Leal-Rodríguez, A. L., & Sanchís-Pedregosa, C. (2019). Could the Ease of Doing Business Index be considered a predictor of countries' socio-economic wealth? An empirical analysis using PLS-SEM, *12*(4), 229-243. doi:10.14254/2071-8330.2019/12-4/15

Journal of International Studies

Scientific Papers

Could the Ease of Doing Business be considered a predictor of countries' Socio-Economic Wealth? An empirical analysis using PLS-SEM

Antonio L. Leal-Rodríguez
Faculty of Economics and Business Science, Universidad de Sevilla, Sevilla, Spain
aleal6@us.es

Carlos Sanchís-Pedregosa
Faculty of Business Science, Universidad del Pacífico, Lima, Peru
c.sanchisp@up.edu.pe
Faculty of Economics and Business Science, Universidad de Sevilla, Sevilla, Spain
csanchis@us.es

Abstract. The wealth of nations differs significantly due to different factors. One of the reasons identified by previous studies is the level of entrepreneurship promotion by governments. This aspect has scarcely been studied empirically to date. Therefore, this paper sheds some light on this regard through building a construct out of ten Ease of Doing Business Index (EDBI) measures developed by the World Bank and relating it with a construct shaped by two measures of socio-economic wealth (SEW), namely gross domestic product and the Human Development Index. To this end, we conduct a structural equation model analysis using partial least squares (PLS-SEM) method with a 2018 database comprising secondary data from 190 countries. As the main contribution of this study, the results show that good performance in the EDBI ranking predicts good performance in the SEW ranking. Additionally, this study is pioneer in the use of these rankings to build composite constructs (latent variables) and relate them. For these reasons, our findings are useful for both academia and governments responsible for promoting entrepreneurship, as this latter is identified as the key enabler of economic development.

Keywords: ease of doing business, socio-economic wealth, gross domestic product, Human Development Index, PLS-SEM.

JEL Classification: L26, O11.

Received: January, 2019
1st Revision: May, 2019
Accepted: November, 2019

DOI: 10.14254/2071-8330.2019/12-4/15

1. INTRODUCTION

Factors involved in determining the socioeconomic level development of nations are common subjects in a large number of research studies to date. However, this area still requires further analysis (Mongay, 2018). Specifically, a government role as facilitator of enterprises' creation is identified as the key issue for economic growth of regions (Ruiz, Cabello and Pérez-Gladish, 2018). For this reason, entrepreneur abilities to modify their environment through leveraging opportunities resulted from wealth creation, as Wang (2017) pointed out, need to be strengthened, or at least not hindered, by governments serving to develop their potential (Szirmai, Naudé and Goedhuys, 2011). Therefore, entrepreneurship is considered a driver of economic change and for some authors such as Greenspan and Wooldridge (2018, as cited in Book, 2019) both are interchangeable terms in countries like America.

Since 2002, the World Bank Group has been developing its Doing Business project, aimed at providing impartial and objective measures of national business regulations (Doing Business, 2018). According to their ease of doing business, these reports rank countries from 1st to 190th place. The higher an economy appears in this ranking, the more favorable its business regulatory environment is in relation to launching and development of enterprises. The Ease of Doing Business Index (EDBI) is made up by the aggregation of the scores on the ten following topics:

1. Starting a Business.
2. Dealing with Construction Permits.
3. Getting Electricity.
4. Registering Property.
5. Getting Credit.
6. Protecting Minority Investors.
7. Paying Taxes.
8. Trading across Borders.
9. Enforcing Contracts.
10. Resolving Insolvency.

Linkages between the fostering of entrepreneurship and socioeconomic wealth of nations have been reasoned from a theoretical approach. Nevertheless, an empirical approach, involving data collection and analysis, might be needed to explore the existence of a relationship between the ease of doing business and socioeconomic wealth. Regarding this, we try to relate the EDBI with Socio-Economic Wealth (SEW) measures in order to assess a potential predictive relationship between them. Specifically, this paper carries out a structural equation model analysis through the use of partial least squares (PLS-SEM) with a 2018 database comprising secondary data from 190 countries (see Appendix section). This study is pioneer in the use of these rankings to build composite constructs and relate them. The following sections will present the conceptual model, methods used to reach our objectives, ending with the results and conclusions sections.

2. LITERATURE REVIEW

As pointed by Ruiz, Cabello and Pérez-Gladish (2018), investment location decisions may entail the entrepreneur to focus on those countries where such investments seem more accurate, wiser and secure. In this vein, effective and transparent business regulatory systems developed by governments that enable entrepreneurship is a research subject requiring a deeper analysis. However, this is a rather complex topic, taking into account the diverse array of factors that might influence an entrepreneur choice (i.e., business atmosphere, the human development level, political and macroeconomic stability).

This topic has been deeply addressed from a theoretical point of view framed within the Austrian School of Economics. Recently, based on the ideas of entrepreneurial spirit and spontaneous order (von Mises, 2004; Hayek, 1960), Huerta-De Soto (2010) defines entrepreneurship as a dynamic process of discovering, recognizing and seizing opportunities to achieve an end or obtain profits, and act accordingly to take advantage of these opportunities that arise in the environment. For instance, as stated by Szirmai, Naudé and Goedhuys (2011), socio-economic development needs continued and shared escalations in GDP per capita jointly with progressive fundamental changes in the settings and productive structure of economy towards goods manufacture. Consequently this leads to higher value-added and the introduction of more efficient production techniques. In this vein, entrepreneurs might foster a country's economic growth by enabling the rearrangement of resources to more productive applications (Acs and Storey 2004), carrying out essential economic functions (e.g. reducing costs, filling market gaps, completing inputs) (Szirmai et al., 2011) and upholding structural adjustment (Gries and Naudé 2009).

