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Predictive impact of consolidation in banking on financial stability in CEE countries

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Abstract

The purpose of our paper is to analyse and investigate, empirically, the impact of competition and concentration on financial stability of the banking sector from 11 Central and Eastern European countries over the period 2000-2015. Our research is based on data provided by the databases of the World Bank and ECB (Statistical Data Warehouse) and uses Generalized Method of Moments (GMM). We use Z-index as dependent variable to measure banking sector stability, and, respectively, Lerner index and Bank concentration as measures of industry competition and concentration, together with bank specific indicators, instrumented with macroeconomic variables, to account for variations in the business environment and economic development. The results of our empirical study indicate a positive and significant effect of competition, capital adequacy and return on assets on financial stability of banking sector from CEE countries, while concentration does not have a statistically significant impact. Moreover, our analysis highlights that bank-specific factors (the ratio of non-performing loans, bank overhead costs to total assets, bank noninterest income to total income and bank cost to income ratios) are significant and negatively correlated with Z-score, likely to influence the probability of crises occurring in CEE countries.

Keywords: bank competition; bank concentration; financial stability; CEE countries

1. Introduction

The extremely negative impact of the recent international and economic crisis on banks and on the real economy highlights the major importance of banking sector stability for the stability of the financial system, as a whole, but also for macroeconomic stability. Against this background, the interest of researchers and decision-makers in identifying factors that have a major impact on the health and financial stability of banks, had revived.

The purpose of our paper is to investigate, empirically, how competition and banking concentration affect the financial stability of the banking sector in 11 Central and Eastern European countries (i.e. Bulgaria, Croatia, the Czech Republic, Hungary, Estonia, Latvia, Lithuania, Romania, Poland, Slovenia and Slovakia) during 2000-2015.

Our analysis complements and extends previous empirical studies on this subject (Liu *et al.*, 2013; Beck *et al.*, 2013; Uhde and Heimeshoff, 2009) for several specific aspects. First, based

on the data provided by the World Statistical Database of the World Bank and the ECB (Data Statistical Warehouse), the paper employ the Generalized Method of Moments (GMM) with instrumental variables to analyse and investigate, empirically, the impact of competition and concentration on financial stability of the banking sector in CEE countries. We tested several econometric GMM specifications and we validate the panel model with fixed-effects.

Second, we extend the analysis by investigating the impact of bank-specific (internal factors) on the Z-score ratio, instrumented with macroeconomic variables (external factors), to account for variations in the business environment and economic development. The results of our empirical research highlight, based on the GMM methodology, a positive and significant effect of bank competition, capital adequacy and return on assets on the financial stability of the banking sector in the analyzed countries. Concerning bank concentration, our results indicate a negative correlation with banking stability, but the coefficient is not statistically significant. The results of our empirical investigation are consistent with those obtained from other empirical studies in the field of financial stability of the banking sector.

The remainder of this paper is organized as follows: Section 2 presents related theoretical and empirical literature on the relationship between banking market competition and concentration on financial stability. Section 3 contains our empirical analysis. While section 3.1 describes the data, Section 3.2 introduces the empirical model. Empirical results are presented and discussed in Section 4. Finally, Section 4 concludes.

2. Literature review

The overview of the literature reveals the existence of a large number of studies investigating the relationship between competition, concentration and financial soundness of banks, but there is no general conclusion about the impact of increasing banking market concentration on financial stability. Among recent relevant studies, we can mention the followings: Schaeck and Čihák, 2008; Uhde and Heimeshoff, 2009; Beck *et al.*, 2013; Liu *et al.*, 2013; Fu *et al.*, 2014; Schaeck and Čihák, 2014. Therefore, Schaeck and Čihák (2008) examine how competition affects the soundness of banks using data for a sample of banks from 12 European countries and the U.S., between 1995-2005 and shows, for both the European and the U.S. banks, a positive effect of competition on bank soundness, transmitted through the efficiency channel. Uhde and Heimeshoff (2009), using aggregate balance data, for EU-25, for more than 2600 banks, covering the period 1997-2005, found that national banking market concentration has a negative impact on banks' financial soundness, measured by Z-score. Maechler *et al.* (2010) emphasizes, with reference to Emerging Europe, that the vulnerability of financial institutions and their resilience depend, on a large extent, on the soundness of the macroeconomic environment, reflected by GDP growth rates, stable inflation, sustainable debt, and a sustainable budget deficit.

