

Geographic and Contextual Distance

Beugelsdijk, S.; Nell, P. C.; Ambos, B.

The following document describes the distance data used in the following publication:

Beugelsdijk, S.; Nell, P. C.; Ambos, B (2017), When Do Distance Effects Become Empirically Observable? An Investigation in the Context of Headquarters Value Creation for Subsidiaries, Journal of International Management, in press, advanced online, available online 3 April, 2017.

<http://dx.doi.org/10.1016/j.intman.2017.03.002>

We directly quote from the publication. The data itself is available for download in a stata file format. In case of using the data, please cite the paper.

Data description

We used the well-known CAGE framework (Ghemawat, 2001) which conceptualizes distance in a multidimensional way by distinguishing between cultural, administrative, geographic, and economic distance. The distance literature has progressed in the last decade, and we apply the latest insights to operationalize the CAGE framework. Specifically, we apply the Mahalanobis technique (Mahalanobis, 1936; Berry et al., 2010; Beugelsdijk et al., 2017). Unlike the standard Euclidean distance measure as commonly applied (e.g. Kogut and Singh's cultural distance index) the Mahalanobis technique corrects for the correlation between the dimensions on which distance is calculated. By using the principal components of the dimensions included, it is unitless, scale invariant and corrects for the co-variance between dimensions. This is an improvement compared to the standard measures used especially when there is a moderate to high degree of correlation between the dimensions on which distance is calculated.

We collect distance data on these four dimensions for all country pairs in the world. The proxies for cultural, administrative, geographic, and economic distance, as described below, are commonly used in

international management literature and in distance literature specifically. The novelty of our application here is how we consistently control for the correlated nature of these dimensions and use the full set of country pairs for which data on these CAGE dimensions is available.

- We measured **geographic distance** as the distance between the most populated cities per the CEPII database (Mayer and Zignago, 2011).
- **Cultural distance** is based on the four original Hofstede dimensions, plus the two dimensions recently added by Hofstede and coauthors (Hofstede et al., 2010). To control for correlations between the different Hofstede dimensions, we apply the Mahalanobis technique.
- **Economic distance** is calculated as the absolute difference in 2008 GDP per capita (PPP corrected in 2010 international dollars). We sourced GDP per capita data from the World Development Indicators.
- **Administrative distance** was measured as the absolute distance on the average of the six World Governance Indicators (2008) as developed by the World Bank (Kaufmann et al., 2008). The Kaufman indexes of administrative distance have commonly been used in international Business (e.g. Hutzschenreuter et al 2014; Abdi and Aulakh, 2012). The six items (Voice and Accountability, Political Stability, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption) included in the WGI of the World Bank are highly correlated. A factor analysis confirms that they form one factor with a Cronbach's alpha of 0.96 with the first and only factor explaining 97% of the variation in these six items. This very high shared variance among these governance dimensions also implies that there is no added value in looking at the dimensions of administrative distance separately, nor in calculating a Mahalanobis-corrected administrative distance measure just for administrative distance (Mahalanobis, 1936). Thus, we aggregate the six governance scores into one overall measure and take the absolute difference between those mean scores to calculate the administrative distance for each country pair.

For the population of country pairs for which we have data on geographic, cultural, economic, and administrative distance ($N = 3721$; 61 countries), we perform a factor analysis. Our results show that geographic distance is different from the other three distance constructs while cultural, economic, and administrative distance load on one single factor (Cronbach's $\alpha = 0.73$). This confirms that a distinction should be made between distance in a geographic sense and distance as a proxy for contextual changes once crossing borders (Beugelsdijk and Mudambi, 2013). Thus, we operationalize the CAGE framework by distinguishing between **geographic distance** and what we call "**contextual distance**" (cf. Doz et al., 2001). **Contextual distance** relates to differences in culture, economic development, and quality of governance. Geographic and contextual distance are positively correlated with each other only to a small extent ($r = 0.14$).

REFERENCES

- Abdie, M. and Aulakh, P.S. (2012). 'Do country level institutional frameworks and interfirm governance arrangements substitute or complement in international business relations'. *Journal of Beugelsdijk, S., Kostova, T., and Roth, K. (2017). 'An overview of Hofstede inspired country level culture research since 2006'. *Journal of International Business Studies* 48(1):*
- Beugelsdijk, S. and Mudambi, R. (2013). 'MNEs as border-crossing MLEs: the role of discontinuities in geographic space'. *Journal of International Business Studies*, 44(5), 413–426.
- Berry, H., Guillen, M. and Zhou, N. (2010). 'An Institutional Approach to Cross-National Distance'. *Journal of International Business Studies*, 41(9), 1460–1480.
- Doz, Y., Santos, J. F. P. and Williamson, P. J. (2001). *From global to metanational*. Boston: Harvard Business School Press.
- Ghemawat, P. (2001). 'Distance Still Matters. The Hard Reality of Global Expansion'. *Harvard Business Review*, 79(8), 137–147.
- Hofstede, G., Hofstede, G. J. and Minkov, M. (2010). *Cultures and organizations; software of the mind* (3rd ed.). New York: McGraw-Hill.
- Hutzschenreuter, T., Kleindienst, I. and Lange, S. (2014). 'Added psychic distance stimuli and MNE performance Performance effects of added cultural, governance, geographic, and economic distance in MNEs' international expansion'. *Journal of International Management*, 20(1), 38–54.
- Kaufmann, D., Kraay, A. and Mastruzzi, M. (2008). *Governance matters VII: aggregate and individual governance indicators 1996–2007*. Policy Research Working Paper 4654. The World Bank, Washington D.C.
- Kogut, B. and Singh, H. (1988). 'The Effect of National Culture on the Choice of Entry Mode'. *Journal of International Business Studies*, 19(3), 411–432.
- Mayer, T. and Zignago, S. (2011). Notes on CEPII's distance measures: the GeoDist database, CEPII working paper 25, December, 2011.
- Mahalanobis, P. C. (1936). On the generalized distance in statistics. *Proceedings of the National Institute of Sciences (Calcutta)*, 2, 49-55