Several studies are based on the World Bank Group's Doing Business database (i.e. Schueth, 2010, 2015; Cooley, 2015) and pointed out the existence of certain significant methodological flaws. Furthermore, an independent evaluation study suggested the need for developing more informative rankings (World Bank, 2008; Ruiz et al., 2018). Thus, the relationship between the ease of doing business and socio-economic remains unclear as prior research has conducted to inconclusive results. As suggested by Szirmai et al. (2011, p. 28) "At the top of the agenda, remains the question why in some cases the institutional environment effectively stifles innovative behaviour, while other times entrepreneurs can find a way around the obstacles". Hence, scholars ought to address efforts to analyze and understand the interplay between the fields of entrepreneurship and development economics.

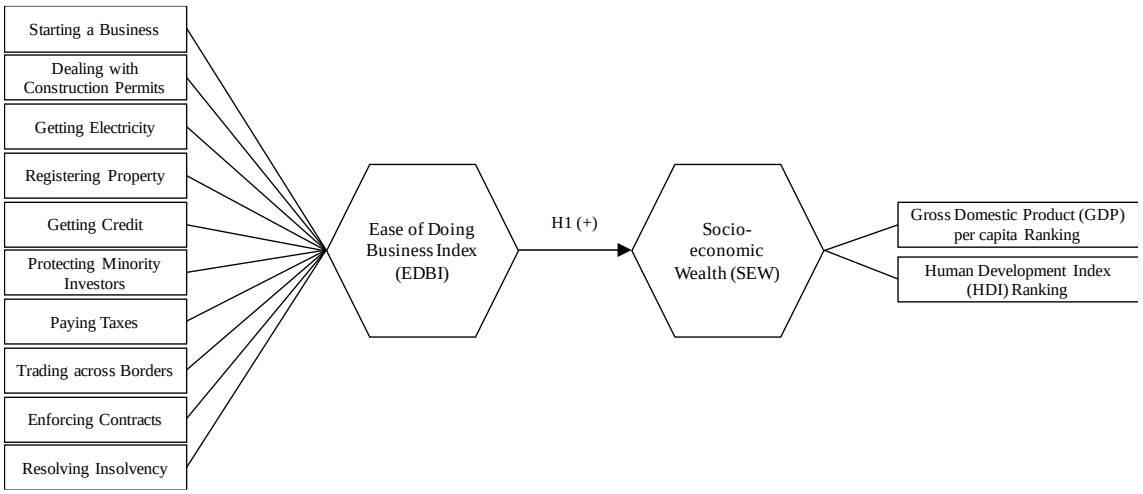

Figure 1. Conceptual model

In light of the above, this paper attempts to narrow this gap by analyzing the extent to which EDBI empirically predicts socio-economic wealth. For this purpose, this paper empirically assesses the causal relationships between the exogenous variable, EDBI, and the endogenous variable, SEW. Both composite variables shaped by ten and two dimensions, respectively. We empirically test our research hypothesis assess in a sample comprising 190 countries by the use of Partial Least Squares - Structural Equations Modeling (PLS-SEM) technique.

3. METHODOLOGY

3.1. Data collection

This study is based on secondary data belonging to diverse data repositories. Precisely, the data corresponding to the EDBI indicators was obtained from the World Bank 'Doing Business Ranking' (2018). Regarding the data indicators shaping the socio-economic wealth, GDP per capita ranking indicators were taken from the International Monetary Fund (2017), and HDI ranking indicators came from the United Nations Development Programme's Human Development Report (2018).

Assessing the Ease of Doing Business essentially bears on the enterprise day-to-day activities jointly with the facilities or obstacles they have to face while observing national, regional or local business regulation. GDP per capita comprises the total aggregate value of the goods and services produced within a nation in a year, divided by its number of inhabitants. Instead, the HDI is a composite statistic shaped by life expectancy, education, and income per capita indicators. A country scores higher HDI when the life expectancy at birth is longer, the education period is longer, and the income per capita is higher. Likewise, it is used to distinguish amongst developed, a developing or underdeveloped countries.

3.2. Data analysis

3.2.1. Descriptive statistics

We carefully checked the data in terms of its descriptive statistics, correlations and normality. This way, Table 1 comprises information regarding the missing, mean, median, minimum, maximum, standard deviation, kurtosis and skewness values. The hypothesis test regarding normally distribution of the dependent variable was performed by Shapiro-Wilk test of normality through JASP package (2019). As it is shown in Table 2, The p-values are significant, meaning there is statistical reason for endorsing the deviation from normality of the dependent variables. Finally, Tables 6 and 7 (Appendix section) comprise the raw data and indicators correlations, respectively.

Table 1

Summary of descriptive statistics

	Missing	Mean	Median	Min	Max	Standard Deviation	Excess Kurtosis	Skewness
GDP pc	2	20,277.798	13,000.000	600	128,378	21,366.694	4.432	1.853
Ranking GDP pc	0	95.500	96	1	190	54.848	-1.200	0.000
HDI	10	634.839	713	7	953	255.442	0.415	-1.107
Ranking HDI	10	94.467	94	1	190	54.890	-1.200	0.030
Global Rank	0	95.495	96	1	190	54.840	-1.200	-0.000
Business Opening	0	95.468	96	1	190	54.855	-1.199	-0.000
Building Permits	0	95.447	96	1	186	54.759	-1.207	-0.005
Electricity Obtaining	0	95.458	96	1	187	54.807	-1.204	-0.004
Property Registration	0	95.453	96	1	187	54.786	-1.204	-0.003
Credit Obtaining	0	90.316	85	1	186	54.880	-1.199	0.065
Protection Minority Investors	0	92.468	95	1	190	54.737	-1.179	0.045
Taxes Payment	0	95.474	96	1	190	54.860	-1.200	-0.001
Cross-border Trade	0	94.858	96	1	189	55.853	-1.144	-0.054
Contracts Fulfillment	0	95.474	96	1	190	54.850	-1.200	0.001
Insolvency Resolution	0	94.147	96	1	168	52.850	-1.283	-0.099

Table 2

Test of Normality (Shapiro-Wilk)

Dependent variable	W	p
Ranking GDP pc	0.955	< .001
Ranking HDI	0.427	< .001

Note. Significant results suggest a deviation from normality.