Beck *et al.* (2013) show that an increase in competition will have a larger impact in economies with specific features (stricter activity restrictions, developed stock exchanges, more generous deposit insurance, effective systems of credit information sharing). By proposing a new approach on the relationship between competition and stability in banking, more exactly at regional level, Liu *et al.* (2013), highlights that increased competition appears to improve stability in relatively noncompetitive markets, whereas it increases fragility in relatively competitive European banking environments. Berger *et al.* (2009) use a variety of risk and competition measures from banks operating in 23 countries. The results provide limited support

to both the competition–fragility and competition–stability views in that market power increases credit risk, but banks with greater market power face lower overall risks. Fu et al. (2014) analyze the empirical impact of bank concentration and competition on banks' robustness in 14 Asian Pacific countries, using the Z score as a proxy for banking stability. The results of the study highlight a positive and significant association between banking competition and the Z score, but also a negative and significant relationship between concentration and banking stability. The paper of Köhler (2015) points out that banking stability is influenced by the specificities of banks, but also by the macroeconomic and institutional environment, as well as by the structure and size of the banking sector.

A recent stream of academic literature includes governance indicators in the analysis of banking competition and financial stability. Nabiyeu *et al.* (2016) analyzed the influence of banking competition on financial stability by using Panzar and Rosse methodology and logistic probability analysis. The authors show that there is no statistically significant relationship between banking competition and financial stability in CIS countries, while institutional indicators are found to be more significant to banking system stability. Fratzscher *et al.* (2016) use a country panel for 50 advanced and emerging market economies to analyze how the post-crisis tightening in supervision and regulation affected bank stability. They found that strengthening of supervisory independence aimed to reduce the decline in domestic credit and improved the stability of banks.

3. Data and methodology

3.1 Data

To gauge the relationship between consolidation in banking and financial stability, we retrieved data from the databases of the World Bank and the European Central Bank -Statistical Data Warehouse, over the period 2000-2015, for 11 CEE economies, totaling 176 observations. The dependent variable is the Z score, which measures the stability of the banking sector. As explanatory variables for our empirical model, we selected, as potential determinants of the financial stability of the banking sector, the Lerner index and bank concentration indexes (as proxy for competition and concentration on the banking market) as well as industry-specific and macroeconomic indicators. Based on representative empirical studies (Fu *et al.*, 2014; Beck *et al.*, 2012), we selected eight variables to capture the specific characteristics of the banking sector, as follows:

- capital adequacy ratio;
- bank asset quality (expressed by the rate of non-performing loans);
- profitability of the banking sector (expressed by return on assets and the net interest margin);
- the operational efficiency of the banking sector (reflected by the operating expenses of a bank as a share of the value of all assets held, the ratio of banks' costs to their revenues);
- liquidity ratios (the ratio of bank loans and deposits, the share of liquid assets in total deposits and short-term funding).

Regarding the macroeconomic environment, we took into account four variables, namely the real GDP growth rate, the unemployment rate, the inflation rate and the bank-credit to the private sector as a percent of GDP.

Notes on our dependent, explanatory and instrumental variables, as well as data sources, are presented in Table 1. The table also presents the predictive impact of dependent variables on the independent one, Z-score, in our case, based on the relevant literature in the field (Uhde and Heimeshoff, 2009, Fu *et al.*, 2014, Berger *et al.*, 2009, Beck *et al.*, 2013).

Table 1: Definition of the variables, source and the expected impact on dependent variable

