Doctoral School of General and Quantitative Economics

SUMMARY

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SOVEREIGN DEFAULTS

Ph.D. dissertation

Supervisor:

János Száz, CSc.

Professor

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Department of Finance

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1. Research Background and Topic Choice

The fact that I have worked for the Hungarian Government Debt Management Agency for almost two years between 2005 and 2006, and thereby I had the chance to get to know a number of – primarily risk management – aspects of debt management both in theory and in everyday practice has made a great impact on the choice of my doctoral field of research. Besides, my master's thesis was also inspired by this topic, I focused on the possibility and risks of issuing a special government debt instrument, namely the inflation-linked bond. Furthermore, I participated in the National Scientific Students' Associations Conference where my paper based on this topic was awarded with first prize in the respective section.

My primary goal at the beginning of the doctoral program was, within the wider field of government debt management, to model the optimal composition of debt portfolio. The trends and events in global economy, however, have drifted a second area into my horizons, that came not exclusively to my sight but also to the world's: a more and more frequent discussion has started on the phenomenon of sovereign defaults. Once a dear colleague of mine gave me the book of Carmen Reinhart and Kenneth Rogoff titled This time is different, then I have made my final decision on the financial-economic phenomenon called sovereign default to be put in the focus of my doctoral thesis. Nevertheless, I also was surprised on myself being led back by this research topic to the inflation-linked bonds after almost a decade, shedding light on those instruments from aspects I was not even aware of when writing the my master's thesis.

The dissertation is organized as follows. The first chapter presents the main features of government bonds and their markets. The purpose of this chapter is twofold. First, the relevance and significance of sovereign defaults

as research topic is emphasized by presenting government bond markets as the scene of buying and selling potential sovereign defaults. Second, the traditional interpretation of government bonds as simple and boring securities is criticized.

The second chapter deals with conceptual questions of sovereign default. Besides presenting received definitions of international rating agencies, I also shed light on the elements of the definition in general. This is important because common definitions of default are convenient, but might obscure the fact that beyond debts a sovereign state has many other types of liabilities as well.

The third chapter briefly outlines the history of sovereign defaults. I will show that such events occurred more frequently and in more countries than one might think - not only in South America, not only after military coups, not only in foreign currency.

The fourth chapter is dedicated to systematize sovereign defaults, while the fifth chapter analyses the costs of sovereign defaults. Creditors of sovereign states – unlike those of private companies – have very limited legal possibilities to enforce debt repayments. Consequently, it is not enough to ask why sovereign defaults occur. A less common question is to be asked as well: Why do sovereign states repay their loans, why do *not* they default? It is widely accepted in the literature that the existence of sovereign debt is provided by the costs of default. By reviewing and systematizing the possible cost types, and by exploring the inconsistencies in the related literature, I will show that we do not know exactly the mechanisms ensuring the existence of sovereign debts.

In the sixth chapter I analyse the relationship between sovereign defaults and the inflation-linked bonds. My premise is that the default risk of real obligation exceeds the default risk of nominal ones.

In the last chapter, I indicate further research topics to be analysed, and then summarize the result of the dissertation.

Summarising, the dissertation seeks the answer for the following questions:

1. **Is there a unique definition for sovereign defaults? If not, what are the possible definitions, and what are the ingredients that all definition has to comprise?**
2. **What are the types of sovereign defaults? From which aspects it is worth to classify the default events?**
3. **Why do sovereign states repay their loans, why do *not* they default? Why the literature could not provide a consensual answer to this fundamental question?**
4. **What is the relationship between the default risk of nominal and real bonds? If there is a theoretical difference between them, is it reflected in market data?**

2. Research Methodology

In the different chapters of the dissertation either qualitative or quantitative methods and tools are being applied with respect to the traits of the research question in focus.

In the first chapter of the thesis, upon the organization and analysis of individually collected statistical data it is being introduced how significant the treasury bond markets are, which, out of the financial markets are the ones closely related to the phenomena of sovereign defaults.

