Democratization, autocratization and financial stability

Research project

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2021

Abstract

This research investigates what effects democratization and autocratization have of financial stability and finds out that autocratization has an instant negative effect, whereas democratization has no effect in short-term and positive effect in long-term.

Content

1 Introduction

The finance, and, in particular, governments' ability to raise capital plays an important role in counties' well-being. At the same time, investors' trust in an ability of states to repay their debts is dependent on the politics. Even if the political institutions drift might be generally good for the economics in the long term, the investors might be scared that such changes would result into something unexpectedly bad. Therefore, it seems to be interesting to quantitatively assess how the investors value the change in risk (measured as an implied probability of default in CDS on sovereign bonds) with regard to democratization or autocratization. Because any similar research has not been done before, this research will provide an insight on what happens to financial stability when political institutuins change.

2 Related literature

The relationship between the democratization (when cosidereded as a process) and the default risk has not been yet researched as a separate topic. Yet, there is a significant amount of literature how the default risk is determined by whether a country is a democracy or not. In "Coalition Governments and Sovereign Debt Crises" (Saiegh, 2009) it is found out that probability of default is lower when a multi-party coalition is in power. In "Can Democracy Prevent Default?" (Saiegh, 2005) the author checks the common belief according to which the democracies are more trustworthy debtors, and finds out that this belief works only for developed countries. "Political institutions and debt crises" (Van Rijckeghem et al., 2009) provides more insight on the difference between different countries, claiming that "In democracies, a parliamentary system or sufficient checks and balances almost guarantee the absence of default on external debt when economic fundamentals or liquidity are sufficiently strong. In dictatorships, high stability and tenure play a similar role for default on domestic debt.".

The fact that democratization is happening might be a sign of instability (the fact that some changes are happening is the direct opposite of stability). Therefore, it is important to consider literature regarding the effect of instability on default probability. "Political instability, country risk and probability of default" (Balkan, 1992) claims that both political stability and democracy level decrease probability of default. Both "Politics and Perceived Country Creditworthiness in International Banking" (Brewer et al., 1990) and "Political instability and country risk" (Rivoli et al., 1997) confirm that the instability increases the perceived risk. "The Impact of Political Risk on Sovereign Bond Spreads - Evidence from Latin America" (Moser, 2007) also confirms the relationship, adding that the reaction of the market to the news is instant.

3 Data

3.1 Data sources

3.1.1 The Economist Intelligence Unit's Democracy Index

Each year the Economist Intelligence Unit publishes its Democracy Index for the past year before the publication. This data is used as an estimate of how democratic various countries were at the ends on years. The democracy score provided is measured on the scale of 0.00 to 10.00, I normalize it to 0.000 to 10.000 for the sake of consistency.

3.1.2 Implied default probabilities data

In this research financial stabilities of countries is viewed through a prism of countries ability to borrow funds and probability of their default. Because there is no direct way to measure these values, I entrust the market to measure these variables and use the implied probability of default derived from prices of 10-year credit default swap countracts on sovereign foreign bonds. To be more precise, the last quote in each year is used. The data is provided by Refinitiv through Thomson Reuters Eikon terminal, it has a scale of 0.000 to 100.000, which I normalize to 0.00000 to 1.00000.

These two data sources are merged on (country,year) basis. The rows which are not in both sources are dropped.

3.2 Definitions

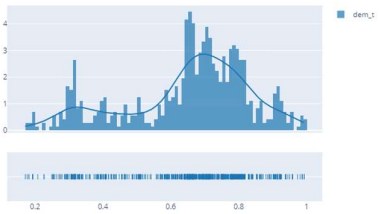
dem_t – the democracy index at year t
$prob_t$ – the implied probability at year t

3.3 Descriptive statistics

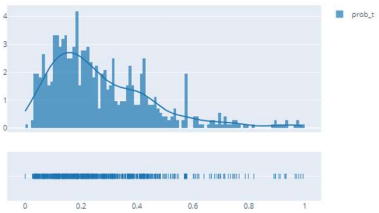
The data consists 719 unique observations, which include 77 unique countries (all over the world, virtually all countries for which there is a market of CDS on their bonds) and 9.3 years per country on average (the dataset is 2010-2020, but not for all countries the whole series is available).

