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Working Paper 157 – Online Appendix

Measuring Economic Openness:

A Review of Existing Measures and Empirical Practices

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Appendix: Measuring Economic Openness

A review of existing measures and empirical practices

Supplementary material[*]

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Abstract

We provide the descriptive statistics for all data used in the paper in section A. Section B gives a more detailed analysis of the individual time series, including a test for their stationarity. We then rank countries according to their openness in selected indicators, as well as the discrepancy between their *de facto* and *de jure* openness in section C. In section D we describe how we grouped countries for the analysis in section 3 in the main paper, and provide for the figures with countries grouped according to their level of income (section E). In section F we replicate the correlation analysis of section 4 in the main paper using the Pearson instead of the Spearman correlation coefficient.

Contents

A Descriptive statistics and country set

Table 1 provides the descriptive statistics for the variables used in the paper. For data sources as well as detailed descriptions of the variables see the meta data file that comes with the data set.[1]

For the regressions in section 5 we have used the following set of 144 countries:

[1] Angola [2] Albania [3] United Arab Emirates [4] Argentina [5] Armenia [6] Australia [7] Austria [8] Burundi [9] Belgium [10] Benin [11] Burkina Faso [12] Bangladesh [13] Bulgaria [14] Bahrain [15] Belize [16] Bolivia [17] Brazil [18] Barbados [19] Brunei Darussalam [20] Botswana [21] Central African Republic [22] Canada [23] Switzerland [24] Chile [25] China [26] Cote D'Ivoire [27] Cameroon [28] Democratic Republic of the Congo [29] Congo [30] Colombia [31] Costa Rica [32] Cyprus [33] Czech Republic [34] Germany [35] Denmark [36] Dominican Republic [37] Algeria [38] Ecuador [39] Egypt [40] Spain [41] Estonia [42] Ethiopia [43] Finland [44] Fiji [45] France [46] Gabon [47] United Kingdom of Great Britain and Northern Ireland [48] Ghana [49] Gambia [50] Greece [51] Guatemala [52] Hong Kong [53] Honduras [54] Croatia [55] Haiti [56] Hungary [57] Indonesia [58] India [59] Ireland [60] Ira [61] Iraq [62] Iceland [63] Israel [64] Italy [65] Jamaica [66] Jordan [67] Japan [68] Kazakhstan [69] Kenya [70] Kyrgyzstan [71] Cambodia [72] Republic of Korea [73] Kuwait [74] Lao People's Democratic Republic [75] Liberia [76] Sri Lanka [77] Lesotho [78] Lithuania [79] Luxembourg [80] Latvia [81] Macao [82] Morocco [83] Republic of Moldova [84] Madagascar [85] Maldives [86] Mexico [87] Mali [88] Malta [89] Myanmar [90] Mongolia [91] Mozambique [92] Mauritania [93] Mauritius [94] Malawi [95] Malaysia [96] Namibia [97] Niger [98] Nigeria [99] Nicaragua [100] Netherlands [101] Norway [102] Nepal [103] New Zealand [104] Pakistan [105] Panama [106] Peru [107] Philippines [108] Poland [109] Portugal [110] Paraguay [111] Qatar [112] Romania [113] Russian Federation [114] Rwanda [115] Saudi Arabia [116] Sudan [117] Senegal [118] Singapore [119] Sierra Leone [120] El Salvador [121] Serbia [122] Slovakia [123] Slovenia [124] Sweden [125] Swaziland [126] Syrian Arab Republic [127] Togo [128] Thailand [129] Tajikistan [130] Trinidad and Tobago [131] Tunisia [132] Turkey [133] Taiwan, Province of China [134] United Republic of Tanzania [135] Uganda [136] Ukraine [137] Uruguay [138] United States of America [139] Venezuela, Bolivarian Republic of [140] Viet Nam [141] Yemen [142] South Africa [143] Zambia [144] Zimbabwe

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[1]The data, as well as the code to reproduce the estimation results and figures will be available online after publication: [github link blinded for review].