3.2.2. PLS analysis

To empirically test the hypothesis posited within this study, this paper relies on the use of Partial Least Squares (PLS) path-modeling, a variance-based structural equation modeling (VBSEM) technique (Roldán and Sánchez-Franco, 2012). The main reason underlying this decision refers to the composite nature of the two constructs under assessment in our research model. Although Granger causality statistical hypothesis test would have been equally useful according to our research purpose of predicting causality, this study works with composite constructs that consequently requires a different approach. Prior studies endorse the use of PLS when a composite measurement model is supported (Felipe et al., 2017). Both theoretical studies (Rigdon, 2012; Rigdon, Sarstedt, & Ringle, 2017) and empirical simulation works (Becker, Rai, & Rigdon, 2013; Sarstedt, Hair, Ringle, Thiele, & Gudergan, 2016) endorse and advice the use of PLS-SEM for models comprising composite constructs. In addition, this study is primarily focused on the prediction of the dependent construct –SEW– (Hair, Ringle and Sarstedt, 2011). The exogenous construct –EDBI– was modeled as a composite and was estimated in Mode B (regression weights), while Mode A (correlation weights) was chosen for measuring the endogenous construct –SEW–. Furthermore, SmartPLS 3.2.7 software was used (Ringle, Wende and Becker, 2015).

4. EMPIRICAL RESULTS

4.1. Evaluation of the measurement model

The assessment of the PLS measurement model displays satisfactory results. Firstly, regarding the Socio-Economic Wealth construct, it has been modeled as a composite construct in Mode A. This requires that the evaluation of the measurement model may comprise the following assessments: (i) individual item reliability, (ii) construct reliability, (iii) convergent validity and (iv) discriminant validity. The indicators meet the requirement of individual item reliability, since the outer loadings are both over the 0.707 threshold (Table 3). Besides, this construct satisfies the requirements of construct reliability, as its Cronbach's Alpha and Composite Reliability are greater than 0.7 (Table 3), and convergent validity, as its average variance extracted (AVE) is over the 0.5 critical level (Table 3). Finally, Table 3 discloses that discriminant validity is attained, according to the heterotrait-monotrait ratio (HTMT) criterion (Henseler et al., 2015), which indicates that values ought to be under the threshold of 0.85 (Kline, 2015).

Secondly, the ease of doing business construct has been modeled as composite construct in Mode B. Therefore, it must be assessed in terms of (i) potential multicollinearity between items and (ii) weight assessment (Roldán and Sánchez-Franco, 2012). Following Petter, Straub and Rai (2007) variance inflation factor (VIF) values that surpass the threshold of 3.3 denotes the existence of high multicollinearity between items. Nevertheless, Ringle, Wende and Becker (2015) suggest that multicollinearity should be a serious concern when VIF values are over the critical level of 5. In our case (Table 3), the maximum VIF value for indicators ascends to 2.537, standing below the thresholds proposed by Ringle et al. (2015) and Petter et al.

(2007). Thus, multicollinearity is not a concern in our study. Subsequently, it is necessary to examine the magnitude and significance of the weights (Table 3). Weights provide information concerning how each item contributes to the respective composite (Chin, 1998), enabling to rank the indicators on the basis of their contribution.

Table 3

Measurement model assessment

Construct/Indicators	Outer loadings	Outer weights	VIF	Cronbach's Alpha	Composite Reliability	AVE
Ease of Doing Business				0.914	0.909	0.507
Dealing with construction permits	0.736	0.214	1.893			
Starting a Business	0.552	-0.087	1.823			
Enforcing contracts	0.764	0.184	2.128			
Getting Credit	0.424	-0.108	1.613			
Trading across Borders	0.785	0.174	2.236			
Getting Electricity	0.866	0.323	2.299			
Resolving Insolvency	0.782	0.295	2.537			
Registering Property	0.707	0.012	2.379			
Protecting Minority Investors	0.633	0.023	2.274			
Paying Taxes	0.765	0.164	2.141			
Socio-Economic Wealth				0.933	0.968	0.937
Ranking GDPpc	0.966	0.496	4.272			
Ranking HDI	0.971	0.537	4.272			
Heterotrait-Monotrait Ratio (HTMT)						
	Ease of Doing Business			Socio-Economic Wealth		
Ease of Doing Business						
Socio-Economic Wealth	0.806					

Note: VIF: Variance Inflation Factor; AVE: Average Variance Extracted; N.A.: Non Applicable.

4.2. Evaluation of the structural model

As suggested by Hair et al. (2014), this study applies a bootstrapping (5,000 resamples) technique to generate the standard errors, t-statistics, p-values and 95% bias corrected confidence intervals (BCCI) that permit the evaluation of the statistical significance for the relationships hypothesized in the conceptual model. Table 4 presents the main parameters that are obtained for the structural model under assessment in this paper. The coefficient of determination (R^2) is employed as the main criterion for measuring explained variance –the extent to which exogenous constructs explain endogenous constructs–. The outcomes contained in Table 4 show that the structural model attains acceptable predictive relevance for the endogenous construct, given that the R^2 coefficient is equal to 0.638 (Table 4). Moreover, the direct relationship hypothesized between EDBI and SEW is shown to be positive and significant.