Variables	Notation	Description	Predictive impact	Source
<i>Dependent</i>				
Bank Z-score	Z-score	It captures the probability of default of a country's commercial banking system. Z-score compares the buffer of a country's commercial banking system (capitalization and returns) with the volatility of those returns.	N/A	Global Financial Development Database, World Bank
<i>Independent- Bank-specific (internal factors)</i>				
Bank regulatory capital to risk-weighted assets (%)	REG_ RATIO (%)	The capital adequacy of deposit takers. It is a ratio of total regulatory capital to its assets held, weighted according to risk of those assets.	+	Global Financial Development Database, World Bank
Non-performing loans	NPL	The ratio of non-performing loans (as loans more than 90 days past due) to total bank loans. It is a proxy variable for credit risk and, at the same time, a measure of the quality of banking assets and of credit portfolio health.	-	ECB- Statistical Data Warehouse
Return on assets (% , after tax)	ROA	Commercial banks' after-tax net income to yearly averaged total assets. The ratio of bank net income after tax over total assets. It is measure of efficiency and management quality.	+	Global Financial Development Database, World Bank
Bank net interest margin (%)	NIM	Bank's net interest income as a share of its average interest bearing (total earning) assets.	+	Global Financial Development Database, World Bank
Bank overhead costs to total assets (%)	BOC	Operating expenses of a bank as a share of the value of all assets held.	-	Global Financial Development Database, World Bank
Bank cost to income ratio (%)	CIR	The ratio of operating expenses over operating Income Operating expenses of a bank as a share of sum of net-interest revenue and other operating income.	Idem cu BOC -	Global Financial Development Database, World Bank

Bank noninterest income to total income (%)	NIIR	The ratio of non-interest income over total operating income (net-interest income plus noninterest income).	-/+	Global Financial Development Database, World Bank
Bank credit to bank deposits (%)	CTD	The financial resources provided to the private sector by domestic money banks as a share of total deposits. It is considered as a liquidity indicator and represent a measure of access to external financing of banks	-/+	Global Financial Development Database, World Bank
Liquid assets to deposits and short term funding (%)	LIQA	The ratio of the value of liquid assets (easily converted to cash) to short-term funding plus total deposits.	+	Global Financial Development Database, World Bank
Lerner index	Lerner	Represent an indicator of banking competition and it is calculated as the average bank-level measure of the mark-up of price over marginal costs.	+/-	Global Financial Development Database, World Bank
5-bank asset concentration	BAC5	Assets of five largest banks as a share of total commercial banking assets.	-	Global Financial Development Database, World Bank
3- bank asset concentration (%)	BAC3	Assets of three largest commercial banks as a share of total commercial banking assets.	-	Global Financial Development Database, World Bank
<i>Independent- Macroeconomic (External factors)</i>				
Economic Activity	GDP	Annual real GDP growth rate, percentage change on previous year GDP per capita growth (annual %)	+/-	World Development Indicators
Inflation	INFL	Inflation, consumer prices (annual %) Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly.	+/-	World Development Indicators
Unemployment	UNEMP	Unemployment, total (% of total labor force) (modeled ILO estimate)	-	World Development Indicators
bank-credit to the private sector as a percent of GDP	PCB	The financial resources provided to the private sector by domestic money banks as a share of GDP. It is a measure of financial depth.	-/+	Global Financial Development Database, World Bank

Notes on the tables: the link for World Development Indicators: <https://data.worldbank.org/data-catalog/world-development-indicators>; the link for Global Financial Development Database: <https://data.worldbank.org/data-catalog/global-financial-development>

Source: authors' elaboration

3.2 Methodology

We test whether bank competition and concentration influence bank stability employing country-level data from 11 Central and Eastern European countries (namely Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia) and a timespan of 16 years, covering both pre- and post-crisis conditions (2000-2015).

Following Berger *et al.* (2009) and Fu *et al.* (2014), we employ an instrumental variable technique with a Generalized Method of Moments (GMM) estimator, in order to address the potential endogeneity between bank competition and risk. The panel data model has the following form:

$$\text{Financial Stability} = f(\text{Competition, Concentration, Bank Controls, Macro controls}) \quad (1)$$

The literature on banking sector soundness employs several alternative measures of the financial soundness of banks, among which the Z-score, the ratio of non-performing loans to total bank loans, the ratio of bank capital and reserves to total assets (Liu *et al.*, 2013, Berger *et al.*, 2009). In our analysis, we decided to measure the financial soundness of banking sector using Z-score (see Table 1), a synthetic variable that compares the buffer of a country's banking sector (capitalization and returns) with the volatility of those returns, according to equation (2):

$$Z - score = \frac{\mu + k}{\sigma} \quad (2)$$

where: μ is the average return on bank assets (%); k is equity to total assets (%); σ is the standard deviation of average return on assets (a proxy for return volatility).