Variable	Observations	Mean	Standard deviation
Alcala	5446	386557.61	461690.6800
CAPITAL	3858	56.40	28.2800
CTS	7090	551.24	1693.9500
EXP_to_GDP	8254	36.61	27.7100
FIN_CUR	3858	60.06	28.0300
Frankel	5821	-17.20	52.7000
FTI_Index	2859	6.69	1.7500
FTI_Index_ipo	5370	61.55	21.3700
FTI_trade	3323	5.69	2.8100
FTI_trade_ipo	6698	5.10	3.1300
GDP_pc_growth	8221	2.29	7.4800
hc	7224	2.06	0.7200
HF_fin	3543	52.57	21.0900
HF_trade	3535	68.15	16.3900
IMP_to_GDP	8254	42.53	29.1000
inflation	7591	33.43	474.5300
inv_share	8684	21.58	21.0500
KA_Index	1001	66.38	35.5500
KAOPEN	6887	45.46	35.8400
KOF_defacto	8544	51.28	19.4000
KOF_dejure	7637	48.54	20.5700
KOF_econ	8130	49.74	16.7500
KOF_finance_df	8359	51.49	21.6100
KOF_finance_dj	7820	47.36	24.0100
KOF_trade_df	8631	50.52	21.3100
KOF_trade_dj	7275	50.51	23.1300
Lietal	7441	0.46	0.2700
LMF_EQ	7065	53.85	537.0500
LMF_FDI_in	7650	59489.34	308868.8600
LMF_FDI_out	7594	60396.62	360124.4600
LMF_FDI_total_stocks_GDP	7050	82.70	652.7200
LMF_in_GDP	7626	140.02	1873.6900
LMF_open	7038	450.60	3292.7200
LMF_out_GDP	7587	166.08	3213.4800
ln_FTI_Index_ipo	5339	4.03	0.5400
Penn_GDP_PPP	8561	0.00	0.0000
Penn_GDP_PPP_log	8561	-12.10	1.2800
pop_growth	11820	1.77	6.6500
pop_log	12035	14.82	2.3900
population	12035	24245522.79	100751022.6400
rgdpo	8684	263742.63	1026442.3100
Tariff_RES	3057	85.60	11.4500
Tariff_WITS	2084	91.35	5.8000
Tariff_WITS_ipo	2611	90.70	6.6500
TOI	4782	15.97	16.8700
Trade_to_GDP	8232	78.42	53.6500
UNC_FDI_in	6450	52887.28	240838.3700
UNC_FDI_out	4693	73631.72	337692.5900
UNC_FDI_total_stocks_GDP	4448	64.42	193.3800
UNC_in_GDP	6173	114.41	1635.6200
UNC_out_GDP	4516	158.57	2523.5600

Table 1: Descriptive statistics for the data used in the paper.

Variable name	Description	Unit	Source
Alcala	Real trade share (Alcala and Ciccone, 2004).	% of GDP at PPP	The World Bank (2018), own calculations
CAPITAL	Text-based index for de jure financial openness	index 0-100	Quinn and Toyoda (2008)
ccode	Iso3c code of Country	NA	NA
Country	Country name	NA	NA
CTS	Composite Trade Share (CTS).	Index	Squalli and Wilson (2011)
EXP_to_GDP	Exports / GDP	% of GDP	The World Bank (2018)
FIN_CUR	The Financial Current Account, a text-based AREAR measure; based on compliance with IMF's Article VIII obligations.	index 0-100	Quinn and Toyoda (2008)
Frankel	Adjusted trade share, alternative method for outlier handling (Frankel, 2000)	% of 2·GDP	The World Bank (2018); own calculations
FTI_Index	Freedom to trade international index, sub-index of the Economic Freedom Index provided of the Fraser Institute	index 0-10	The Fraser Institute (2016)
FTI_Index_ipo	FTI_Index with interpolated values (linear interpolation)	index 0-10	The Fraser Institute (2016), own calc

FTI_trade	Freedom to trade international index, with score for "Black Market Exchange Rates" and "controls of the movement of capital and people" being excluded.	index 0-10	The Fraser Institute (2016)
FTI_trade_ipo	FTI_trade with interpolated values (linear interpolation)	index 0-10	The Fraser Institute (2016), own calculation.
GDP_pc_growth	Growth in GDP per capita	Percent	Pen (2018)
hc	Human capital index, based on years of schooling and returns to education; see Human capital in PWT9.	Index, 1-5	Pen (2018)
HF_econ	Economic Freedom Index of the Heritage Foundation (average of 12 sub-indices).	Index, 0-100	Miller et al. (2018)
HF_fin	Financial Investment Freedom Index, subset of Economic Freedom Index	Index, 0-100	Miller et al. (2018)
HF_trade	Trade-weighted average tariff rate Ð Nontariff trade barriers (NTBs), subset of Economic Freedom Index.	Index, 0-100	Miller et al. (2018)
IMP_to_GDP	Imports / GDP	% of GDP	The World Bank (2018)
inflation	Inflation, consumer prices (annual)	annual growth in %	The World Bank (2018)
initial_GDP_pc	GDP per capita at PPP in starting year of periods (for 5-year average dataset only).	Output-side real GDP at chained PPPs (in mil. 2011US$)	Pen (2018); own calculation
inv_share	Share of gross capital formation	at current PPPs	Pen (2018)

KA_Index	Capital Account Restrictions, a Text-based AREAER measur; similar to CAPITAL and FIN_CURRENT but includes finer-graned sub-categories and information about different types of restrictions, asset categories, direction of flows and residency of agents.	Index, 0-1	Schindler (2009)
KAOPEN	Chinn-Ito-Index, a table-based AREAER measure	index from -1.90 to 2.37	Chinn and Ito (2008), data update 2015
KOF_defacto	De facto part of the KOF Economic Globalization index	index 0-100	Gygli et al. (2018)
KOF_dejure	De jure part of the KOF Economic Globalization index	index 0-100	Gygli et al. (2018)
KOF_econ	The Economic Globalization index of the Swiss Economic Institute (KOF); de facto and de jure weighted equally	index 0-100	Gygli et al. (2018)
Lietal	Adjusted trade share, modification to Frankel and Romer (1999) approach, suggested by Li et al. (2004)	% of GDP (adjusted)	The World Bank (2018); own calculations
LMF_EQ	Total foreign assets and liabilities (stocks) in % GDP	% of GDP	Lane and Milesi-Ferretti (2017)
LMF_FDI_total_stocks_GDP	Sum of inward and outwarf FDI stocks in % of GDP.	% of GDP	Lane and Milesi-Ferretti (2017)
LMF_in_GDP	FDI inward stocks in % of GDP in USD.	% of GDP	Lane and Milesi-Ferretti (2017)

