forex Social Trading

Information asymmetry is one of the primary impediments encountered by traders and the amount of information accessible from the market is deterministic of their trading performances (Easley and O'hara 2004; Covrig and Melvin 2002; Goodhart 1988; Peiers 1997). Gleaning market information from other countries could elevate information search cost and increase the risk of missing the opportune time for investment (Lyons and Moore 2009). For this reason, a trader’s investment strategy tends to be biased in favor of their home country (Ke et al. 2010; Lin and Viswanathan 2015). According to Lin and Viswanathan (2015, p. 1393), home bias is “a phenomenon wherein agents (businesses, funds, etc.) are more likely to conduct transactions with parties who are geographically closer to them, either in the same country or the same state, rather than those outside”. Scholars have bear witness to home bias behavior in financial markets, where investors prefer to bet on domestic assets rather than diversify globally (Disdier and Head 2008; Graham et al. 2009). For example, Oehler et al. (2008) detected home-biased portfolio composition in German mutual funds market, identifying information asymmetry, perceived risk, and transaction costs as core factors leading to such biases. Apart from the prevalence of home-biased investments in conventional financial market (Eichengreen et al. 2016; Ke et al. 2010), such suboptimal yet effective decision-making tactic has also been unraveled in digital contexts (Hortaçsu et al. 2009; Lin and Viswanathan 2015). Lin and Viswanathan (2015) have witnessed home bias behavior in crowdfunding market and attributed the emotional affinity investors attach to nearby capital seekers as the impetus for the formers’ home-biased investment decisions.

Though home bias behavior has been reported in multiple investment contexts (Anderson and Van 2004; Burtch et al. 2013; Lin and Viswanathan 2015; Rose and Spiegel 2009), it is indistinct in forex trading given that the assets traded in forex market is a currency pair issued by two separate countries (Baruník et al. 2017). Advocating the idea of a ‘flat world’, past studies have blurred the concept of national borders by extrapolating home bias behavior to denote one’s tendency to invest in assets published by parties that are geographically proximate (Freidman 2005; Fung et al. 2007; Leamer 2007).

Specifically, prior research has posited that leading traders are more likely to invest in currencies issued by countries closer to their own because geographic proximity translates into better accessibility and lower search cost for market information to value traded currencies (John et al. 2008; Grinblatt and Keloharju 2001; Hattari and Rajan 2011; Burch et al. 2013). Accordingly, we conceive geographic proximity as an indicator of home bias behavior and strives to uncover the effect of traders' home bias propensities in determining their performance on social forex trading platforms.

Geographic proximity between a trader's home country and a given currency issuer can drive the profitability from buying or selling the said currency in three ways. First, traders benefit from informational advantages by speculating on geographically proximate currency pair. Due to better accessibility to diverse socio-economic and political cues that jointly influence the fluctuation of currencies, these traders experience reduced information search cost and are able to carry out the due diligence process more efficiently (Lewis 1999; Ke et al. 2010). For example, Loughran and Schultz (2005) discovered that the information search cost for rural firms is significantly higher than their metropolitan counterparts. Likewise, Baik et al. (2010) found that distance would amplify the difficulty of information acquisition, leading to depressed profit for domestic traders as opposed to international ones. Second, albeit from the angle of opportunity cost, traders can avert profound losses by investing in currency pairs that are geographically proximate given the riskiness and unpredictability of forex trading. Indeed, Abid et al. (2014) and Oehler et al. (2008) noticed that home-biased investments, despite being suboptimal compared to global diversification, remain dominant due to high levels of risk and uncertainty in international markets. Finally, distance also acts as a proxy for awareness and familiarity, which in turn could affect traders' sensitivity to and valuation of currencies (Leblang 2010). Taken together, it is conceivable that trader's profitability from investing in a currency pair is dependent on their geographic proximity towards the issuers of these currencies. We therefore hypothesize that:

Hypothesis 1: Geographic proximity between a leading trader's home country and the issuers of a currency pair is positively associated with the trader's profitability on the currency pair.

