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The Long-Term Relationship Between *De Jure* and *De Facto* Judicial Independence

Bernd Hayo*

and

Stefan Voigt**

Revised version

Please note that this is a revised version of the original working paper. In particular, we substantially extended the sample across countries and time. As a result of these changes, our findings changed considerably compared to the first version of the paper.

Abstract:

We study the long-term and dynamic relationship between *de jure* and *de facto* judicial independence using a large panel dataset covering up to 87 countries and as many as 61 years. In line with the prevailing theoretical view in the literature, our analysis shows a positive relationship between these variables. However, the magnitude of the relationship is quite small. The positive relationship between the two variables is primarily driven by non-OECD countries.

Keywords: Judicial independence, *de facto*, *de jure*, long-term panel data analysis, cointegration, Granger causality

JEL classification: D 72, D 78, K 42

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1 Introduction

The law and economics literature makes an important distinction between *de jure* and *de facto* judicial independence (*dejure*JI and *defacto*JI). Analysing the relationship between them is interesting for a number of reasons. Doing so can tell us to what degree formal legislation is more than just cheap talk. It can also tell us whether the degree to which formal legislation is actually implemented depends on a country's institutional background. And it is, at least potentially, policy-relevant. Although *defactoJI* appears to be conducive to economic development, *dejureJI* is not significantly correlated with it (Voigt et al. 2015). Thus the question is whether a government interested in spurring economic development can do so by passing legislation that improves its country's *dejure*JI.

It seems straightforward to assume that increases in *dejure*JI will be followed by increases in *defacto*JI. However, findings in the scarce empirical literature are not so straightforward. Using cross-sectional data, Hayo and Voigt (2007) discover that the two are positively related and that *dejureJI* is the single most important predictor for *defactoJI*, although the magnitude of this relationship is small. Melton and Ginsburg (2014) report that none of the conventional variables used to proxy *dejureJI* are significantly correlated with *defactoJI*. Indeed, a figure in their paper (2014, 189) suggests that *defactoJI* might even cause adjustments in *dejureJI*, instead of the other way around as is commonly assumed.

The extant studies rely on simple cross-sections, but the lack of a time dimension makes inferences problematic. Here, we use panel data analyses to study the long-term relationship between *dejureJI* and *defactoJI* for two samples: (i) the period 1955–2015 (61 years) covering 49 countries and (ii) the period 1975–2015 (41 years) covering 87 countries. This is possible due to the development of time-based indicators for *dejureJI* and *defactoJI*. Hayo and Voigt (2014, 2016) use and extend the Comparative Constitutions Project (Elkins et al. 2009) and derive a time-varying indicator for *dejureJI* based on factor analysis; Linzer and Staton (2015) design a latent variable measurement model combining eight extant indicators to map out *defactoJI* across time. In the latter's context, missing data are a big problem and they deal with it by employing Bayesian methodology. Holsinger et al. (2017) provide an update of this dataset and we employ its most recent version (April 2019). For the present analysis, we reconstructed the *de jure* JI indicator from Hayo and Voigt (2016) using the most recent data from the Comparative Constitutions Project (April 2019).

The sample is not quite representative of the world, as about one-quarter of the countries became OECD members before 1973 and some regions are not adequately covered. See the Appendix for a list of the countries and summary statistics.

2. The Long-Term Relationship Between *De Jure* and *De FactoJI*

We first run a static random effects panel data regression, where we use *dejureJI* to explain *defactoJI*.[1] For the period 1955–2015, Model 1 in Table 1 shows a significantly positive relationship between the two variables, which is in line with the theoretical view in the literature and the empirical findings based on cross-sectional data. A one standard deviation increase in *dejureJI* is associated with a 0.06 standard deviation increase of *defactoJI* and the average marginal elasticity is 0.2. Thus, the absolute size of the effect is small, suggesting that the linkage between the two variables is weak. This result is in line with Melton and Ginsburg's (2014) conclusion.

Are these findings robust? Since we find substantial autocorrelation, we re-estimate the model using GLS with an autocorrelated error of order 1 and allowing for heteroscedastic panels. This model (Model 2 in Table 1) shows that the qualitative result remains, but the quantitative effect is even smaller. In Models 3 and 4, we split up the sample into OECD and non-OECD countries to proxy for different degrees of institutional development. We observe a (non-significant) negative coefficient for the OECD sample, whereas the coefficient for non-OECD countries is similar to that in Model 1. Thus, the positive relationship between *dejure*JI and *defacto*JI is driven by the non-OECD countries. Do these findings hold when increasing the number of countries while reducing the observation period? Corresponding Models 5 to 8 for the period 1975–2015 show strikingly similar results.