LMF_open	Portfolio equity assets and liabilities (stocks) in % GDP	% of GDP	Lane and Milesi-Ferretti (2017)
LMF_open_pv	Private Financial Openness Index: by subtracting official development aid (DA) from foreign liablities (FL) and international reserves (IR) from foreign assets (FA), private financial openness represents private agentsŐ willingness and ability to invest abroad and to incur foreign debt.	% of GDP	Lane and Milesi-Ferretti (2017)
LMF_out_GDP	FDI outward stocks in % of GDP in USD.	% of GDP	Lane and Milesi-Ferretti (2017)
ln_FTI_Index_ipo	Log of FTI_trade_ipo HOW	log	Lane and Milesi-Ferretti (2017)
Penn_GDP_PPP			Pen (2018)
Penn_GDP_PPP_log	Log of Penn_GDP_PPP	log	Pen (2018)
period	Periods used for calculation of 5 year averages	NA	Own calculation
pop_growth	Growth of pop_growth	Percent	Own calculation
pop_log	Log of population	Log	Own calculation
population	Total de facto population, inluding both Sexesas of 1 July of the year indicated.	1000 people	UNPD (2015 Revision)
rgdpo	Output-side real GDP	chained PPPs (in mil. 2011USD)	Pen (2018)

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Tariff_RES	100 minus the tariff rate, which is based upon the average of (1) the effective (i.e. tariff revenue divided by import value) and (2) the unweighted tariff rates	Index, 0-100	Jaumotte et al. (2013)
Tariff_WITS	100 minus Mean of Effectively Applied (AHS) and Most-Favored Nation (MFN) weighted average tariff rates	index 0-100	Own calculations, 2017 (based on tariff data of WITS databank)
Tariff_WITS_ipo	Tariff_WITS with interpolated values (linear interpolation)	index 0-100	Own calculation
TOI	Generalized Trade Openness Index	index 0-100 (top value=100, others relative to this)	Tang (2011)
Trade_to_GDP	(Imports+Exports) / GDP	Percent	World Bank
UNC_FDI_in	Inward Foreign Direct Investment stocks (value of foreign investors' equity in and net loans to enterprises resident in the reporting economy) in % of GDP	% of GDP	UNCTAD Database (01/2018)
UNC_FDI_out	Outward FDI stocks (value of the resident investors' equity in and net loans to enterprises in foreign economies) in % GDP	% of GDP	UNCTAD Database (01/2018)
UNC_FDI_total_stocks_GDP	Sum of inward and outwarf FDI stocks in % of GDP.	% of GDP	UNCTAD Database (01/2018)
UNC_in_GDP	Outward FDI stocks in % GDP in USD	% of GDP	UNCTAD Database (01/2018)

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| UNC_out_GDP | Outward FDI stocks in % GDP in USD | % of GDP | UNCTAD Database (01/2018) |
| Year | Year of observation | NA | NA |

Table 2

B Further information on individual time series

Here we provide more specific information on the individual time series of the openness measures considered. Columns 'start' and 'end' indicate the first and last data point for the time series. Column 'share_na' gives the share of missing data points in percent. Column 'adf_pval' provides the p value of an augmented Dickey Fuller test with trend for stationarity, and the last columns illustrates the significance level on which the Null of a stationary time series has to be rejected.

country	var_name	data_start	data_end	share_na	adf_pval	sig
Albania	Lietal	1984	2016	0.000	0.088	*
Australia	Lietal	1989	2016	0.000	0.543	.
Austria	Lietal	2005	2016	0.000	0.223	.
Belgium	Lietal	2002	2016	0.000	0.139	.
Bulgaria	Lietal	1980	2016	0.000	0.100	.
Canada	Lietal	1960	2016	0.000	0.563	.
Croatia	Lietal	1995	2016	0.000	0.345	.
Cyprus	Lietal	1976	2016	0.000	0.356	.
Czech Republic	Lietal	1993	2016	0.000	0.038	**
Denmark	Lietal	1975	2016	0.000	0.454	.
Estonia	Lietal	1995	2016	0.000	0.033	**
Finland	Lietal	1975	2016	0.000	0.541	.
France	Lietal	1975	2016	0.000	0.341	.
Germany	Lietal	1971	2016	0.000	0.550	.
Greece	Lietal	1976	2016	0.024	0.382	.
Hungary	Lietal	1991	2016	0.000	0.703	.
Iceland	Lietal	1976	2016	0.000	0.547	.
Ireland	Lietal	2005	2016	0.000	0.608	.
Italy	Lietal	1970	2016	0.000	0.264	.