Therefore, the chapter on the one hand underpins the practical relevance of the topic choice, on the other hand it draws the attention to the fact that although government bond markets represent the opinions and expectations of investors in relation to a certain sense of sovereign defaults, they do not tell much about the causes, consequences, and further attributes. The third chapter highlights the repeated timeliness of the topic, furthermore supports the importance of understanding the wider context. In this chapter I outline the history of sovereign defaults based upon historical factual data showing that sovereign default events happen often, in several ways, and under different conditions.

In the second, fourth, and fifth chapters of the thesis basically aim at finding answers for questions that are subjects of qualitative analyses, inter alia the examination of the univocality of the sovereign default concept, or the typology definition possibilities of the latter. Here, from this aspect the methodology of making and analysing case studies take over. In the aforementioned chapters a broad and in-depth literature review was carried out, the results relevant to my research questions are not solely presented, but are also confronted to each other and are put on a common platform.

As a result of the analyses a number of causes and explanations are identified and formulated in order to the contradictions in the literature be resolved.

The earlier chapters ground the conceptual system and theoretical framework, without which in chapter six it would not have been possible to discuss a narrower problem, i.e. the relationship of inflation-indexed bonds with sovereign defaults in a trustworthy way.

As a first step, I show formally, how unexpected inflation and partial default scenarios could be compared as scenarios resulting in decreased real ex-post returns. With the help of the formal relationships, I illustrate the indifference curves of the two scenarios. Afterwards, I identify the factors that might influence the difference between nominal and real bonds' yields, the so called break-even inflation. Based on the previous conclusions of the dissertation, the break-even inflation is decreased by the default risk premium difference of the nominal and indexed bonds. With the purpose of testing the appearance of this difference in market data, I estimate an econometric model on USA Treasury's break-even inflation time series. I used an autoregressive model which allows for volatility to cluster, and among the possible specifications a chose an AR(4)-GARCH(1,1) model. For error distribution of the variance equation, I assumed t-distribution. The estimation results and the goodness of the model are tested with usual methods: among others, I tested the serial correlation of the residuals and the squared residuals, the distribution of the residuals and the significance of the estimated parameters.

3. Results of the Dissertation

The results of the dissertation are structured as to follow the questions presented in Chapter 1, respectively.

1. The abstract concept of sovereign defaults, and the consequences of such a default might have been clear and obvious in the past, but the concept is rather *manifold* than unique today.

    1.a. The most general – and the least concrete – definition of sovereign default is that a country does not fulfil its financial obligations. In accordance with this, I identified two ingredients that all default definition should contain: it has to be clarified *which obligations* are to be considered and what '*not fulfilling*' means. However, nor of these ingredients is obvious if the debtor is a sovereign country. This finding sheds light on several inconsistencies in the literature. For example, if we take the common definition, where obligations are exclusively debt instruments, then most of the sovereign defaults have much more strategic aspect than it is usually discussed.

2. When preparing a classification of sovereign defaults, I identified four factors that describe the main features of default events. These factors characterize the *size* and *type of debt* affected; furthermore the *way and reason of not servicing* the debt. It is easy to see that these four aspects are closely related to the ingredients of defaults' definition presented in the previous point. In the dissertation, I determined different default groups according to all the four factors, and I also analysed why these groups are worth to be separated. My own classification is presented in Table 1.

Table 1. Classification of sovereign defaults

Principle of classification	Possible types
Size of default	• Total/partial • Groups by the absolute/relative size of debt affected • Groups by the size of creditor losses
Type of debt affected	• Local/foreign currency debt • Domestic/external debt
Form of not fulfilling	• Missed payment • Delayed payment • Distressed debt exchange
Reason of not fulfilling	• Inability to pay: illiquidity, insolvency • Unwillingness to pay: repudiation, strategic decision

3. For the question, 'Why do countries repay their loans?' the common answer is 'Because default has costs'. However, there is no consensus about which type of costs is dominant or how to measure these costs. I identified the following reasons behind the contradictions in the literature.