Emulative trading is a distinctive feature of forex social trading platforms whereby unsophisticated followers could rely on leading traders' private knowledge of currency markets to make investments (Berger et al. 2018). Followers, who have the intention of investing in a currency pair, will thus emulate trades from experts who are deemed to be reliable in predicting the floating exchange rate for the said currency pair (Dorfleitner et al. 2018). In this sense, leading traders' profitability on a currency pair could serve as a signal of credibility for garnering more followers. Dziuda and Mondria (2012) observed that individual investors, who do not structure investment portfolios on their own, tend to trust fund managers who specialize in assets from their home country since those managers are deemed to be better informed with respect to domestic markets. Similarly, Jagannathan et al. (2017) revealed that home-biased managers' performance on stocks from their own region significantly outperforms those of other managers investing in the same region and that superior profitability could attract more investors who are not located in close geographic proximity to the stock issuer. Given that investors tend to be confounded by market trends associated with currency pairs from distant issuers (Hattari and Rajan 2011), they are likely to become faithful followers of traders demonstrating greater potential in profiting from these currency pairs. We therefore hypothesize that:

Hypothesis 2: A leading trader's profitability on a currency pair is positively associated with their appeal on followers who are distant from the issuers of the currency pair.

Government Transparency

Despite the importance of geographic proximity in determining traders' performance, prior research has also postulated governmental control of information as an impediment to market accessibility, which in turn jeopardizes traders' assessments (Oberlechner and Hocking 2004). This is especially salient in forex trading where socio-economic and political status of the currency issuer can be hedged by the government (Reck and Wilson 2014; Wilson and Kattelus 2001). Consequently, governmental transparency of currency issuers could dictate traders' competency in accurately valuating a currency pair (Bertot et al. 2010). Past studies have conceptualized governmental transparency as the extent to which a government is open about its macroeconomic policies as well as their accountability, frequency,

and timeliness of information disclosure (Gelos and Wei 2002). Gelos and Wei (2002) confirmed that international investors are more confident in their assessment of the financial market for more transparent countries such that they show a greater willingness to hold a greater amount of assets from these countries. The same can be said for forex social trading. Predictability of currencies issued by countries with high level of openness are likely to dampen followers’ interest in home-biased traders of these currencies because the transparent climate lowers the barrier and search cost of market information (Caperchione and Salvatori 2012). Conversely, lower governmental transparency on the part of currency issuers would accentuate the value of private information held by traders who are in close geographical proximity to these issuers (Dawes and Helbig 2010; Vishwanath and Kaufmann 2001). We therefore hypothesize that governmental transparency of issuers for a given currency pair will moderate the extent to which followers from distant countries, instead of emulating home-biased traders, are more motivated to draw on their own knowledge for trading in the currency pair:

Hypothesis 3: Governmental transparency of the issuers of a given currency pair attenuates the positive relationship between a leading trader’s profitability on the currency pair and their appeal on followers who are distant from the issuers of the currency pair.

Methodology

Geographic proximity can be construed as the negative distance between two locations and has been applied in extant literature to estimate home market affect in bilateral trade flows (Anderson and Van 2004; Burtch et al. 2013; Rose and Spiegel 2009). The effect of distance is expressed in the form of reciprocal value. We hence derive geographic proximity between a leading trader / follower and issuers for a currency pair by calculating the reciprocal value of distance among the parties. The overall geographic proximity of a given currency pair is shown in Equation 1 below:

$$\text{Geographic Proximity} = \left(\frac{1}{1 + D_b} + \frac{1}{1 + D_q} \right) / 2 \quad (1)$$

where D_b represents the distance between leading trader/follower and the base currency issuer of a currency pair; D_q represents the distance between leading trader/follower and the quote currency issuer of a currency pair.

Data Collection and Operationalization

We plan to validate our research model based on data collected from a leading forex social trading platform. The platform is one of the first social trading platforms that facilitates emulative trading in forex market. To-date, we have elicited data on for 353 leading traders together with their trading history and followers’ demographics. Next, we will compute the overall geographic proximity between a leading trader and issuers of a currency pair they have invested in as well as extract the leading trader’s profitability on the said currency pair from their trading history. In the same vein, we will obtain the average geographic proximity between followers of the leading trader and the currency pair as a measure of the trader’s appeal on followers who are distant from the issuers of the currency pair. We further utilize Freedom on the Net index (Freedomhouse 2018) to represent the level of governmental transparency for each currency issuer. Specifically, this index was generated based on the assessment of online freedom, global overview of the latest developments, and in-depth national reports of 65 major counties (House 2015). We will also control for confounding variables such as trader’s diversification of investment portfolio, risk propensity, overall profitability, and followers’ trading performance. Detailed operationalization of each focal variable is depicted in Table 1.