Japan	Lietal	1996	2016	0.000	0.061	*
Korea	Lietal	1976	2016	0.000	0.685	.
Latvia	Lietal	1995	2016	0.000	0.053	*
Lithuania	Lietal	1995	2016	0.000	0.151	.
Luxembourg	Lietal	1999	2016	0.000	0.100	*
Macedonia FYR	Lietal	1996	2016	0.000	0.232	.
Malta	Lietal	1971	2016	0.000	0.699	.
Mexico	Lietal	1979	2016	0.000	0.165	.
Montenegro	Lietal	2007	2016	0.000	0.001	***
Netherlands	Lietal	1967	2016	0.000	0.530	.
New Zealand	Lietal	2000	2016	0.000	0.247	.
Norway	Lietal	1975	2016	0.000	0.309	.
Poland	Lietal	1990	2016	0.000	0.094	*
Portugal	Lietal	1975	2016	0.000	0.023	**
Romania	Lietal	1987	2016	0.000	0.262	.
Serbia	Lietal	2007	2016	0.000	0.001	***
Slovakia	Lietal	1993	2016	0.000	0.167	.
Slovenia	Lietal	1995	2016	0.000	0.083	*
Spain	Lietal	1975	2016	0.000	0.255	.
Sweden	Lietal	1970	2016	0.000	0.331	.

Switzerland	Lietal	1980	2016	0.000	0.402	.
Turkey	Lietal	1974	2016	0.000	0.038	**
United Kingdom	Lietal	1970	2016	0.000	0.143	.
United States	Lietal	1970	2016	0.000	0.174	.
Albania	Trade_to_GDP	1996	2016	0.000	0.837	.
Australia	Trade_to_GDP	1960	2016	0.000	0.304	.
Austria	Trade_to_GDP	1960	2016	0.000	0.179	.
Belgium	Trade_to_GDP	1960	2016	0.000	0.049	**
Bulgaria	Trade_to_GDP	1991	2016	0.000	0.079	*
Canada	Trade_to_GDP	1960	2016	0.000	0.683	.
Croatia	Trade_to_GDP	1995	2016	0.000	0.481	.
Cyprus	Trade_to_GDP	1960	2016	0.000	0.671	.
Czech Republic	Trade_to_GDP	1990	2016	0.000	0.054	*
Denmark	Trade_to_GDP	1960	2016	0.000	0.263	.
Estonia	Trade_to_GDP	1993	2016	0.000	0.264	.
Finland	Trade_to_GDP	1960	2016	0.000	0.326	.
France	Trade_to_GDP	1960	2016	0.000	0.249	.
Germany	Trade_to_GDP	1960	2016	0.000	0.645	.
Greece	Trade_to_GDP	1960	2016	0.000	0.028	**
Hungary	Trade_to_GDP	1978	2016	0.000	0.383	.

Iceland	Trade_to_GDP	1960	2016	0.000	0.495	.
Ireland	Trade_to_GDP	1960	2016	0.000	0.324	.
Italy	Trade_to_GDP	1960	2016	0.000	0.379	.
Japan	Trade_to_GDP	1960	2016	0.000	0.434	.
Korea	Trade_to_GDP	1970	2016	0.000	0.522	.
Latvia	Trade_to_GDP	1990	2016	0.000	0.015	**
Lithuania	Trade_to_GDP	1990	2016	0.000	0.030	**
Luxembourg	Trade_to_GDP	1960	2016	0.000	0.958	.
Macedonia FYR	Trade_to_GDP	1995	2016	0.000	0.022	**
Malta	Trade_to_GDP	1960	2016	0.000	0.195	.
Mexico	Trade_to_GDP	1960	2016	0.000	0.253	.
Montenegro	Trade_to_GDP	2000	2016	0.000	0.544	.
Netherlands	Trade_to_GDP	1960	2016	0.000	0.120	.
New Zealand	Trade_to_GDP	1960	2016	0.000	0.424	.
Norway	Trade_to_GDP	1960	2016	0.000	0.015	**
Poland	Trade_to_GDP	1980	2016	0.000	0.003	***
Portugal	Trade_to_GDP	1960	2016	0.000	0.089	*
Romania	Trade_to_GDP	1980	2016	0.000	0.193	.
Serbia	Trade_to_GDP	1995	2016	0.000	0.132	.
Slovakia	Trade_to_GDP	1990	2016	0.000	0.034	**

Slovenia	Trade_to_GDP	1990	2016	0.000	0.001	***
Spain	Trade_to_GDP	1960	2016	0.000	0.070	*
Sweden	Trade_to_GDP	1960	2016	0.000	0.170	.
Switzerland	Trade_to_GDP	1960	2016	0.000	0.302	.
Turkey	Trade_to_GDP	1980	2016	0.000	0.476	.
United Kingdom	Trade_to_GDP	1960	2016	0.000	0.282	.
United States	Trade_to_GDP	1960	2016	0.000	0.091	*
Albania	Alcala	1980	2014	0.000	0.659	.
Australia	Alcala	1989	2014	0.000	0.660	.
Austria	Alcala	2005	2014	0.000	0.048	**
Belgium	Alcala	2002	2014	0.000	0.490	.
Bulgaria	Alcala	1980	2014	0.000	0.743	.
Canada	Alcala	1960	2014	0.000	0.082	*
Croatia	Alcala	1993	2014	0.000	0.669	.
Cyprus	Alcala	1976	2014	0.000	0.364	.
Czech Republic	Alcala	1993	2014	0.000	0.699	.
Denmark	Alcala	1975	2014	0.000	0.339	.
Estonia	Alcala	1992	2014	0.000	0.293	.
Finland	Alcala	1975	2014	0.000	0.318	.
France	Alcala	1975	2014	0.000	0.216	.