Therefore, Z-score reflects the extent to which banks have a cushion (of bank capital) to absorb losses. The Z-index increases with higher profitability and capitalization levels, and decreases with unstable earnings highlighted by a higher standard deviation of return on assets (Berger *et al.*, 2009). A large value of Z-score points to a low solvency risk and a high level of financial soundness.

The Lerner index is used to measure the degree of competition and represents the mark-up of price over marginal costs and is an indicator of the degree of market power (Berger *et al.*, 2009).

$$\text{Lerner}_{it} = (P_{TAit} - MC_{TAit}) / P_{TAit} \quad (3)$$

where P_{TAit} is the price of total assets proxied by the ratio of total revenues (interest and noninterest income) to total assets for bank i at time t , and MC_{TAit} is the marginal cost of total assets for bank i at time t .

Market concentration is measured as the ratio of the assets of three and respectively five largest banks to the total assets of the banking system in the analyzed countries.

We use macroeconomic variables, namely the real GDP growth rate, the unemployment rate, the inflation rate and the bank-credit to the private sector as a percent of GDP as instruments in the analysis. According to Berger *et al.* (2009), we account for the presence of heteroskedasticity by implementing a GMM estimation. Real GDP per capita growth rate is a key

determinant on the financial soundness of banks, as pointed out by Uhde and Heimeshoff (2009), Nguyen *et al.* (2012), Schaeck and Čihák (2014), and Köhler (2015). An increase in the GDP per capita could lead to an increase in borrowers' incomes and, thus, the increase of their solvency, with positive impact on the quality of bank loans and hence on banks' soundness. Unemployment rate is an important macroeconomic factor with significant negative impact on banks' soundness (Liu *et al.* 2013, Schaeck and Čihák, 2014). A rising unemployment rate could lead to lower incomes and lower ability of borrowers to honor their debts. The impact of inflation rate depends on whether inflation is anticipated by banks or not (Bilan and Roman, 2016). If inflation is anticipated, revenues will grow faster than bank costs and thus the profitability and financial soundness of banks will show an increasing trend. Another instrumental variable is bank credit to the private sector, which is found to have a negative and highly significant impact on the soundness of banks in CEE countries. We test the relevance of these instruments using the Hansen's J test of overidentification.

4. Empirical results

Table 2 presents the descriptive statistics of all variables used in the study. The calculations show that Z-score registered a mean value of 6.29%, while the minimum and maximum values were -0.34% (Slovenia, in 2013) and 14.39% (Bulgaria, in 2000), respectively. This indicates a large variability in the financial soundness of the banking sectors of CEE countries, due to large differences in banks' profitability (return on bank assets) and capitalization. Lerner index (LERNER) varies from 0 to 0.71, with a mean value of 0.09, indicative of a competitive banking market across the sample EU countries.

Table 2. Descriptive statistics of the variables

Variable	Mean	Std. dev.	Min	Max
Z-score	6.29	2.79	-0.34	14.39
REG_RATIO	15.85	4.41	10.1	35.65
NPL	7.23	5.9	0.2	29.3
ROA	0.95	1.42	-5.98	4.24
NIM	3.59	1.36	1.21	9.9
BOC	3.02	1.27	0.83	6.97
CIR	61	13.4	26.78	124.39
NIIR	34.78	11.92	3.6	61.86
CTD	108.51	39.59	36.95	257.32
LIQA	30.1	15.27	5.76	88.08
Lerner	0.25	0.09	0	0.71
BAC5	76.81	12.05	46.57	100
BAC3	62.48	15.43	34.32	98.87
GDP	3.72	4.43	-14.56	12.92
INFL	4.22	5.22	-1.42	45.66
UNEMP	10.48	4.12	4.25	19.92
PCB	14.56	19.26	6.38	102.53

Overall, the descriptive statistics support the view that there are major differences across the CEE countries in terms of economic development, financial sector competition and bank behaviour.