Table 1. Definitions of Focal Variables

Variable	Definition
Geographic Proximity between Trader and a Currency Pair (GPTC)	Geographic proximity between the leading trader and a focal currency pair they have invested in

Trader’s Profitability on a Currency Pair (TPC)	Overall profit the leading trader earned on investing in the said currency pair
Geographic Proximity between Followers and a Currency Pair (GPFC)	Average geographic proximity between all followers of the leading trader and the said currency pair
Government Transparency (GT)	Rank of a country on Freedom on the Net (reversed)

Figure 2 depicts an illustrative comparison in the geographical distribution of followers from two leading traders who are differentiated based on their home-biased trading propensities. In the figure, red diamonds denote the location of the leading trader location whereas orange circles denote the location of followers. The size of the circle represents the proportion of followers’ composition. As can be inferred from Figure 2, the left picture is the home-biased leading trader (Colombia) and followers’ geographic distribution whereas the right picture is the no home-biased leading trader (Hong Kong) and followers’ geographic distribution.

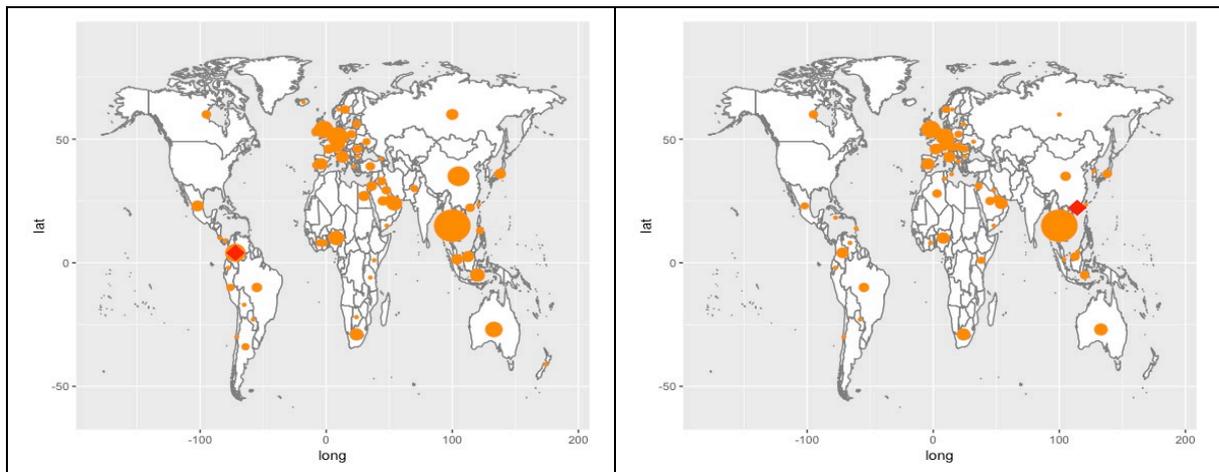


Figure 2. Geographic Distribution of Followers for Traders with Different Home Bias Propensity

Expected Contribution to Theory and Practice

As one of the pioneering attempts to explore the effects of geographic proximity in forex social trading, we aim to contribute to both theory and practice on three fronts. First, grounded in geographic proximity theory and home bias behavior, we consider the distance between leading traders and currency issuers as the primary cause of information asymmetry so much so that the accessibility and cost of market information would determine the former’s performances and their appeal to potential followers. Specifically, we operationalize trade flow as a dyadic relationship to disentangle the triadic geographic proximity between leading trader/follower and a given currency pair. Our study could assist future research in untangling geographical effects on forex markets. Second, we link the governmental transparency of a currency issuer to its market predictability and argue for the role of governmental transparency in lessening followers’ reliance on traders that are deemed to possess private information due to geographic proximity. Third, accounting for geographic impact on leading traders’ profitability and appeal to followers, this study not only yields insights for leading traders about portfolio design, but it also lays the foundation for optimizing recommendation systems through the incorporation of geographic proximity information on forex social trading platforms. For example, the platform could emphasize traders’ home bias propensity and their performances on home-biased trades to entice copy-trades from followers who suffer from geographical restrictions.

References

Abid, F., Leung, P., Mroua, M., and Wong, W. 2014. “International Diversification Versus Domestic Diversification: Mean-Variance Portfolio Optimization and Stochastic Dominance Approaches,” *Journal of Risk and Financial Management* (7:2), pp. 45-66.