Table 1: Explaining *defactoJI* using *dejureJI*: static long-run regressions

	1955–2015			
	1 All countries RE	2 All countries GLS	3 OECD countries RE	4 Non-OECD countries RE
DejureJI	0.27*** (0.02)	0.007** (0.003)	0.16*** (0.05)	0.27*** (0.02)
Constant	0.50*** (0.05)	0.67*** (0.01)	0.86*** (0.03)	0.29*** (0.04)
Test variables	$Chi^2(1)$=275***	$Chi^2(1)$=4**	$Chi^2(1)$=11***	$Chi^2(1)$=206***
Test AC(1)	F(1,48)=4,353***	n.a.	F(1,18)=412***	F(1,29)=3,668***
Observations	2,989	2,989	1,159	1,830
Countries	49	49	19	32
Years	61	61	61	61

[1] Note that all results reported here hold when estimating fixed effect models.

	1975–2015			
	5 All countries RE	6 All countries GLS	7 OECD countries RE	8 Non-OECD countries RE
DejureJI	0.25*** (0.02)	0.02*** (0.005)	–0.06 (0.06)	0.26*** (0.02)
Constant	0.45*** (0.03)	0.47*** (0.01)	0.92*** (0.03)	0.32*** (0.02)
Test variables	$Chi^2(1)$=207***	$Chi^2(1)$=14***	$Chi^2(1)$=1.3	$Chi^2(1)$=185***
Test AC(1)	F(1,86)=13,872***	n.a.	F(1,20)=630***	F(1,65)=19,409***
Observations	3,567	3,567	861	2,706
Countries	87	87	21	66
Years	41	41	41	41

Notes: RE=random effects estimator. GLS=generalised least square estimator with an autocorrelated error of order 1 and allowing for heteroscedastic panels. Test variables=Wald test of all included variables. Test AC(1)=Wooldridge (2002) test for first-order autocorrelation. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

The preceding conclusions assume that both variables are stationary or at least cointegrated. Panel unit roots have very weak power and, thus, a sufficiently long time series is essential for valid inference. Table 2 sets out the time-series behaviour of our dataset. Employing various tests, we obtain conflicting results, but, overall, we find more evidence of non-stationarity. The cointegration tests suggest that the variables are cointegrated in both samples.

Table 2: Testing for unit roots and cointegration

	Unit root tests			Cointegration tests		
	Levin-Lin-Chu	Breitung	Im-Pesaran-Shin	Kao	Westerlund: Some panels	Westerlund: All panels
1955–2015						
DefactoJI	Adjusted t*= -3.6***	Lambda= -1.8	W-$\bar{t}$= -2.7***	Augmented D-F t*= -5.0***	Variance ratio= 4.5***	Variance ratio= 1.5*
DejureJI	Adjusted t*= 0.8	Lambda= -0.2	W-$\bar{t}$= 1.9			

1975–2015						
DefactoJI	Adjusted t*= 14	Lambda= -0.4	W-$\bar{t}$= -0.02	Augmented D-F t*= -7.3***	Variance ratio= 9.4***	Variance ratio= 4.5***
DejureJI	Adjusted t*= 14	Lambda= -0.4	W-$\bar{t}$= -3.7***			

Notes: See notes to Table 1. Unit root tests: Levin-Lin-Chu (2002); Breitung (2000); Im-Pesaran-Shin (2003). Cointegration tests: Kao (1999); Westerlund (2005). Tests use demeaning, five lags, and a trend.

This finding leads us to compute error-correction terms (EC) based on the results from Model 1 in Table 1. Accounting for the potentially dynamic nature of the relationship of interest, we run EC models using the first difference of the JI variables and employing five lags. The outcome in Table 3 shows that the ECs are highly significant in all specifications. Thus, the relationships estimated in Table 1 appear to be long-term equilibria, deviations from which affect *defactoJI*'s short-term adjustment in a stabilising way.

Do we find short-term Granger causality from *dejureJI* to *defactoJI*? In the case of Models 1 and 3 in Table 3, there is a significant test outcome. However, in Model 1, the absolute effect of the short-term dynamic reaction is small and negative—a 1 percentage point increase in *dejureJI* leads to a decrease of 0.13 percentage points in *defactoJI*—whereas it is roughly zero in Model 3. These conclusions generally carry over to the GLS specifications in Models 2 and 4. Thus, for OECD countries, there is a negative or zero relationship between the two variables in the short run and a positive one in the long run.