Table 3 presents the main results that indicate the impact of bank concentration and competition on financial stability. There are 3 GMM panel data estimations, with 2SLS instrument weighting matrix, to explain the impacts of bank concentration and competition on financial stability. In all equations, the dependent variable is Z-score and a constant is included. The first equation is a panel GMM estimation with fixed effects, where independent variables are instrumented with macroeconomic indicators. The second equation represents a panel GMM estimation with cross-section random effects, where BOC and CTD were excluded. The third equation is the same as equation 2, but with all variables.

Table 3. Concentration, competition, and financial stability

	Dependent variable: Z-score		
	(1) Z-score	(2) Z-score	(3) Z-score
LERNER	1.692939* (0.987633)	1.690024* (0.899359)	1.959271 (2.944763)
BAC5	-0.048171 (0.033371)	0.087947*** (0.022223)	0.102915 (0.076568)
BAC3	-0.043151 (0.030231)	-0.062003*** (0.017902)	-0.073843 (0.067578)
LIQA	-0.02** (0.007989)	-0.019544*** (0.006310)	-0.028478 (0.040058)
NIM	0.009678 (0.182808)	0.233677*** (0.057588)	-0.432303 (0.404451)
NPL	-0.030696* (0.016113)	0.000133 (0.014133)	0.010840 (0.052038)
REG_RATIO	0.189412*** (0.022150)	0.218324*** (0.020406)	0.244075* (0.132963)
ROA	0.632800*** (0.060399)	0.705707*** (0.057171)	0.538309*** (0.199562)
BOC	-0.442418** (0.218214)		0.766159 (0.582543)
NIIR	-0.038420*** (0.013742)	-0.018168** (0.007737)	-0.062361* (0.036998)
CIR	-0.034147** (0.013456)	0.001915** (0.005740)	-0.053012 (0.033995)
CTD	-0.003962 (0.003956)		-0.010388 (0.007444)
C	4.116941 (2.023570)	-0.88 (1.090350)	5.04 (4.208795)
<i>R-squared</i>	0.93	0.32	0.32
<i>J-statistic</i>	12.94	3.26	58.81180
<i>No. of observations</i>	176	176	176

Notes: *, ** and *** indicate significance at 10%, 5% and 1% levels, respectively.

Robust standard errors are in parentheses.

Source: authors' calculations

The value of R-squared indicates that the first estimation-(1) Z-score fits better the data. J-statistic is used to carry out hypothesis tests from GMM estimation. A simple application of the J-statistic is to test the validity of overidentifying restrictions. Under the null hypothesis that the overidentifying restrictions are satisfied, the J-statistic times the number of regression observations is asymptotically χ^2 with degrees of freedom equal to the number of overidentifying restrictions. If we compare J-statistic with 0.95 quantile of the chi-squared distribution, the third

specification – (3) Z-score is not valid, therefore the data does not come close to meeting the restrictions. We eliminate the third specification, and from the first two, we select the first one, because of higher value of R-squared.

Once validated the panel GMM estimation with fixed effects, we interpret the results of this model in what follows. The results in column 1 of Table 3 show a positive and significant relationship between market power and bank soundness in CEE countries. Concerning bank concentration, our results indicate a negative correlation with banking stability, but the coefficient is not statistically significant. Our results predict that the higher concentration brought about by the recent financial crisis may result in riskier loan portfolios, but the banks are likely to hold higher capital or use other measures to mitigate the risks (Berger *et al.*, 2009). The results confirm that lower pricing power and excessive concentration may lead to financial fragility, as in Fu *et al.* (2014) or Uhde and Heimeshoff (2009). The results does not support the concentration-stability view as in Beck *et al.* (2013).

Among the control variables, the following bank-specific factors: non-performing loan ratio (NPL), bank overhead costs to total assets (BOC) and bank cost to income ratio (CIR), enter the regression significantly negative, indicating that higher assets quality and operational efficiency have a positive impact on the banking system soundness. The positive sign of the coefficients of net interest margin and return on assets, respectively, implies a positive relationship between profitability and banks capital ratio, as pointed by Uhde *et al.* (2009). The empirical results also highlight that capital regulations is fostering financial stability.