3.a. The forms of the defaults' costs are *changing in time*: centuries ago, and even at the beginning of the 20th century it was usual that a sovereign default triggered military actions. Today, even the exclusion from financial markets is not necessarily experienced after a default.

3.b. Most of the empirical studies, especially in case of the so-called reputational costs, do not separate properly the two main dimensions of costs. The dimensions I determined are the *markets* influenced by the costs and the *mechanism* of their emergence.

3.c. Most of the empirical studies do not differentiate among default events in the dimensions I determined during the classification of defaults, and hence they examine a rather heterogeneous sample.

4. If we approve the common argumentation that sovereigns are less risky in their domestic currency, partly because of their power to print money, then the *default risk of inflation-indexed bonds must be higher than that of nominal bonds*. From the point of view that the obligation cannot be eased via inflation, indexed bonds are akin to bonds issued in foreign currency.

4.a. For an investor, unexpected inflation might cause similar losses in ex-post real return than partial default. This finding leads us back to result 1.a. in the sense that different default definitions determine different analysis frameworks. In case of zero-coupon type investments, the relationship between unexpected inflation

and partial default leading to the same ex-post real return is the following:

$$D = 1 - \left(\frac{1 + \pi^e}{1 + \pi^e + \pi^u} \right)^T = 1 - \left(1 - \frac{\pi^u}{1 + \pi^e + \pi^u} \right)^T$$

where

D = rate of partial default

T = maturity

π^e = annual expected inflation

π^u = annual unexpected inflation

4.b. Apart from expected inflation, inflation premium, and liquidity difference, break-even inflation may comprise default risk difference as well. Like liquidity difference, default risk difference decreases the break-even inflation and hence makes a negative bias as compared to inflation expectations. Formally:

$$BEI = IE + IP - (DP_r - DP_n) - (LP_r - LP_n)$$

where

BEI = break-even inflation

IE = inflation expectations

IP = inflation premium

DP = default premium

LP = liquidity premium

r = index denoting real bond

n = index denoting nominal bond

4.c. Empirical results drawn from analysis on USA Treasury bond markets' time series suggest that the default risk difference appear in the markets as well: after controlling for inflation and liquidity effects, CDS-spreads that represents default risks, have significant effect in the dynamics of break-even inflation. The estimated model was the following AR(4)-GARCH(1,1) specification:

$$dBEI_t = \beta_1 dIS_t + \beta_2 dCDS_t + \beta_3 dBAS_t +$$

$$+ \beta_4 dBEI_{t-1} + \beta_5 dBEI_{t-2} + \beta_6 dBEI_{t-3} + \beta_7 dBEI_{t-4} + u_t$$

$$u_t = \sqrt{h_t} v_t ;$$

$$h_t = \alpha + \gamma_1 u_{t-1}^2 + \gamma_2 h_{t-1};$$

where
BEI = break-even inflation
IS = inflation swap rates
CDS = CDS-spread
BAS = difference between bid-ask spreads of real and nominal bonds
d = denotes percentage change.

The estimation output is summarised in Table 2.

Table 2. Estimation output

Dependent Variable: DBEI
Method: ML - ARCH (Marquardt) - Student's t distribution
Sample (adjusted): 6 813
Included observations: 808 after adjustments
Convergence achieved after 13 iterations
Presample variance: backcast (parameter = 0.7)
t-distribution degree of freedom parameter fixed at 4
GARCH = C(8) + C(9)*RESID(-1)^2 + C(10)*GARCH(-1)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
DIS	0.8810	0.0231	38.1976	0.0000
DCDS	0.0076	0.0043	1.7689	0.0769
DBAS	-0.0011	0.0007	-1.6462	0.0997
AR(1)	-0.3368	0.0338	-9.9672	0.0000
AR(2)	-0.1651	0.0362	-4.5599	0.0000
AR(3)	-0.0283	0.0355	-0.7987	0.4244
AR(4)	-0.0924	0.0340	-2.7141	0.0066
	Variance Equation			
C	0.0000	0.0000	1.9281	0.0538
RESID(-1)^2	0.1014	0.0264	3.8412	0.0001
GARCH(-1)	0.8940	0.0250	35.8024	0.0000