Germany	Alcala	1971	2014	0.000	0.574	.
Greece	Alcala	1976	2014	0.026	0.799	.
Hungary	Alcala	1982	2014	0.000	0.523	.
Iceland	Alcala	1976	2014	0.000	0.094	*
Ireland	Alcala	2005	2014	0.000	0.449	.
Italy	Alcala	1970	2014	0.000	0.260	.
Japan	Alcala	1996	2014	0.000	0.114	.
Korea	Alcala	1976	2014	0.000	0.785	.
Latvia	Alcala	1992	2014	0.000	0.479	.
Lithuania	Alcala	1993	2014	0.000	0.639	.
Luxembourg	Alcala	1999	2014	0.000	0.853	.
Macedonia FYR	Alcala	1996	2014	0.000	0.214	.
Malta	Alcala	1971	2014	0.000	0.965	.
Mexico	Alcala	1979	2014	0.000	0.322	.
Montenegro	Alcala	2007	2014	0.000	0.009	***
Netherlands	Alcala	1967	2014	0.000	0.383	.
New Zealand	Alcala	2000	2014	0.000	0.442	.
Norway	Alcala	1975	2014	0.000	0.209	.
Poland	Alcala	1976	2014	0.000	0.779	.
Portugal	Alcala	1975	2014	0.000	0.140	.

Romania	Alcala	1971	2014	0.000	0.911	.
Serbia	Alcala	2007	2014	0.000	0.106	.
Slovakia	Alcala	1993	2014	0.000	0.516	.
Slovenia	Alcala	1992	2014	0.000	0.542	.
Spain	Alcala	1975	2014	0.000	0.034	**
Sweden	Alcala	1970	2014	0.000	0.293	.
Switzerland	Alcala	1977	2014	0.000	0.653	.
Turkey	Alcala	1974	2014	0.000	0.455	.
United Kingdom	Alcala	1970	2014	0.000	0.109	.
United States	Alcala	1970	2014	0.000	0.599	.
Albania	CTS	1984	2016	0.000	0.473	.
Australia	CTS	1989	2016	0.000	0.324	.
Austria	CTS	2005	2016	0.000	0.179	.
Belgium	CTS	2002	2016	0.000	0.015	**
Bulgaria	CTS	1980	2016	0.000	0.707	.
Canada	CTS	1977	2016	0.000	0.732	.
Croatia	CTS	1995	2016	0.000	0.330	.
Cyprus	CTS	1977	2016	0.000	0.057	*
Czech Republic	CTS	1993	2016	0.000	0.600	.
Denmark	CTS	1977	2016	0.000	0.292	.

Estonia	CTS	1995	2016	0.000	0.064	*
Finland	CTS	1977	2016	0.000	0.511	.
France	CTS	1977	2016	0.000	0.061	*
Germany	CTS	1977	2016	0.000	0.463	.
Greece	CTS	1977	2016	0.025	0.885	.
Hungary	CTS	1991	2016	0.000	0.875	.
Iceland	CTS	1977	2016	0.000	0.743	.
Ireland	CTS	2005	2016	0.000	0.661	.
Italy	CTS	1977	2016	0.000	0.518	.
Japan	CTS	1996	2016	0.000	0.179	.
Korea	CTS	1977	2016	0.000	0.465	.
Latvia	CTS	1995	2016	0.000	0.079	*
Lithuania	CTS	1995	2016	0.000	0.233	.
Luxembourg	CTS	1999	2016	0.000	0.031	**
Macedonia FYR	CTS	1996	2016	0.000	0.172	.
Malta	CTS	1977	2016	0.000	0.634	.
Mexico	CTS	1979	2016	0.000	0.496	.
Montenegro	CTS	2007	2016	0.000	0.059	*
Netherlands	CTS	1977	2016	0.000	0.405	.
New Zealand	CTS	2000	2016	0.000	0.032	**

| Norway	CTS	1977	2016	0.000	0.137	.
Poland	CTS	1990	2016	0.000	0.165	.
Portugal	CTS	1977	2016	0.000	0.519	.
Romania	CTS	1987	2016	0.000	0.052	*
Serbia	CTS	2007	2016	0.000	0.085	*
Slovakia	CTS	1993	2016	0.000	0.397	.
Slovenia	CTS	1995	2016	0.000	0.567	.
Spain	CTS	1977	2016	0.000	0.864	.
Sweden	CTS	1977	2016	0.000	0.327	.
Switzerland	CTS	1980	2016	0.000	0.790	.
Turkey	CTS	1977	2016	0.000	0.017	**
United Kingdom	CTS	1977	2016	0.000	0.418	.
United States	CTS	1977	2016	0.000	0.491	.
Albania	KOF_defacto	1970	2015	0.000	0.131	.
Australia	KOF_defacto	1970	2015	0.000	0.832	.
Austria	KOF_defacto	1970	2015	0.000	0.619	.
Belgium	KOF_defacto	1970	2015	0.000	0.555	.
Bulgaria	KOF_defacto	1970	2015	0.000	0.420	.
Canada	KOF_defacto	1970	2015	0.000	0.261	.
Croatia	KOF_defacto	1991	2015	0.000	0.965	.