Finally, we analyse whether the causal relationship might run from *defactoJI* to *dejureJ*, as suggested by the figure in Melton and Ginsburg (2014, 189). We use a VAR-type setup (Johansen 1992) to test for weak exogeneity of *defactoJI* with regard to *dejureJI*. In three of the four tests we cannot reject the null of weak exogeneity (see Table 3), which generally supports the view that *defactoJI* adjusts to *dejureJI* and not the other way around. Moreover, we find little evidence of Granger causality running from *defactoJI* to *dejureJI*.

Table 3: Explaining Δ*defactoJI* using Δ*dejureJI*: EC model

	1955–2015		1975–2015	
	1 All countries RE	2 All countries GLS	3 All countries RE	4 All countries GLS
Constant	0.001***	0.0002	0.003***	0.31***
	(0.0001)	(0.00005)	(0.0005)	(0.007)
ΔdefactoJIt-1	1.08***	0.97***	1.05***	0.02
	(0.02)	(0.02)	(0.02)	(0.02)
ΔdefactoJIt-2	-0.25***	-0.06**	-0.26***	0.03
	(0.03)	(0.03)	(0.03)	(0.02)
ΔdefactoJIt-3	0.02	0.05	0.04	0.02
	(0.03)	(0.03)	(0.03)	(0.02)
ΔdefactoJIt-4	-0.02	-0.06*	-0.002	0.01
	(0.03)	(0.03)	(0.03)	(0.02)
ΔdefactoJIt-5	-0.01	-0.001	-0.03	0.02
	(0.02)	(0.02)	(0.02)	(0.02)
ΔdejureJIt-1	-0.01**	-0.002	-0.01**	-0.01
	(0.003)	(0.001)	(0.004)	(0.02)
ΔdejureJIt-2	0.003	0.002	0.003	-0.01
	(0.003)	(0.001)	(0.004)	(0.02)
ΔdejureJIt-3	-0.01***	-0.001	-0.01**	-0.01
	(0.003)	(0.001)	(0.004)	(0.02)
ΔdejureJIt-4	0.0003	-0.002	-0.001	-0.004
	(0.003)	(0.001)	(0.004)	(0.02)
ΔdejureJIt-5	0.003	-0.001	0.001	0.004
	(0.003)	(0.001)	(0.003)	(0.01)
ECM_{t-1}	-0.002***	-0.001***	-0.003***	-0.05***
	(0.0004)	(0.0001)	(0.001)	(0.01)
Test variables	$Chi^2(11)$= 8,736***	$Chi^2(11)$= 12,502***	$Chi^2(11)$= 9,220***	$Chi^2(11)$= 54***
Test AC(1)	F(1,48)=38***	n.a.	F(1,86)=63***	n.a.
Granger causality	$Chi^2(5)$=17***	$Chi^2(5)$=9	$Chi^2(5)$=10*	$Chi^2(5)$=4.2
Weak exogeneity	$Chi^2(1)$=0.4	$Chi^2(1)$=0.3	$Chi^2(1)$=0.00	$Chi^2(1)$=53***
Observations	2,695	2,695	3,045	3,045
Countries	49	49	87	87
Years	55	55	35	35

Notes: See notes to Table 1. Granger (1969) causality: joint test involving five lags of *dejureJI*. Weak exogeneity: test of weak exogeneity of *dejureJI* with regard to *defactoJI* (Johansen 1992).

3. Conclusion

Using two recently published new indicators for *defactoJI* and *dejureJI*, we study their long-term relationship as well as their short-term dynamics. We find that the relationship between the two variables is positive and weak in terms of magnitude, in line with findings by Melton and Ginsburg (2014). The positive relationship is driven by non-OECD countries. In the short term, we discover a generally negative relation between the two variables, which is consistent with results from Gutmann and Voigt (2019) for EU countries.

We find evidence of cointegration between the two variables, which, according to the Engle-Granger representation theorem (Engle and Granger 1987), can be interpreted as the existence of long-term equilibria. Finally, we discover little evidence of reverse causality, that is, that *dejureJI* is influenced by *defactoJI*.