Table 4

Structural model results

Relationship	Coefficient of Determination	Path coefficient	T Statistics	P-value	95% BCCI		Support
					2.5%	97.5%	
Ease of Doing business → Socio-Economic Wealth	$R^2 = 0.638$	0.799***	32.045	0.000	0.728	0.834	Yes

Note: Bootstrapping 95% bias corrected confidence intervals (based on n = 5000 subsamples). ***p b .001; **p b .01; *p b .05

4.3. Evaluation of the predictive ability model

This study also assesses whether this model entails predictive ability. In this line, Shmueli and Koppius (2011) label a model's predictive performance as its ability to generate precise predictions of new observations, whether they are temporal or cross-sectional. Furthermore, Shmueli (2010) posits that explanation and prediction involve two distinctive purposes that could be combined in a research study. Such view is also shared by Dolce, Vinzi and Lauro (2017, p. 169), who argue that "The predictions of path models should be sensitive to the theory. In particular, the theoretical model represented by the structural equations and prediction should not be separated".

Hence, this study assesses the predictive ability (out-of-sample prediction) of the proposed conceptual model by using cross-validation with holdout samples (Evermann and Tate, 2016) focusing on the key endogenous construct (SEW). Concretely, this paper makes use of the PLS predict algorithm (Shmueli et al, 2016) available in the SmartPLS software version 3.2.7. (Ringle et al, 2015).

To evaluate if the model entails predictive ability it is required to check the Q^2 value. Q^2 values greater than 0 imply that the prediction error of PLS results are smaller than the prediction error of merely using the mean values. Therefore, reaching positive Q^2 values implies that the proposed conceptual model attains appropriate predictive ability. The conceptual model proposed within this paper fulfills this criterion both at the construct (i.e., SEW), and at the dimension (Ranking GDP pc and Ranking HDI) levels (Table 5).

Table 5

Predictive performance summary

LV Prediction Summary			
	RMSE	MAE	Q^2
Socio-Economic Wealth	0.546	0.430	0.584
PLS			
	RMSE	MAE	Q^2
Ranking GDP pc	38.818	29.841	0.504
Ranking HDI	33.796	27.375	0.604

5. DISCUSSION AND CONCLUSIONS

As it was pointed out before, not many studies have empirically attempted to test whether there is a positive relationship between the ease of doing business and socio-economic wealth. This paper sheds some light upon this research gap and empirically analyzes the extent to which EDBI predicts socio-economic wealth. Results derived from the use of Partial Least Squares - Structural Equations Modeling (PLS-SEM) technique reveal that there is a positive and significant link between the EDBI and the socio-economic

wealth of nations. This could be considered an important contribution, bearing in mind that previous studies were unable to set that relation. However, not only the positive relation could be demonstrated but a predictive ability of the model. Therefore, it is possible to establish that the EDBI is a predictor of SEW. Consequently, it seems likely that the more obstacles to free trade a government introduces, the lower its socio-economic wealth level will be.

In this line, the Austrian school of economics, firmer than any other school of economic thought, has disapproved almost all forms of governmental interference in the market –particularly inflation, price controls, barriers to free market and schemes for redistribution of wealth or income–, arguing that such interventions typically contribute to erode the incentives, to generate distortions in production, as well as shortages, demoralization, and other undesirable effects. Moreover, Friedrick A. Hayek remarkably argued that those grand and ambitious governmental plans frequently lead to unintended consequences. In fact, such view became the intellectual rationale behind Ronald Reagan's and Margaret Thatcher's economic agendas of the 1980s and 1990s (Fukuyama, 2011). In his work "The Constitution of Liberty", Hayek (1960) develops further this view of the limits of human cognition and claims that governments are not able to discern sufficiently about a society to be able to plan accurately.

Among the main practical implications of these results, it is important to note that a government's more suitable role should be somehow more modest, limited to the creation of laws that generally and equally applied may represent the ground upon which spontaneous interactions among individuals might happen (Fukuyama, 2011). It is only within this social order that Hayek delimits the role governments should adopt in society. Thus, governments must merely exist to deliver a ground or structure within which human collaboration is maximized (Andrieu, 2010). Finally, it would be useful to perform confirmatory tests of these results through a longitudinal study or other methodological approaches.

REFERENCES

Acs, Z. J., & Storey, D. J. (2004). Introduction: Entrepreneurship and economic development. *Regional Studies*. https://doi.org/10.1080/0034340042000280901

Andrieu, E. C. (2010, April). The entrepreneur according to the Austrian school. In *Businesses Report OPENS Forum (2014): Study Reports On Growth of Women-Owned Businesses*. Retrieved from http://hdl.handle.net/10500/3779%3E

Becker, J.-M., Rai, A., & Rigdon, E. (2013). Predictive validity and formative measurement in structural equation modeling: Embracing practical relevance. *Proceedings of 34th International Conference on Information Systems*, Milan, 1–19.

Book, J. (2019). [Review of the book Capitalism in America: A History by A. Greenspan & A. Wooldridge]. *The QuarTerly Journalof AusTrian Economics*, *22*(1), 82–90. Retrieved from https://qjae.scholasticahq.com/article/9142

Chin, W. W. (1998). The partial least squares approach for structural equation modeling. In G. A. Marcoulides (Ed.), *Methodology for business and management. Modern methods for business research* (pp. 295-336). Mahwah, NJ, US: Lawrence Erlbaum Associates Publishers.