- Anderson, J. E., and Van Wincoop, E. 2004. "Trade costs," *Journal of Economic literature* (42:3), pp. 691-751.
- Baik, B., Kang, J.-K., and Kim, J.-M. 2010. "Local Institutional Investors, Information Asymmetries, and Equity Returns," *Journal of financial economics* (97:1), pp. 81-106.
- Baruník, J., Kočenda, E., and Vácha, L. 2017. "Asymmetric Volatility Connectedness on the Forex Market," *Journal of International Money and Finance* (77), pp. 39-56
- Berger, E. S. C., Wenzel, M., and Wohlgemuth, V. 2018. "Imitation-Related Performance Outcomes in Social Trading: A Configurational Approach," *Journal of Business Research* (89), pp. 322-327.
- Bertot, J. C., Jaeger, P. T., and Grimes, J. M. 2010. "Using ICTs to Create a Culture of Transparency: E-Government and Social Media as Openness and Anti-Corruption Tools for Societies," *Government Information Quarterly* (27:3), pp. 264-271.
- Burch, G., Ghose, A., and Wattal, S. 2013. "Cultural Differences and Geography as Determinants of Online Pro-Social Lending," *MIS Quarterly*, Forthcoming.
- Caperchione, E., and Salvatori, F. 2012. "Rethinking the relationship between local government and financial markets," *Public money and management* (32:1), pp. 21-25.
- Chakrabarti, A., and Mitchell, W. 2013. "The Persistent Effect of Geographic Distance in Acquisition Target Selection," *Organization Science* (24:6), pp. 1805-1826.
- Covrig, V., and Melvin, M. 2002. "Asymmetric Information and Price Discovery in the FX Market: Does Tokyo Know More about the Yen?," *Journal of Empirical Finance* (9:3), pp. 271-285.
- Dawes, S. S., and Helbig, N. 2010. "Information strategies for open government: Challenges and prospects for deriving public value from government transparency," *In International Conference on Electronic Government*, Springer, Berlin, Heidelberg, pp. 50-60.
- Disdier, A. C., and Head, K. 2008. "The Puzzling Persistence of the Distance Effect on Bilateral Trade," *Review of Economics and Statistics* (90:1), pp. 37-48.
- Dorfleitner, G., Fischer, L., Lung, C., Willmertinger, P., Stang, N., and Dietrich, N. 2018. "To follow or not to follow—An empirical analysis of the returns of actors on social trading platforms," *The Quarterly Review of Economics and Finance* (70), p. 160-171.
- Dziuda, W., and Mondria, J. 2012. "Asymmetric Information, Portfolio Managers, and Home Bias," *Review of Financial Studies* (25:7), pp. 2109-2154
- Easley, D., and O'Hara, M. 2004. "Information and the Cost of Capital," *Journal of Finance* (59:4), pp. 1553-1583.
- Eichengreen, B., Lafarguette, R., and Mehl, A. 2016. "Cables, sharks and servers: Technology and the geography of the foreign exchange market (No. w21884)," *National Bureau of Economic Research*.
- El Ghouli, S., Guedhami, O., Ni, Y., Pittman, J., and Saadi, S. 2013. "Does Information Asymmetry Matter to Equity Pricing? Evidence from Firms' Geographic Location," *Contemporary Accounting Research* (30:1), pp. 140-181.
- Freedomhouse, 2018. [Online] Available: "<https://freedomhouse.org/report/freedom-net/freedom-net-2018/rise-digital-authoritarianism>".
- Freidman, T. 2005. "The world is flat," *New York: Farrar, Straus and Giroux*, (488).
- Fung, V. K., Fung, W. K., and Wind, Y. J. R. 2007. "Competing in a Flat World: Building Enterprises for a Borderless World (paperback)," *Pearson Prentice Hall*.
- Gelos, G., and Wei, S. J. 2002. "Transparency and International Investor Behavior (No. w9260)," *National Bureau of Economic Research*.
- Glaser, F., and Risius, M. 2018. "Effects of transparency: analyzing social biases on trader performance in social trading," *Journal of Information Technology* (33:1), pp. 19-30.
- Goodhart, C. 1988. "The Foreign Exchange Market: A Random Walk with a Dragging Anchor," *Economica*, pp. 437-460.
- Graham, J. R., Harvey, C. R., and Huang, H. 2009. "Investor competence, trading frequency, and home bias," *Management Science* (55:7), pp. 1094-1106.
- Grinblatt, M., and Keloharju, M. 2001. "How Distance, Language, and Culture Influence Stockholdings and Trades," *Journal of Finance* (56:3), pp. 1053-1073.
- Hartmann, P. 1999. "Trading Volumes and Transaction Costs in the Foreign Exchange Market: Evidence from Daily Dollar-Yen Spot Data," *Journal of Banking and Finance* (23:5), pp. 801-824.
- Hattari, R., and Rajan, R. S. 2011. "How Different Are FDI and FPI Flows?: Distance and Capital Market Integration," *Journal of Economic Integration*, pp. 499-525.