	mean	median	std	min	max
dem_t	0.650542	0.685000	0.182216	0.17100	0.99300
$prob_t$	0.271494	0.222520	0.187012	0.00000	0.99410
$dem_t - dem_{t-1}$	-0.001760	0.000000	0.019147	-0.12900	0.16900
$prob_t - prob_{t-1}$	-0.002697	-0.005015	0.082507	-0.45251	0.47298

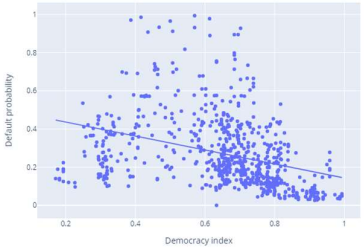
3.3.1 dem_t distribution



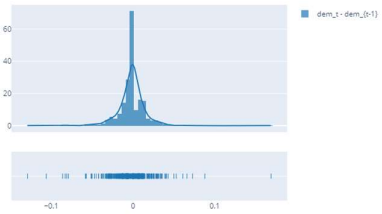
3.3.2 $prob_t$ distribution



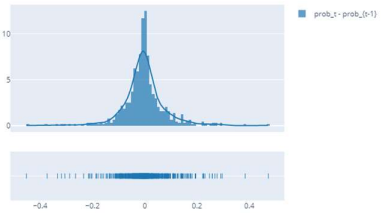
3.3.3 $(dem_t, prob_t)$ scatter plot



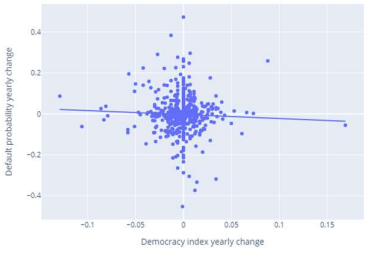
3.3.4 $dem_t - dem_{t-1}$ distribution



3.3.5 $prob_t - prob_{t-1}$ distribution



3.3.6 $(dem_t - dem_{t-1}, prob_t - prob_{t-1})$ scatter plot



4 Research

4.1 A regression between changes

The main idea of this research is to check how a change in democracy level affects financial stability. Therefore, it is natural to look for a correlation in these two changes. In order to be able to tell apart cases when 1. democratization 2. autocratization 3. nothing happens, it seems logical to split the change in democracy level into two separate variables:

$$\Delta dem_{t_1,t_2} = \begin{cases} |dem_{t_1} - dem_{t_2}|, dem_{t_1} - dem_{t_2} > 0 \\ 0, otherwise \end{cases}$$

$$\Delta aut_{t_1,t_2} = \begin{cases} 0, & dem_{t_1} - dem_{t_2} > 0 \\ |dem_{t_1} - dem_{t_2}|, otherwise \end{cases}$$

Basically, the idea is that if the democracy level increased, then a democratization happened and autocratization didn't happen, so the first variable should be equal to the change and the second should be zero (and otherwise for decreases). Both variables are always non-negative.

From (Moser, 2007) as well as from common sense we know that the reaction of the market is instant, so it is natural to assume that whatever caused the democracy level to change through the year should have been reflected in the CDS market also in that year. Therefore, the regression model is

$$\text{prob}_t - \text{prob}_{t-1} = c_1 \Delta dem_{t,t-1} + c_2 \Delta aut_{t,t-1} + c_3$$

The results are:

R^2: 0.003

	coef	std err	t	P>|t|	[0.025	0.975]
const	-0.0051	0.004	-1.287	0.199	-0.013	0.003
$\Delta dem_{t,t-1}$	0.0146	0.283	0.052	0.959	-0.542	0.571
$\Delta aut_{t,t-1}$	0.3665	0.252	1.455	0.146	-0.128	0.861

The p-value and the coefficient for $\Delta \text{aut}_{t,t-1}$ allows us to relatively safely conclude that autocratization worsens financial stability. As for democratization, it is hard to make any conclusions given that the coefficient is near zero.

4.2 A regression between changes and absolute values

The near-zero coefficient for democratization is somewhat strange given that there is an obvious relationship between democracy level and the default

probability. Such "paradox" can be explained with the following intuitive reasoning. In the long run, democratization is indeed good from creditors' perspective. Bu in the short run any change is bad, because any change means higher instability, which means higher risk of a default.