Cooley, A. (2015). The emerging politics of international rankings and ratings. In A. Cooley & J. Snyder (Eds.), *Ranking the World: Grading States as a Tool of Global Governance* (pp. 1-38). Cambridge: Cambridge University Press. doi:10.1017/CBO9781316161555.002

Dolce, P., Vinzi, V. E., & Lauro, C. (2017). Predictive path modeling through PLS and other component-based approaches: Methodological issues and performance evaluation. In *Partial Least Squares Path Modeling* (pp. 153-172). Springer, Cham. https://doi.org/10.1007/978-3-319-64069-3_7

Evermann, J., & Tate, M. (2016). Assessing the predictive performance of structural equation model estimators. *Journal of Business Research, 69*(10), 4565-4582. https://doi.org/10.1016/j.jbusres.2016.03.050

Felipe, C., Roldán, J., & Leal-Rodríguez, A. (2017). Impact of organizational culture values on organizational agility. *Sustainability, 9*(12), 2354. https://doi.org/10.3390/su9122354

Fukuyama, F. (2011). Friedrich A. Hayek, Big-Government Skeptic. *The New York Times*, p. BR12. Retrieved from https://www.nytimes.com/2011/05/08/books/review/f-a-hayek-big-government-skeptic.html

Gries, T., & Naudé, W. (2010). Entrepreneurship and structural economic transformation. *Small Business Economics, 34*(1), 13-29. https://doi.org/10.1007/s11187-009-9192-8

Hair, J.F., Ringle, C.M. and Sarstedt, M. (2011). PLS-SEM: Indeed, a Silver Bullet. *Journal of Marketing Theory and Practice*, 19, 139-151. https://doi.org/10.2753/MTP1069-6679190202

Hayek, F. A. (1960). *The Constitution or Liberty*. Chicago: University of Chicago Press.

Huerta-De Soto, J. H. (2010). *Socialism, economic calculation and entrepreneurship*. Edward Elgar.

JASP Team (2019). JASP (Version 0.11.1) [Computer software].

Kline, R. B. (2015). *Principles and practice of structural equation modeling*. Guilford publications.

von Mises, L. (2004). Abstract of *Human Action, treatise of economy*. Paris, Les belles lettres.

Mongay, J. (2018). Ease of Doing Business and Wealth Creation. In *Examining the Private Sector's Role in Wealth Creation and Poverty Reduction* (pp. 29–50). https://doi.org/10.4018/978-1-5225-3117-3.ch002

Petter, S., Straub, D., & Rai, A. (2007). Specifying Formative Constructs in Information Systems Research. *MIS Quarterly, 31*(4), 623-656. doi:10.2307/25148814

Rigdon, E. E. (2012). Rethinking partial least squares path modeling: In praise of simple methods. *Long Range Planning*, 45(5–6), 341–358.

Rigdon, E. E., Sarstedt, M.,&Ringle, C. M. (2017). On comparing results from CBSEM and PLS-SEM: Five perspectives and five recommendations. *Marketing ZFP*, 39(3), 4–16.

Ringle, C., Wende, S., Becker, J., Ringle, Christian M., Wende, Sven, & Becker, J.-M., Ringle, C., Wende, S., & Becker, J. (2015). SmartPLS 3. Retrieved From https://doi.org/http://www.smartpls.com

Roldán, J. L., & Sánchez-Franco, M. J. (2012). Variance-Based Structural Equation Modeling: Guidelines for Using Partial Least Squares in Information Systems research. In *Research Methodologies, Innovations and Philosophies in Software Systems Engineering and Information Systems*. https://doi.org/10.4018/978-1-4666-0179-6

Ruiz, F., Cabello, J. M., & Pérez-Gladish, B. (2018). Building Ease-of-Doing-Business synthetic indicators using a double reference point approach. *Technological Forecasting and Social Change,* 131, 130-140. https://doi.org/10.1016/j.techfore.2017.06.005

Sarstedt, M., Hair, J. F., Ringle, C. M., Thiele, K. O., & Gudergan, S. P. (2016). Estimation issues with PLS and CBSEM: Where the bias lies! *Journal of Business Research*, 69(10), 3998–4010.

Schueth, S. (2011). Assembling international competitiveness: The Republic of Georgia, USAID, and the Doing Business project. *Economic geography, 87*(1), 51-77. https://doi.org/10.1111/j.1944-8287.2010.01103.x

Shmueli, G. (2010). To explain or to predict? *Statistical science, 25*(3), 289-310. https://doi.org/10.2139/ssrn.1351252

Shmueli, G., & Koppius, O. R. (2011). Predictive analytics in information systems research. *MIS quarterly*, 553-572. doi:10.2139/ssrn.1606674

Shmueli, G., Ray, S., Velasquez Estrada, J. M., & Chatla, S. B. (2016). The elephant in the room: Predictive performance of PLS models. *Journal of Business Research, 69*(10), 4552-4564. https://doi.org/10.1016/j.jbusres.2016.03.049

Szirmai, A., Naudé, W., & Goedhuys, M. (2011). Entrepreneurship, Innovation, and Economic Development. In *Entrepreneurship, Innovation, and Economic Development*. https://doi.org/10.1093/acprof:oso/9780199596515.001.0001

Szirmai, A., Naudé, W., & Goedhuys, M. (Eds.). (2011). Entrepreneurship, Innovation, and Economic Development. Oxford: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199596515.001.0001

World Bank (2008). *Doing business: an independent evaluation - taking the measure of the World Bank-IFC Doing Business Indicators (English)*. Washington, DC: World Bank. Retrieved from http://documents.worldbank.org/curated/en/102811468157765042/Doing-business-an-independent-evaluation-taking-the-measure-of-the-World-Bank-IFC-Doing-Business-Indicators

Doing Business (2018, October). *Doing Business 2018: Reforming to Create Jobs (15th. Annual Report*). World Bank Group. Retrieved from https://www.doingbusiness.org/en/reports/global-reports/doing-business-2018