5. Conclusions

Using country-level data, over the period 2000-2015, our paper investigates, empirically, the impact of competition and banking concentration on the financial stability of the banking sector in 11 Central and Eastern European countries (i.e. Bulgaria, Croatia, the Czech Republic, Hungary, Estonia, Latvia , Lithuania, Romania, Poland, Slovenia and Slovakia). In our analysis, we measure the financial soundness of banking sector using Z-score, a synthetic variable that compares the buffer of a country's banking sector (capitalization and returns) with the volatility of those returns. Based on Generalized Method of Moments (GMM) methodology, we extend the analysis by investigating the impact of Bank-specific (internal factors) on the Z-score ratio, instrumented with macroeconomic variables (external factors), to account for variations in the business environment and economic development. Therefore, as explanatory variables for our empirical model, we selected, as potential determinants of the financial stability of the banking sector, the Lerner index and bank concentration indexes (as proxy proxy for competition and concentration on the banking market) as well as industry-specific and macroeconomic indicators.

The results of our empirical study indicate a positive and significant effect of competition, capital adequacy and return on assets on financial stability of banking sector from CEE countries, while concentration does not have a statistically significant impact. Moreover, our analysis highlights that bank-specific factors (the ratio of non-performing loans, bank overhead costs to total assets, bank noninterest income to total income and bank cost to income ratios) are significant and negatively correlated with Z-score, likely to influence the probability of crises occurring in CEE countries.

The topic addressed in our article is important and up-to-date because of the major interest in ensuring a sound, healthy and sound banking sector to finance the real economy. Identifying

factors that have a major impact on banks' financial stability is of interest to decision-makers, who need to step up their concerns to rigorously monitor banks, and to take appropriate measures to ensure the financial stability of the banking sector, as a whole.

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References

Beck, T., De Jonghe, O., & Schepens, G., 2013. Bank competition and stability: cross-country heterogeneity. *Journal of financial Intermediation*, 22(2), pp. 218-244.

Berger, A.N., Klapper, L.F., Turk-Ariss, R. (2009). Bank competition and financial stability. *Journal of Financial Services Research*, 35(2), pp. 99-118.

Bilan I., Roman, A., 2016. Macroeconomic Environment and Banking Sector Soundness in CEE Countries, *Ovidius University Annals Economic Sciences*, Volume XVI (2), pp. 421-427.

ECB, 2017. Data Statistical Warehouse, available at <http://sdw.ecb.europa.eu/> referred on October 15, 2017.

Fratzscher, M., Johann König, P., Lambert, C., 2016. Credit provision and banking stability after the Great Financial Crisis: The role of bank regulation and the quality of governance, *Journal of International Money and Finance*, 66, pp. 113-135.

Fu, X.M., Lin, Y.R., & Molyneux, P., 2014. Bank competition and financial stability in Asia Pacific. *Journal of Banking and Finance*, 38, pp. 64-77.

Köhler, M., 2015. Which banks are more risky? The impact of business models on bank stability. *Journal of Financial Stability*, 16, pp. 195-212.

Liu, H., Molyneux, P. and Wilson, J. O., 2013. Competition and stability in European banking: a regional analysis. *The Manchester School*, 81(2), pp. 176-201.

Maechler, A.M., Mitra, S., & Worrell, D., 2010. Decomposing financial risks and vulnerabilities in emerging Europe. *IMF Staff Papers*, 57(1), pp. 25-60.

Nabiyev, J., Musayev, K., Yusifzada, L. 2016. Banking Competition and Financial Stability: Evidence from CIS countries, *Working Paper Series*, Central Bank of Republic of Azerbaijan.

Nguyen, M., Skully, M. and Perera, S., 2012. Market power, revenue diversification and bank stability: Evidence from selected South Asian countries. *Journal of International Financial Markets, Institutions and Money*, 22(4), pp. 897-912.

Schaeck, K. and Čihák, M., 2014. Competition, efficiency, and stability in banking. *Financial Management*, 43(1), pp. 215-241.

Schaeck, K., Čihák, M., 2008. How does competition affect efficiency and soundness in banking? New empirical evidence. *Working Paper*, 932, European Central Bank.

Uhde, A., Heimeshoff, U., 2009. Consolidation in banking and financial stability in Europe: Empirical evidence. *Journal of Banking & Finance*, 33(7), pp. 1299-1311.

World Bank. 2017. World Development Indicators, available at <http://data.worldbank.org/data-catalog/world-development-indicators>, referred on October 15, 2017.