- Hortaçsu, A., Martínez-Jerez, F., and Douglas, J. 2009. "The geography of trade in online transactions: Evidence from eBay and mercadolibre," *American Economic Journal: Microeconomics* (1:1), pp. 53-74.
- House, F. 2015. "Freedom on the Net 2011," *Obtenido de https://freedomhouse.org/sites/default/files/F_OTN*, 202015.
- ISO 4217. 2008. "Codes for the representation of currencies and funds".
- Jagannathan, M., Jiao, W., and Karolyi, A. 2017. "Home field advantage: Fund manager national origin and US international mutual fund performance," *Working Paper*.
- John, K., Knyazeva, A., and Knyazeva, D. 2008. "Do shareholders care about geography," *Journal of Financial Economics* (73:2), pp. 271-288.
- Ke, D., Ng, L., and Wang, Q. 2010. "Home Bias in Foreign Investment Decisions," *Journal of International Business Studies* (41:6), pp. 960-979
- Kromidha, E., and Li, M. C. 2019. "Determinants of leadership in online social trading: A signaling theory perspective," *Journal of Business Research* (97), pp. 184-197.
- Leamer, E. E. 2007. "A Flat World, a Level Playing Field, a Small World After All, or None of the Above? A Review of Thomas L. Friedman's The World Is Flat," *Journal of Economic Literature* (45:1), pp. 83-126
- Leblang, D. 2010. "Familiarity Breeds Investment: Diaspora Networks and International Investment," *American Political Science Review* (104:3), pp. 584-600.
- Lewis, K. K. 1999. "Trying to Explain Home Bias in Equities and Consumption," *Journal of Economic Literature* (37:2), pp. 571-608.
- Lin, M., and Viswanathan, S. 2015. "Home bias in online investments: An empirical study of an online crowdfunding market," *Management Science*, (62:5), pp. 1393-1414.
- Loughran, T., and Schultz, P. 2005. "Liquidity: Urban versus Rural Firms," *Journal of Financial Economics* (78:2), pp. 341-374.
- Lyons, R. K., and Moore, M. J. 2009. "An Information Approach to International Currencies," *Journal of International Economics* (79:2), pp. 211-221.
- Melitz, J. 2004. "Geography, trade and currency union. Volbert Alexander, Jacques Mélitz and George M. Von Furstenberg, Monetary unions and hard pegs: Effects on trade, financial development and stability," *Oxford University Press, New York* (5), pp. 69-87.
- Menkhoff, L., Sarno, L., Schmeling, M., and Schrimpf, A. 2016. "Information flows in foreign exchange markets: Dissecting customer currency trades," *The Journal of Finance* (71:2), pp. 601-634.
- Oberlechner, T., and Hocking, S. 2004. "Information sources, news, and rumors in financial markets: Insights into the foreign exchange market," *Journal of Economic Psychology* (25:3), pp. 407-424.
- Oehler, A., Rummer, M., and Wendt, S. 2008. "Portfolio Selection of German Investors: On the Causes of Home-Biased Investment Decisions," *Journal of Behavioral Finance* (9:3), pp. 149-162.
- Peiers, B. 1997. "Informed Traders, Intervention, and Price Leadership: A Deeper View of the Microstructure of the Foreign Exchange Market," *Journal of Finance* (52:4), pp. 1589-1614.
- Reck, J. L., and Wilson, E. R. 2014. "The relative influence of fund-based and government-wide financial information on municipal bond borrowing costs," *Journal of Governmental and Nonprofit Accounting* (3:1), pp. 35-57.
- Rose, A. K., and Spiegel, M. M. 2009. "International Financial Remoteness and Macroeconomic Volatility," *Journal of Development Economics* (89:2), pp. 250-257.
- Stosic, D., Stosic, D., Ludermir, T., de Oliveira, W., and Stosic, T. 2016. "Foreign exchange rate entropy evolution during financial crises," *Physica A: Statistical Mechanics and its Applications* (449), pp. 233-239.
- Stošić, D., Stošić, D., Stošić, T., and Stanley, H. E. 2015. "Multifractal analysis of managed and independent float exchange rates," *Physica A: Statistical Mechanics and its Applications* (428), pp. 13-18.
- Vishwanath, T., and Kaufmann, D. 2001. "Toward transparency: New approaches and their application to financial markets," *The World Bank Research Observer* (16:1), pp. 41-57.
- Wilson, E. R., and Kattelus, S. C. 2001. "Implications of GASB's New Reporting Model for Municipal Bond Analysts and Managers," *Public Budgeting and Finance* (21:3), pp. 47-62.