R-squared	0.4861	Mean dependent var	-0.0002
Adjusted R-squared	0.4822	S.D. dependent var	0.0144
S.E. of regression	0.0104	Akaike info criterion	-6.6178
Sum squared resid	0.0864	Schwarz criterion	-6.5597
Log likelihood	2683.6102	Hannan-Quinn criter.	-6.5955
Durbin-Watson st	2.0820		

Thus, the estimated relationships are:

$$dBEI_t = 0{,}881 dIS_t + 0{,}008 dCDS_t - 0{,}001\beta_3 dBAS_t -$$

$$- 0{,}337 dBEI_{t-1} - 0{,}165 dBEI_{t-2} - 0{,}028 dBEI_{t-3} - 0{,}092 dBEI_{t-4} + u_t$$

$$u_t = \sqrt{h_t} v_t;$$

$$h_t = 1{,}74 * 10^{-6} + 0{,}101 u^2_{t-1} + 0{,}894 h_{t-1};$$

As an analysis and interpretation of the results we may observe that in the mean equation the coefficients of the explanatory variables responsible for the inflation, liquidity and default risk effects are all significant at 90 percent significance level. Among these variables, the most important in explaining the variance of the break-even inflation is the inflation swap rate. This is not surprising, the positive sign of β_1 and its value close to 1 are in accordance with the close relationship between break-even inflation and inflation swap rates.

The value of β_2 and β_3 (in absolute terms) are much lower and hence the liquidity and inflation effects appear to be less important. Unfortunately, the sign and the exact value of the coefficient β_2 are cannot really be interpreted or explained, since the CDS-spreads are not measuring the default risk difference, they only represent the aggregate default risk premium of the nominal and the real bonds. The negative sign of the coefficient β3 is a plausible result, but its value cannot be interpreted as exact liquidity premium, since bid-ask spreads are only one possible measures of liquidity. However, the scope of the analysis was not

measuring the liquidity and the default risk differences, but to demonstrate their existence.

Analysis of the variance equation should be started by observing that the sign of each coefficient is positive, which is a prerequisite for the conditional variance to be nonnegative, thus for the GARCH-specification to be reasonable. The fact that the sum of the ARCH- and the GARCH- coefficients is close to one suggests that shocks die out very slowly, which is a common feature in financial time series. All in all, the GARCH(1,1) specification shows that the volatility of the dBEI variable depends on the volatility of the previous period, and implicitly on earlier volatilities as well.

Explanatory power of the model with R^2-value at around 48 percent is rather moderate. This is in line with expectations, since the liquidity and default effect are only represented and not measured exactly in the specification.

Summarising the results of this chapter, they are not contradictory to my expectations, that besides inflation and liquidity effects, market break-even inflation may comprise the default risk difference as well.

4. Questions for Further Consideration

Taking the results of the thesis into account the following further research directions could be identified. As a result of the examination of the definition issues around sovereign default it was concluded that the definition of the default event is not unambiguous at all. To put it the other way around, between default and non-default there is no clean-cut borderline. Sovereign default as a concept goes through an evolution just as the concept of money. Money used to be identifiable with gold or other precious metals. Nowadays, we differentiate monetary base and other monetary aggregates; cash and quasi-money, and so forth. It is worth further researching the following questions: What would the levels of sovereign default be? What would the near-defaults be? When and under what circumstances the expert's opinion would consider a country to be on the brink of sovereign default?