APPENDIX

Table 6

Data

Economy	GDPpc	Ranking GDPpc	HDI	Ranking HDI	EDBI Global Rank
Afghanistan	1981	167	0.498	168	167
Albania	12020	98	0.785	68	63
Angola	6389	129	0.581	147	173
Antigua and Barbuda	23593	61	0.78	70	112
Argelia	15275	83	0.754	85	157
Argentina	20787	65	0.825	47	119
Armenia	9647	108	0.755	83	41
Australia	48460	21	0.939	3	18
Austria	52398	16	0.908	20	26
Azaerbaijan	17398	75	0.757	80	25
Bahamas	30430	45	0.807	54	118
Bahrain	47527	23	0.846	43	62
Bangladesh	3869	147	0.608	136	176
Barbados	18639	70	0.8	58	129
Belarus	18848	68	0.808	53	37
Belgium	47840	22	0.916	17	45
Belize	8590	114	0.708	106	125
Benin	2266	162	0.515	163	153
Bhutan	9560	109	0.612	134	81
Bolivia	7560	121	0.693	118	156
Bosnia and Herzegovina	12876	95	0.768	77	89
Botswana	17354	76	0.717	101	86
Brazil	15484	82	0.759	79	109
Brunei	78836	4	0.853	39	55
Bulgaria	20329	66	0.813	51	59
Burkina Faso	1870	170	0.423	183	151
Burundi	771	187	0.417	185	168
Cambodia	4002	144	0.582	146	138
Cameroon	3694	149	0.556	151	166
Canada	46705	24	0.926	12	22
Cape Verde	6831	126	0.654	125	131
Central African Rep	36327	37	0.367	188	183
Chad	1941	168	0.404	186	181
Chile	24635	59	0.843	44	56
China	16807	79	0.752	86	46
Colombia	14552	89	0.747	90	65
Comoros	1552	179	0.503	165	164
Congo Dem Rep	887	185	0.457	176	184
Congo Rep	5359	136	0.606	137	180
Costa Rica	17044	78	0.794	63	67
Cote d'Ivoire	3953	145	0.492	170	122
Croatia	25264	57	0.831	46	58
Cyprus	34503	39	0.869	32	57
Czech Republic	-	189	0.888	27	35
Denmark	51364	18	0.929	11	3
Djibouti	2705	158	0.476	172	99
Dominica	10620	105	0.715	103	103
Dominican Republic	16030	81	0.736	94	102

Ecuador	11618	101	0.752	86	123
Egypt	11583	102	0.696	115	120
El Salvador	8006	120	0.674	121	85
Equatorial Guinea	24817	58	0.591	141	177
Eritrea	1510	181	0.44	179	189
Estonia	31742	41	0.871	30	16
Eswatini	8496	115	-	-	117
Ethiopia	1899	169	0.463	173	159
Fiji	9554	110	0.741	92	101
Finlandia	44866	25	0.92	15	17
France	42850	28	0.901	24	32
Gabon	18183	72	0.702	110	169
Gambia	1715	173	0.46	174	149
Georgia	10699	104	0.78	70	6
Germany	50638	19	0.936	5	24
Ghana	4641	140	0.592	140	114
Greece	27602	50	0.87	31	72
Grenada	14924	87	0.772	75	147
Guatemala	8150	119	0.65	127	98
Guinea	2285	161	0.459	175	152
Guinea-Bissau	1700	174	0.455	177	175
Guyana	8163	118	0.654	125	134
Haiti	1815	172	0.498	168	182
Honduras	4986	138	0.617	133	121
Hong Kong	61540	10	0.933	7	4
Hungary	28107	49	0.838	45	53
Iceland	53152	14	0.935	6	21
India	7056	123	0.64	130	77
Indonesia	12284	97	0.694	116	73
Iran	20949	64	0.798	60	128
Iraq	17196	77	0.685	120	171
Ireland	75648	5	0.938	4	23
Israel	38262	34	0.903	22	49
Italy	39426	32	0.88	28	51
Jamaica	8995	112	0.732	97	75
Japan	43279	26	0.909	19	39
Jordan	9153	111	0.735	95	104
Kazakhstan	26410	54	0.8	58	28
Kenia	3286	152	0.59	142	61
Kiribati	2175	164	0.612	134	158
Korea	38335	33	0.903	22	5
Kosovo	10754	103	-	-	44
Kuwait	71943	7	0.803	56	97
Kyrgyzstan	3726	148	-	-	70
Laos	7023	124	0.601	139	154
Latvia	27598	51	0.847	41	19
Lebanon	14676	88	0.757	80	142
Lesotho	3130	155	0.52	159	106
Liberia	827	186	0.435	181	174
Lithuania	32093	40	0.858	35	14
Luxembourg	103744	2	0.904	21	66
Lybia	19631	67	0.706	108	186
Macedonia	15231	84	0.757	80	10
Madagascar	1555	178	0.519	161	161