Cyprus	KOF_defacto	1970	2015	0.000	0.553	.
Czech Republic	KOF_defacto	1993	2015	0.000	0.343	.
Denmark	KOF_defacto	1970	2015	0.000	0.669	.
Estonia	KOF_defacto	1991	2015	0.000	0.888	.
Finland	KOF_defacto	1970	2015	0.000	0.362	.
France	KOF_defacto	1970	2015	0.000	0.214	.
Germany	KOF_defacto	1970	2015	0.000	0.637	.
Greece	KOF_defacto	1970	2015	0.000	0.334	.
Hungary	KOF_defacto	1970	2015	0.000	0.511	.
Iceland	KOF_defacto	1970	2015	0.000	0.916	.
Ireland	KOF_defacto	1970	2015	0.000	0.458	.
Italy	KOF_defacto	1970	2015	0.000	0.583	.
Japan	KOF_defacto	1970	2015	0.000	0.542	.
Korea	KOF_defacto	1970	2015	0.000	0.734	.
Latvia	KOF_defacto	1990	2015	0.000	0.305	.
Lithuania	KOF_defacto	1990	2015	0.000	0.182	.
Luxembourg	KOF_defacto	1970	2015	0.000	0.686	.
Macedonia FYR	KOF_defacto	1991	2015	0.000	0.448	.
Malta	KOF_defacto	1970	2015	0.000	0.803	.
Mexico	KOF_defacto	1970	2015	0.000	0.168	.

|						
Montenegro	KOF_defacto	1970	2015	0.000	0.640	.
Netherlands	KOF_defacto	1970	2015	0.000	0.294	.
New Zealand	KOF_defacto	1970	2015	0.000	0.916	.
Norway	KOF_defacto	1970	2015	0.000	0.307	.
Poland	KOF_defacto	1970	2015	0.000	0.955	.
Portugal	KOF_defacto	1970	2015	0.000	0.102	.

Table 3

C   Rankings

Here we first rank countries according to selected openness measures (see table 4) and, second, illustrate the fact that a high degree of *de jure* openness does not necessarily implies a high degree of *de facto* openness: figure 1 illustrates this difference and highlights those countries with the strongest discrepancy between *de facto* and *de jure* openness.
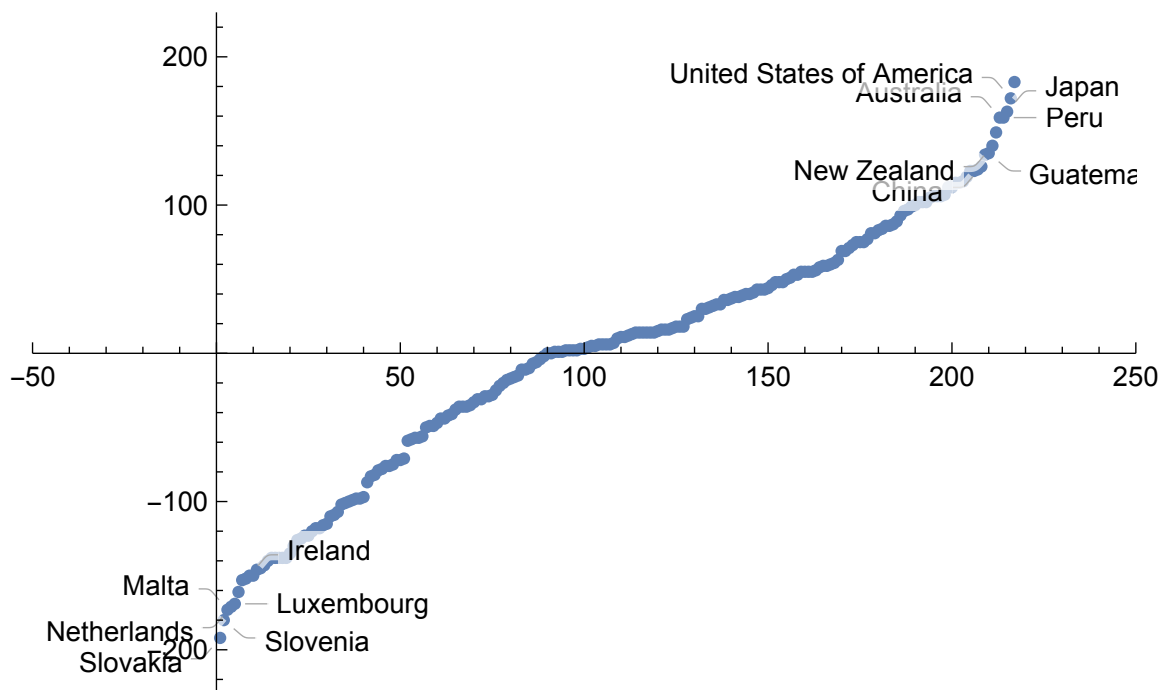
(a) Differences in the ranks of trade-to-GDP (trade *de facto*) and the WITS-based index (trade *de jure*).
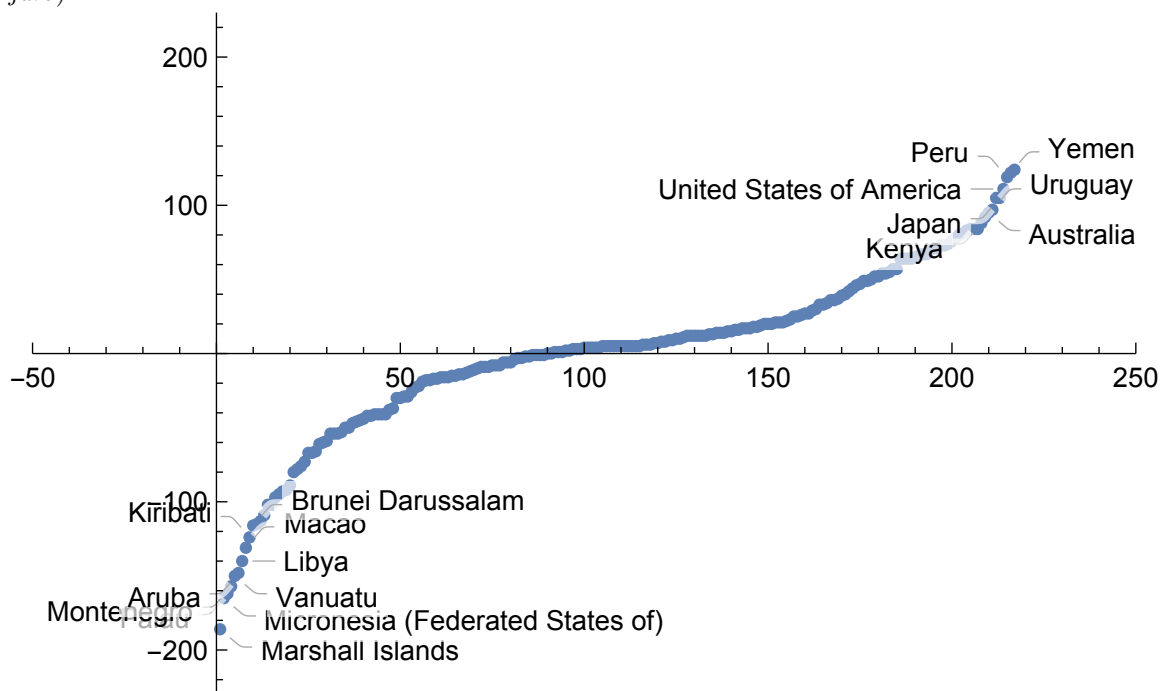
(b) Differences in the ranks of KOF *de facto* and KOF *de jure*.