The relationship between inflation-indexed bonds and sovereign defaults might also be a subject for further consideration. The existence of default risk difference between nominal and real bonds could also be examined in other periods or markets, thereby extending the research in space and time. It would be desirable – however more complicated – to measure that effect. Beyond the decomposition of break-even inflation, the problem could also be captured by looking into the connection between the general default risk of some country and the weight of its inflation-indexed debt in the debt portfolio. It is linked to the latter train of thought that inflation risk does not only change in the case of inflation-indexed debt, but also when joining a monetary union. Will the default risk increase when joining such a union? Will the inflation risk partially be transformed into default risk? Those questions might become particularly interesting for a candidate country and for its creditors as well.

5. References

The dissertation has 73 references. From the point of view of the results and tha main findings, the most important references are the following.

ADRIAN, TOBIAS – WU, HAO [2009]: The Term Structure of Inflation Expectations. Staff Reports, *Federal Reserve Bank of New York*, no. 362. February. DOI: http://dx.doi.org/ 10.2139/ssrn.1338125

ÁBEL ISTVÁN – LEHMANN KRISTÓF – MOTYOVSZKI GERGŐ – SZALAI ZOLTÁN [2014]: Deflációs félelmek a fejlett gazdaságokban. *MNB-Szemle*, July, pp. 7-17.

ÁRVA LÁSZLÓ [1995]: Külföldi beruházások, fizetésimérleg egyensúly, adósságtörlesztés. A magyar gazdaság dilemmái a kilencvenes években. *Közgazdasági Szemle*, 42(12), pp. 1147-1156.

BEIM, DAVID – CALOMIRIS, CHARLES [2000]: *Emerging Financial Markets*. New York: McGraw-Hill/Irvin.

BENCZÚR PÉTER – ILUT, CUSMIN [2006]: Determinants of Spreads on Sovereign Bank Loans: The Role of Credit History. *MNB Working Papers*, 2006/1. DOI: http://dx.doi.org/10.2139/ssrn.850044

BERLINGER EDINA – HORVÁTH FERENC – VIDOVICS-DANCS ÁGNES [2012]: Tőkeáttétel-ciklusok. *Hitelintézeti Szemle*, 11(1), pp. 1-23.

BLINDER, ALAN S. [2000]: Central-Bank Credibility: Why Do We Care? How Do We Build It? *The American Economic Review*, 90(5), pp. 1421-1431. DOI: http://dx.doi.org/ 10.1257/aer.90.5.1421

BORENSZTEIN, EDUARDO – PANIZZA, UGO [2008]: The Costs of Sovereign Default. *IMF Working Paper*, 08/238. Washington: International Monetary Fund. DOI: http://dx.doi.org/10.1057/imfsp.2009.21

BULOW, JEREMY – ROGOFF, KENNETH [1989]: Sovereign Debt: Is to Forgive to Forget? *The American Economic Review*, 79(1), pp. 43-50. DOI: http://dx.doi.org/10.3386/w2623

CAMPBELL, JOHN Y. – LO, ANDREW W. – MACKINLEY, CRAIG A. [1997]: *The Econometrics of Financial Markets*. Princeton: Princeton University Press.

CHATTERJEE, SATYAJIT – EYIGUNGOR, BURCU [2011]: Maturity, Indebtedness, and Default Risk. Working Paper, *Federal Reserve Bank of Philadelphia*, 10-12. August.
DOI: http://dx.doi.org/10.2139/ssrn.1596725

CHIODO, ABBIGAIL J. – OWYANG, MICHAEL T. [2002]: A Case Study of a Currency Crisis: The Russian Default of 1998. The Federal Reserve Bank of St. Louis. November/December.
http://research.stlouisfed.org/publications/review/02/11/ChiodoOwyang.pdf, accessed: 14 July, 2013.