Malawi	1202	183	0.477	171	111
Malaysia	29432	46	0.802	57	15
Maldives	16669	80	0.717	101	139
Mali	2211	163	0.427	182	145
Malta	39535	31	0.878	29	84
Marshal Islands	4193	142	0.708	106	150
Mauritania	3950	146	0.52	159	148
Mauritius	22278	63	0.79	65	20
Mexico	18258	71	0.774	74	54
Micronesia	3622	150	0.627	131	160
Moldova	5698	133	0.7	112	47
Mongolia	13000	94	0.741	92	74
Montenegro	18765	69	0.814	50	50
Morocco	8218	117	0.667	123	60
Mozambique	1247	182	0.437	180	135
Myanmar	6139	130	-	-	171
Namibia	10475	106	0.647	129	107
Nepal	2682	159	0.574	149	110
Netherlands	52503	15	0.931	10	36
New Zealand	41109	30	0.917	16	1
Nicaragua	5482	135	0.658	124	132
Niger	1017	184	0.354	189	143
Nigeria	5861	132	0.532	157	146
Norway	61414	11	0.953	1	7
Oman	41675	29	0.821	48	78
Pakistan	5527	134	0.562	150	136
Palau	14536	90	0.798	60	133
Panama	24446	60	0.789	66	79
Papua New Guinea	4197	141	0.544	153	108
Paraguay	9690	107	0.702	110	113
Peru	13434	93	0.75	89	68
Phillipines	8343	116	0.699	113	124
Poland	29026	47	0.865	33	33
Portugal	31672	42	0.847	41	34
Puerto Rico	37793	36	-	-	64
Qatar	128378	1	0.856	37	83
Romania	25840	55	0.811	52	52
Russia	25533	56	0.816	49	31
Rwanda	2036	166	0.524	158	29
Saint Kitts and Nevis	27066	52	0.778	72	140
Saint Vincent and the Grenadines	11776	100	0.723	99	130
Samoa	6611	128	0.713	104	90
San Marino	62425	9	-	-	88
Santa Lucía	14219	91	0.747	90	93
Sao Tomé and Príncipe	3351	151	0.589	143	170
Saudi Arabia	53845	13	0.853	39	92
Senegal	2712	157	0.505	164	141
Serbia	15090	86	0.787	67	48
Seychelles	28963	48	0.797	62	96
Sierra Leone	1526	180	0.419	184	163
Singapoore	93905	3	0.932	9	2
Slovakia	31616	43	0.855	38	42
Slovenia	34868	38	0.896	25	40
Solomon Islands	2422	160	0.546	152	115

Somalia	600	188	-	-	190
South Africa	13498	92	0.699	113	82
South Sudan	1693	175	0.388	187	185
Spain	37998	35	0.891	26	30
Sri Lanka	12811	96	0.77	76	100
Sudan	4903	139	0.502	167	162
Suriname	15114	85	0.72	100	165
Sweden	50208	20	0.933	7	12
Switzerland	64712	8	0.944	2	38
Syria	5285	137	-	-	179
Taiwan	52304	17	-	-	13
Tajikistan	3180	154	0.65	127	126
Tanzania	2946	156	0.538	154	144
Thailand	17870	73	0.755	83	27
Timor-Leste	7213	122	0.625	132	178
Togo	1570	177	0.503	165	137
Tonga	5957	131	0.726	98	91
Trinidad and Tobago	31578	44	0.784	69	105
Tunissia	11911	99	0.735	95	80
Turkey	26505	53	0.791	64	43
Uganda	1864	171	0.516	162	127
Ukraine	8667	113	0.751	88	71
United Arab Emirates	73878	6	0.863	34	11
United Kingdom	43269	27	0.922	14	9
Uruguay	22562	62	0.804	55	95
USA	59531	12	0.924	13	8
Uzbekistan	6865	125	0.71	105	76
Vanuatu	3208	153	0.603	138	94
Venezuela	17640	74	0.761	78	188
Viet Nam	6676	127	0.694	116	69
West Bank and Gaza	-	190	-	-	116
Yemen	1595	176	0.452	178	187
Zambia	4050	143	0.588	144	87
Zimbabwe	2086	165	0.535	156	155

Table 7

Indicators correlations

	GDP pc	Ranking GDP pc	HDI	Ranking HDI	Global Rank	Business Opening	Building Permits	Electricity Obtaining	Property Registration	Credit Obtaining	Protection Minority Investors	Taxes Payment	Cross-border Trade	Contracts Fulfillment	Insolvency Resolution
GDP pc	1.000														
Ranking GDP pc	-0.859	1.000													
HDI	0.497	-0.538	1.000												
Ranking HDI	-0.779	0.899	-0.569	1.000											
Global Rank	-0.588	0.673	-0.391	0.782	1.000										
Business Opening	-0.382	0.399	-0.181	0.465	0.660	1.000									
Building Permits	-0.518	0.566	-0.339	0.588	0.676	0.513	1.000								
Electricity Obtaining	-0.577	0.647	-0.361	0.709	0.791	0.474	0.575	1.000							
Property Registration	-0.460	0.494	-0.309	0.612	0.802	0.481	0.511	0.584	1.000						
Credit Obtaining	-0.197	0.279	-0.219	0.382	0.688	0.398	0.324	0.403	0.503	1.000					
Protection Minority Investors	-0.353	0.463	-0.217	0.527	0.759	0.567	0.471	0.530	0.544	0.544	1.000				
Taxes Payment	-0.582	0.559	-0.349	0.638	0.737	0.489	0.567	0.580	0.617	0.344	0.477	1.000			
Cross-border Trade	-0.466	0.544	-0.356	0.683	0.759	0.405	0.481	0.585	0.605	0.405	0.437	0.568	1.000		
Contracts Fulfillment	-0.488	0.567	-0.343	0.629	0.738	0.491	0.524	0.598	0.616	0.389	0.515	0.582	0.568	1.000	
Insolvency Resolution	-0.490	0.571	-0.321	0.654	0.805	0.537	0.425	0.606	0.545	0.506	0.643	0.498	0.621	0.493	1.000