Appendix

A) Sample countries (i=in sample 1955–2015, ii=in sample 1975–2015, *=OECD country in 1972)

Albania(i,ii), Angola(ii) Argentina(ii), Australia(i,ii,*), Austria(i,ii,*), Bahrain(ii), Belgium(i,ii,*), Bhutan(i,ii), Bolivia (ii), Botswana(ii), Brazil (i,ii), Bulgaria(i,ii), Cameroon(ii), Canada(i,ii,*), Chile(i,ii), China(i,ii), Colombia(i,ii), Costa Rica(i,ii), Cuba(ii), Cyprus(ii), Denmark(i,ii,*), Dominican Republic(i,ii), Equatorial Guinea(ii), Finland(i,ii,*), France(i,ii,*), Gabon(ii), Germany(i,ii,*), Greece(ii,*), Guatemala(ii), Guinea-Bissau(ii), Guyana(ii), Haiti(i,ii), Honduras(i,ii), Hungary(ii), Iceland(i,ii,*), India(i,ii), Indonesia(ii), Iran(i,ii), Iraq(i,ii), Ireland(i,ii,*), Israel(i,ii), Italy(i,ii,*), Jamaica(ii), Japan(i,ii,*), Jordan(i,ii), Kenya(ii), Laos(ii), Lebanon(i,ii), Libya(i,ii), Luxembourg(i,ii,*), Madagascar(ii), Malawi(ii), Malaysia(ii), Mali(ii), Malta(ii), Mexico(i,ii), Morocco(ii), Mozambique(ii), Nepal(ii), Netherlands(i,ii,*), North Korea(i,ii), Norway(i,ii*), Panama(i,ii), Papua New Guinea(ii), Paraguay(i,ii), Peru(i,ii), Philippines(i,ii), Poland(i,ii), Romania(i,ii), Senegal(ii), Singapore(ii), South Africa(i,ii), South Korea(i,ii), Spain(ii,*), Sri Lanka(i,ii), Sweden(i,ii,*), Switzerland(i,ii,*), Syria(ii), Taiwan(i,ii), Tanzania(ii), Turkey(i,ii), United Arab Emirates (ii), United States(i,ii,*), Uruguay(ii), Venezuela(ii), Zambia(ii), Zimbabwe(ii).

B) Variable descriptions (annual data, (i) 1955–2015, (ii) 1975–2015)

Variable	Source	Obs.	Mean	Standard Deviation	Min	Max
DejureJI	Normalised indicator based on Hayo and Voigt (2016); newly computed using latest update	(i) 2,989	0.27	0.23	0	1
			0.26	0.22	0	1

	from Comparative Institutions Project, April 2019	(ii) 3,567				
DefactoJI	Indicator based on Holsinger et al. (2017); latest update April 2019	(i) 2,989	0.57	0.33	0.02	0.99
		(ii) 3,567	0.52	0.31	0.03	0.99

C) Constructing a factor as an indicator for *dejure JI*

The procedure is based on Hayo and Voigt (2016). We construct dummy variables of the following items and use these for a factor analysis. The first factor is then considered an indicator of the latent variable *dejure*JI.

(1) Judicial independence mentioned in constitution?

(2) Does the constitution provide for judicial opinions of the highest ordinary court?

(3)–(4) Which of the following aspects is mentioned about opinions for the highest ordinary court? (i) reasons are required in court decisions, (ii) dissenting opinions are allowed.

(5) Judiciary nominates chief justice of the highest ordinary court?

(6) Judiciary approves of nominations for the chief justice?

(7) Chief justice must have a certain education?

(8) Chief justice must be a non-felon?

(9) Chief justice must be a lawyer?

(10) All justices of highest ordinary court must be lawyers?

(11) To whom does the constitution assign the responsibility for interpretation of the constitution? Supreme court only

(12)–(13) Who has standing to initiate a challenge to the constitutionality of legislation? (i) public (by complaint) and (ii) courts

(14)–(15) What is the effect of a determination of unconstitutionality? (i) law is void, (ii) law is void for specific case, but remains on the books, or (iii) law is returned to the legislature for revision/reconsideration

(16) Are there provisions for dismissing judges?

(17)–(18) Under what conditions can judges be dismissed? (i) crimes and other issues of conduct and (ii) incapacitation

(19) Does the constitution explicitly state that judicial salaries are protected from governmental intervention?

(20)–(21) What is the maximum term length for the chief justice of the highest ordinary court? (i) 1 to 10 years or (ii) infinite

(22) What restrictions are in place regarding the number of terms the chief justice of the highest ordinary court may serve? Maximum of 1 term

(23)–(25) What is the maximum term length for judges of the highest ordinary court? (i) 1 to 10 years or (ii) infinite

Statistical information (for period 1955–2015):

- Kaiser-Meyer-Olkin measure of sampling adequacy: 0.64
- Cronbach's alpha: 0.71
- Eigenvalue of first factor: 2.7
- Explanatory power first factor: 0.37

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