CRUCES, JUAN J. – TREBESCH, CHRISTOPH [2013a]: Sovereign Defaults: The Price of Haircuts. *American Economic Journal: Macroeconomics*, 5(3), pp. 85-117. DOI: http://dx.doi.org/10.1257/mac.5.3.85

CRUCES, JUAN J. – TREBESCH, CHRISTOPH [2013b]: Supplementary Appendix, Sovereign Defaults: The Price of Haircuts. Appendix B: Cases Not Included.
https://sites.google.com/site/christophtrebesch/research/Haircuts-Appendix-B.pdf, accessed: 21 July, 2013.

CUADRA, GABRIEL – SAPRIZA, HORACIO [2006]: Sovereign Default, Interest Rates and Political Uncertainty in Emerging Markets. Working Papers, *Banco de Mexico*, 2006-02.
DOI: http://dx.doi.org/10.1016/j.jinteco.2008.05.001

DAS, UDAIBIR S. – PAPAIOANNOU, MICHAEL G. – TREBESCH, CHRISTOPH [2012]: Sovereign Debt Restructurings 1950-2010: Literature Survey, Data, and Stylized Facts. *IMF Working Paper*, 12/203. Washington: International Monetary Fund. DOI:
http://dx.doi.org/10.5089/9781475505535.001

DEVLIN, WILL – PATWARDHAN, DEEPIKA [2012]: Measuring Market Inflation Expectations. *Economic Roundup*, The Treasury, Australian Government, 2012/2. http://www.treasury.gov.au/~/media/Treasury/Publications%20and%20Media/Publications/2012/Economic%20Roundup%20Issue%202/Downloads/01_Measuring_market_inflation_exp.ashx, accessed: 10 September, 2014.

EATON, JONATHAN – GERSOVITZ, MARK [1981]: Debt with Potential Repudiation: Theoretical and Empirical Analysis. *Review of Economic Studies*, 48(2), pp. 289-309. DOI: http://dx.doi.org/10.2307/2296886

EATON, JONATHAN – GERSOVITZ, MARK – STIGLITZ, JOSEPH E. [1986]: The pure theory of country risk. *European Economic Review*, 30(3), pp. 481-513. DOI: http://dx.doi.org/10.1016/0014-2921(86)90006-1

EICHENGREEN, BARRY – HAUSMANN, RICARDO [1999]: Exchange Rates and Financial Fragility. NBER Working Paper Series, 7418. Cambridge: National Bureau of Economic Research. November. DOI: http://dx.doi.org/10.3386/w7418, accessed: 15 June 2014

EICHENGREEN, BARRY – HAUSMANN, RICARDO – PANIZZA, UGO [2002]: Original Sin: The Pain, the Mystery, and the Road to Redemption. Paper Presented at the IADB Conference "Currency and Maturity Matchmaking: Redeeming Debt from Original Sin." http://www.financialpolicy.org/financedev/hausmann2002.pdf, accessed: 15 June 2014

ENGLISH, WILLIAM B. [1996]: Understanding the Costs of Sovereign Default: American State Debts in the 1840's. *The American Economic Review*, 86(1), pp. 259-275.

ENSZ [2000]: Classification of Expenditures According to Purpose. *UN Statistical Papers*, ST/ESA/STAT/SER.M/84. New York: United Nations. http://unstats.un.org/unsd/publication/SeriesM/SeriesM_84E.pdf, accessed: 2 November, 2013.

FITCH [2002]: Sovereign ratings. Rating methodology. Fitch Ratings.

FITCH [2013a]: Fitch Ratings Sovereign 2012 Transition and Default Study. Fitch Ratings, 12 March.

FITCH [2013b]: Why Sovereigns Can Default on Local-Currency Debt. Printing Money No Panacea as High Inflation Is a Costly Policy Option. Fitch Ratings, 10 May.