In order to test the hypothesis above, let's run a regression which will account both the long term (the democracy level lagged), medium term and short term (the democracy level changes with different lag) effects:

$$\text{prob}_t = c_1\Delta dem_{t,t-1} + c_2\Delta aut_{t,t-1} + c_3\Delta dem_{t-1,t-2} + c_4\Delta aut_{t-1,t-2} + c_5\Delta dem_{t-2,t-3} + c_6\Delta aut_{t-2,t-3} + c_7 dem_{t-3} + c_8$$

The lags up to three years are used so as to be able to capture medium term effects separately. The larger number of lags isn't used because 1. more variables will make overfitting more likely 2. the time series data used is relatively short, so usage of long lags will cause lots of observations to be dropped.

R^2: 0.147

	coef	std err	t	P>|t|	[0.025	0.975]
$const$	0.4860	0.034	14.199	0.000	0.419	0.553
dem_{t-3}	-0.3671	0.047	-7.799	0.000	-0.460	-0.275
$\Delta dem_{t,t-1}$	0.0206	0.976	0.021	0.983	-1.897	1.938
$\Delta aut_{t,t-1}$	1.3624	0.882	1.544	0.123	-0.371	3.096
$\Delta dem_{t-1,t-2}$	-0.6401	1.080	-0.593	0.554	-2.761	1.481
$\Delta aut_{t-1,t-2}$	-0.3768	0.893	-0.422	0.673	-2.132	1.378
$\Delta dem_{t-2,t-3}$	0.5484	0.857	0.640	0.523	-1.136	2.233
$\Delta aut_{t-2,t-3}$	0.9000	0.626	1.437	0.151	-0.330	2.130

The results are too noisy, meaning that there is no evidence that democratization increases the financial stability even in the medium-term.

4.3 Research design strengths and weaknesses

The main advantage of this research is that it uses a much more objective measure of financial stability then some kind of proxies or expert estimations. Still, it should be admitted that the usage of CDS's implied default probabilities is far from ideal, because bankers might be wrong and CDS's prices might not be reflecting reality. Another strength of this model is its ability to distinguish long and short term effects. The weakness is that making conclusions regarding casuality requires additional assumptions. Although the common sense is enough to say that cheap bonds don't cause democratization, there is a possibility that

there is a third factor that influences both democracy level and financial stability. Yet, in the literature mentioned above I wasn't able to find any mentions of any potential candidates for such role. Therefore, with some degree of sumption talking about casuality is possible. Moreover, another strength of this research is that without relying on assumptions the research provides an insight on how easy will it be for a country in democratization/autocratization to raise debt.

5 Conclusion

The data unravels that democratization is always better than autocratization in terms of financial stability. There is a clear evidence that autocratization will have a relatively instant effect on how the market estimates the country risk. As for democratization, it can be said that even though overall democracies are financially more stable, the democratization does not bring stability on short notice. Instead, a drift towards democratization won't decrease county risk within few next years and will require much more time to make a country's financial stability more stable. The possible explanations for this is that even though democracy is generally better for financial system, any insitutuinal change is a stress, which is not good for countries' finances.

6 Source code

All source code together with raw data can be found at https://github.com/danpetruk/DemocratizationAutocratizationFinancialStability.

7 References

7.1 Literature

Balkan, Erol M. "Political instability, country risk and probability of default." Applied Economics 24.9 (1992): 999-1008.

Brewer, Thomas L., and Pietra Rivoli. "Politics and perceived country creditworthiness in international banking." Journal of Money, Credit and Banking 22.3 (1990): 357-369.

Moser, Christoph. "The impact of political risk on sovereign bond spreads-evidence from Latin America." (2007).

Rivoli, Pietra, and Thomas L. Brewer. "Political instability and country risk." Global Finance Journal 8.2 (1997): 309-321.

Saiegh, S. "Can Democracy prevent default?." The Political Economy of Recurrent Debt. Princeton, NJ: PIIRS (2005).

Saiegh, Sebastian M. "Coalition governments and sovereign debt crises." Economics & Politics 21.2 (2009): 232-254.

Van Rijckeghem, Caroline, and Beatrice Weder. "Political institutions and debt crises." Public Choice 138.3 (2009): 387-408.

7.2 Other materials

Refinitiv. *CDS on 10y sovereign bonds implied default probabilities data fetched using Thomson Reuters Eikon Excel addon*. 2010-2020.

sebnil. *LaTeX-template-for-Word*. 2019. <https://github.com/sebnil/LaTeX-template-for-Word>.

The Economist Intelligence Unit. "Democracy Index." 2006-2020.

xmarquez. *democracyData*. 2021.
<https://github.com/xmarquez/democracyData>.