Figure 1: Comparisons of *de facto* and *de jure* openness.

Country	Rank	Country	Rank
Luxembourg	1	Singapore	1
Hong Kong	2	Mauritius	2
Singapore	3	Georgia	3
Malta	4	Peru	4
Ireland	5	New Zealand	5
Slovakia	6	Switzerland	6
Viet Nam	7	Ukraine	7
United Arab Emirates	8	USA	8
Hungary	9	Australia	9
Congo	10	Albania	10
Sint Maarten (Dutch part)	207	Turkmenistan	207
Seychelles	208	Timor-Leste	208
Syrian Arab Republic	209	Tonga	209
Turks and Caicos Islands	210	Trinidad and Tobago	210
Turkmenistan	211	Tuvalu	211
Trinidad and Tobago	212	Taiwan, Province of China	212
Tuvalu	213	Uzbekistan	213
Taiwan	214	Venezuela	214
Venezuela	215	Virgin Islands, British	215
Virgin Islands, British	216	Virgin Islands, U.S.	216
Vanuatu	217	Vanuatu	217

(a) Rank according to trade-to-GDP (trade *de facto*).

(b) Rank according to the WITS-based index (trade *de jure*).

Country	Rank	Country	Rank
Singapore	1	Hong Kong	1
Belgium	2	Singapore	2
Netherlands	3	Netherlands	3
Malta	4	Ireland	4
Hong Kong	5	Belgium	5
Marshall Islands	6	France	6
Seychelles	7	Czech Republic	7
Luxembourg	8	Finland	8
Ireland	9	United Kingdom	9
Mauritius	10	Luxembourg	10
Romania	207	Sint Maarten (Dutch part)	207
San Marino	208	Turks and Caicos Islands	208
Somalia	209	Turkmenistan	209
South Sudan	210	Timor-Leste	210
Sint Maarten (Dutch part)	211	Tonga	211
Turks and Caicos Islands	212	Tuvalu	212
Timor-Leste	213	Taiwan, Province of China	213
Tuvalu	214	Uzbekistan	214
Taiwan, Province of China	215	Virgin Islands, British	215
Virgin Islands, British	216	Virgin Islands, U.S.	216
Virgin Islands, U.S.	217	Vanuatu	217

(c) Rank according to the KOF *de facto* index.

(d) Rank according to the KOF *de jure* index.

Table 4: The most and least open countries according to selected openness measures.