FUENTES, MIGUEL – SARAVIA, DIEGO [2010]: Sovereign defaulters: Do international capital markets punish them? *Journal of Development Economics*, 91(2), pp. 336-347. DOI: http://dx.doi.org/10.1016/j.jdeveco.2009.06.005

GELOS, GASTON R. – SAHAY, RATNA – SANDLERIS, GUIDO [2004]: Sovereign Borrowing by Developing Countries: What Determines Market Access? *IMF Working Paper*, 04/221. Washington: International Monetary Fund. DOI: http://dx.doi.org/10.5089/9781451875263.001

GROSSMANN, HERSCHEL – VAN HUYCK, JOHN [1988]: Sovereign debt as a Contingent Claim: Excusable Default, Repudiation, and Reputation. *The American Economic Review*, 78(5), pp. 1088-1097.

GÜRKAYNAK, REFET S. – SACK, BRIAN – WRIGHT, JONATHAN H. [2008]: The TIPS Yield Curve and Inflation Compensation. Working Paper, *Board of Governors of the Federal Reserve*, 2008-05. http://www.federalreserve.gov/pubs/feds/2008/200805/200805pap.pdf, accessed: 2 December, 2014.

IMF [2013]: Global Financial Stability Report. Old Risks, New Challenges. Washington: International Monetary Fund. April. DOI: http://dx.doi.org/10.5089/9781475589580.082 http://www.imf.org/External/Pubs/FT/GFSR/2013/01/pdf/text.pdf, accessed: 28 October, 2013.

KOPITS GYÖRGY [2006]: The Sickest Men of Europe. Wall Street Journal Europe, 21 September, p. 13.

KORNAI JÁNOS [2012]: Ígéretek megszegése. [online] http://www.kornai-janos.hu/Kornai2012%20Igeretek%20megszegese.pdf, accessed: 22 June, 2013. (Shorter version: Élet és Irodalom, 56(51-52), 21 December, 2012., pp. 25-28.)

LÁMFALUSSY SÁNDOR [2008]: Pénzügyi válságok a fejlődő országokban. *Tanulmányok a globalizált pénzügyi rendszer sérülékenységéről*. Budapest: Akadémiai Kiadó.

MANASSE, PAOLO – ROUBINI, NOURIEL [2005]: "Rules of Thumb" for Sovereign Debt Crisis. *IMF Working Paper*, 05/42. Washington: International Monetary Fund. DOI: http://dx.doi.org/10.5089/9781451860610.001

MARTINEZ, JOSE VICENTE – SANDLERIS, GUIDO [2011]: Is it punishment? Sovereign default and the decline in trade. *Journal of International Money and Finance*, 30(6), pp. 909-930. DOI: http://dx.doi.org/10.1016/j.jimonfin.2011.06.003

MITCHENER, KRIS JAMES – WEIDENMIER, MARC D. [2005]: Supersanctions and Debt Repayment. *NBER Working Paper Series*, 11472. Cambridge: National Bureau of Economic Research. July. DOI: http://dx.doi.org/10.3386/w11472

MOODY'S [2008]: Sovereign Default and Recovery Rates, 1983-2007. Moody's Global Credit Research. March.

MOORE, LYNDON – KALUZNY, JAKUB [2005]: Regime change and debt default: the case of Russia, Austro-Hungary, and the Ottoman Empire following World War One. *Explorations in Economic History*, 42(2), pp. 237-258. DOI: http://dx.doi.org/10.1016/j.eeh.2004.06.003

PANIZZA, UGO - STURZENEGGER, FEDERICO – ZETTELMEYER, JEROMIN [2009]: The Economics and Law of Sovereign Debt and Default. *Journal of Economic Literature*, 47(3), pp. 651-698. DOI: http://dx.doi.org/10.1257/jel.47.3.651

PETRIMÁN ZITA – TULASSAY ZSOLT [2005]: Bepillantás az ARCH-modellek világába. *Hitelintézeti Szemle*, 4(2), pp. 74-79.

PHELPS, EDMUND S. - BHIDÉ, AMAR [2011]: The Root of All Sovereign-Debt Crises. [online] Project Syndicate, 4 August. http://www.project-syndicate.org/commentary/the-root-of-all-sovereign-debt-crises, accessed: 2 November 2013.