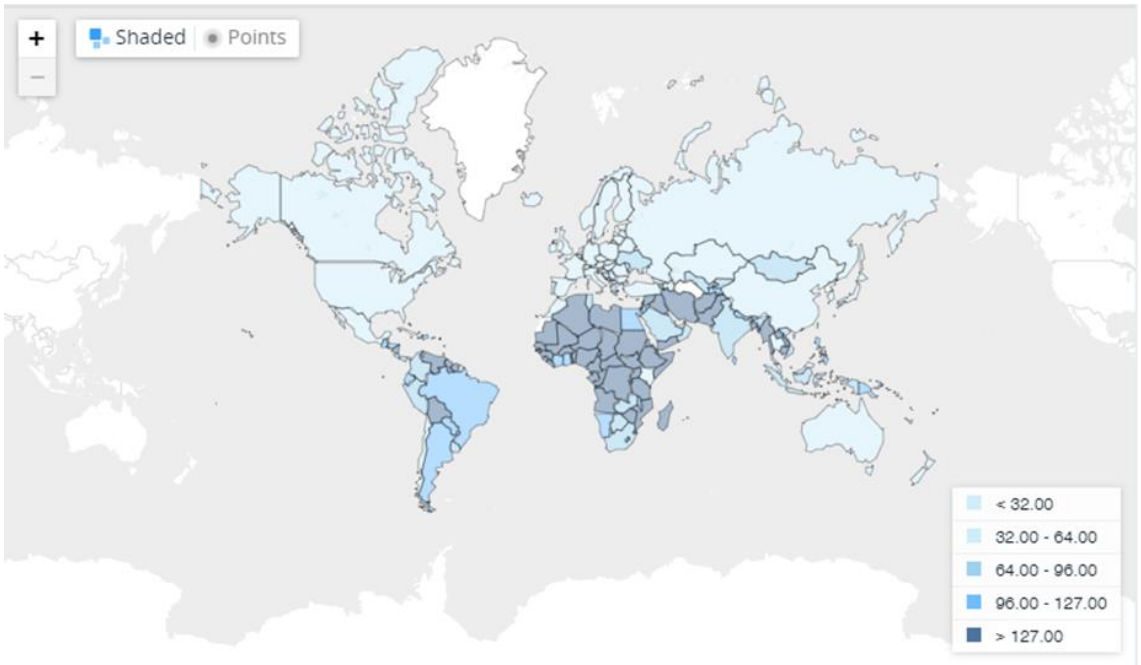

Figure 2. Countries by EDBI in 2018

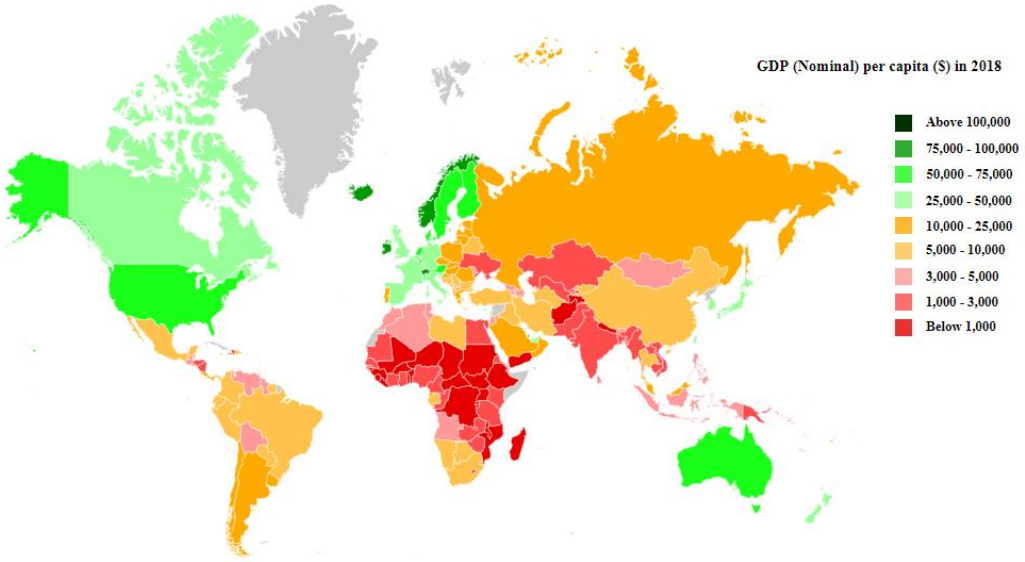

Figure 3. Countries by GDP pc in 2018

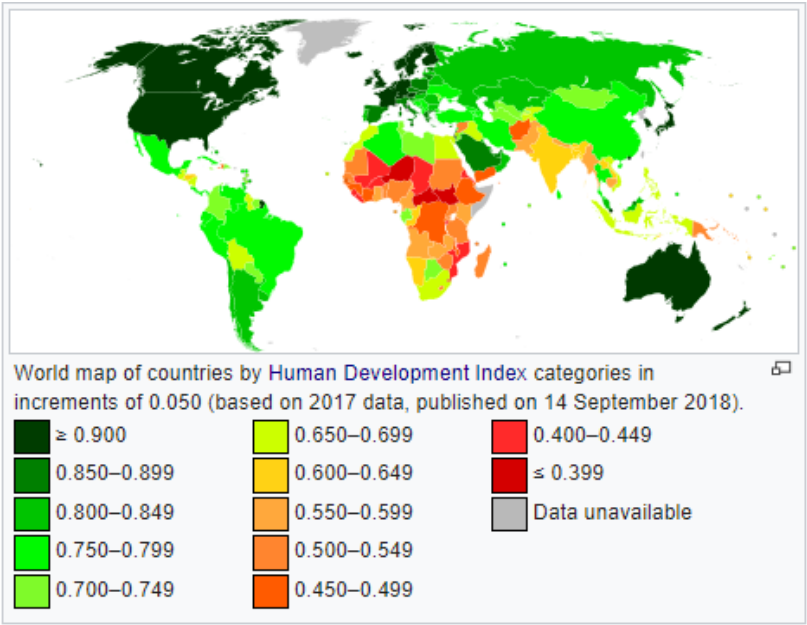

Figure 4. Countries by HDI in 2018