REINHART, CARMEN M. [2010]: This Time is Different Chartbook: Country Histories on Debt, Default, and Financial Crises. *NBER Working Paper Series*, 15815. Cambridge: National Bureau of Economic Research. March. DOI: http://dx.doi.org/10.3386/w15815

REINHART, CARMEN M. – ROGOFF, KENNETH S. [2009]: *This Time is Different: Eight Centuries of Financial Folly*. Princeton: Princeton University Press.

RIEFFEL, LEX [2003]: *Restructuring Sovereign Debt: The Case for Ad Hoc Machinery*. Washington: Brookings Institution Press.

ROSE, ANDREW K. [2005]: One reason countries pay their debts: renegotiation and international trade. *Journal of Developed Economics*, 77(1), pp. 189-206. DOI: http://dx.doi.org/10.1016/j.jdeveco.2004.03.006

ROUBINI, NOURIEL [2001]: Debt Sustainability: How to Assess Whether a Country is Insolvent. Stern School of Business, New York University, 20 December. http://people.stern.nyu.edu/nroubini/papers/debtsustainability.pdf, accessed: 19 July, 2013.

SANTOS, ALEJANDRO [2003]: Debt Crises in Russia: The Road form Default to Sustainability. In: Owen, David – Robinson, David (eds): *Russia Rebounds*. Washington: International Monetary Fund. pp. 154-183.

STANDARD & POOR'S [2011]: Default, Transition and Recovery: Sovereign Defaults and Rating Transition Data, 2010 Update. RatingDirect. 23 February.

STURZENEGGER, FEDERICO – ZETTELMEYER, JEROMIN [2005]: Haircuts: Estimating Investor Losses in Sovereign Debt Restructurings, 1998-2005. *IMF Working Paper*, 05/137. Washington: International Monetary Fund. DOI: http://dx.doi.org/10.5089/9781451861563.001

STURZENEGGER, FEDERICO – ZETTELMEYER, JEROMIN [2006]: *Debt Defaults and Lessons from a Decade of Crises.* Cambridge: MIT Press.

SUTER, CHRISTIAN [2012]: Debt Crises in the Modern World-System. In: Babones, Salvatore – Chase-Dunn, Christopher (eds): *Routledge International Handbook of World-System Analysis*. Oxford: Routledge. pp. 215-223.

TOMZ, MICHAEL - WRIGHT, MARK [2013]: Empirical Research on Sovereign Debt and Default. *Annual Review of Economics*, 5(1), pp. 247-272. DOI: http://dx.doi.org/10.1146/annurev-economics-061109-080443

6. Author's Bibliography

Hereby listed the author's publications relevant to the topic of the theses.

VIDOVICS-DANCS ÁGNES [2014]: *Az államcsőd költségei régen és ma.* Közgazdasági Szemle, LXI., March. pp. 262-278.

VIDOVICS-DANCS ÁGNES [2013]: *Államcsődök. Tények és alapfogalmak újragondolva.* Hitelintézeti Szemle, 12(4), pp. 285-305.

KATA VÁRADI – ÁGNES VIDOVICS-DANCS [2013]: *Cost Simulation of an Inflation-Linked and a Floater Bond with Backtesting*. In: Rekdalsbakken, W. – Bye, R. T. – Zhang, H. (eds): 27th European Conference on Modelling and Simulation. Aalesund, Norway, 27-30 May 2013. ISBN: 978-0-9564944-6-7. pp. 275-281.

BERLINGER EDINA – HORVÁTH FERENC – VIDOVICS-DANCS ÁGNES [2012]: *Tőkeáttétel-ciklusok.* Hitelintézeti Szemle, 11(1), January. pp. 1-23.

VIDOVICS-DANCS ÁGNES [2008]: *Államadósság-kezelés*. In: Báger Gusztáv – Bod Péter Ákos (eds.): Gazdasági kormányzás. Aula Kiadó, Budapest. pp. 81-104.