D Country groups according to economic complexity

We classified countries according to their complexity as defined by Hidalgo and Hausmann. We decided to set thresholds such that the three groups (*high*, *medium*, and *low* complexity) consist of approximately the same number of countries. This yields to the following classification, according to which we classify countries every year anew (i.e. countries can in principle switch between groups):

High complexity	$ECI > 0.5$
Medium complexity	$0.5 \geq ECI \geq -0.5$
Low complexity	$ECI < -0.5$

E Trends in openness based on income groups

In the main paper we classified countries according to their complexity as defined by Hidalgo and Hausmann and as explicated in section D. Here we complement this presentation by providing the same kind of visualization, but according to the income groups as provided by the World Bank. The World Bank assigns countries into four income groups – high, upper-middle, lower-middle, and low. The assignment is based on the GNI per capita in current US dollars calculated using the Atlas method. The threshold levels are determined at the start of the Bank's fiscal year in July and remain fixed for 12 months regardless of subsequent revisions to estimates. Thus, as for the classification into complexity groups, countries may move among income groups over the years. Currently, the following classification scheme is used:

	GNI p.c. in current USD
High income	> 12235
Upper middle income	$3956 - 12235$
Lower middle income	$1006 - 3955$
Low income	< 1005

The figures of section 3 in the main text are replicated in figures 2 (for figure 1 in the main text), 3 (for figure 2 in the main text), and 4 (for figure 3 in the main text) using the World Bank classification. Note that since our sample is restricted to European countries only high and upper medium income countries show up.
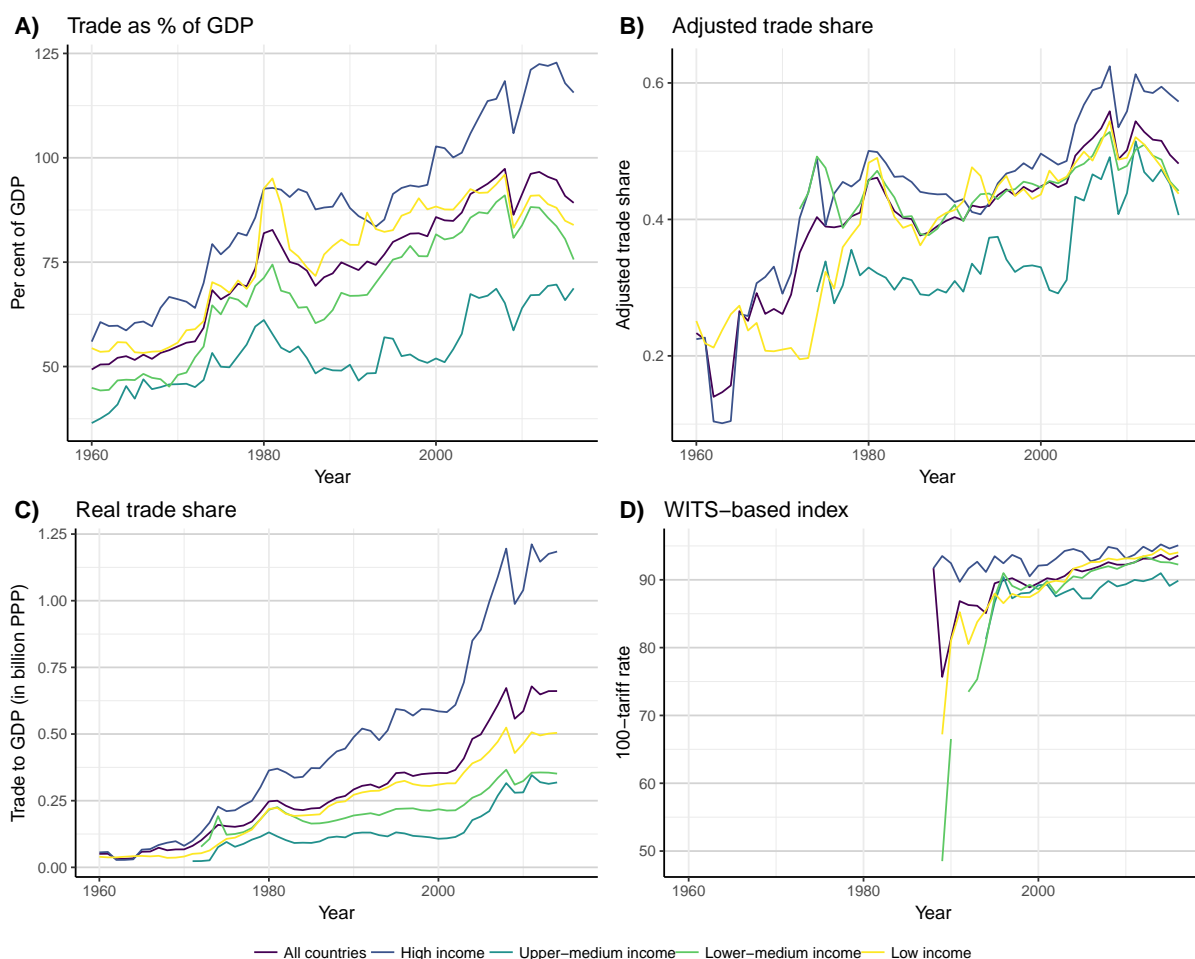
Figure 2: Replication of figure 1 in the main text: the dynamics of trade openness measures.

F   Correlation analysis with alternative correlation measures

Here we replicate the correlation matrix of section 4 in the main paper with the Pearson correlation coefficient (see figure 5a for correlations among levels and 5b for correlations among differences). The assumptions for this measure are somehow more restrictive than for the Spearman coefficient, yet the results are more pronounced, and the clusters of trade vs. financial, and de facto vs. de jure measures are easier to spot.

A) Inward FDI stocks (% GDP) **B)** Outward FDI stocks (% GDP)

C) Foreign assets and liabilities (LMF_open) **D)** Chinn–Ito Index of capital account openness

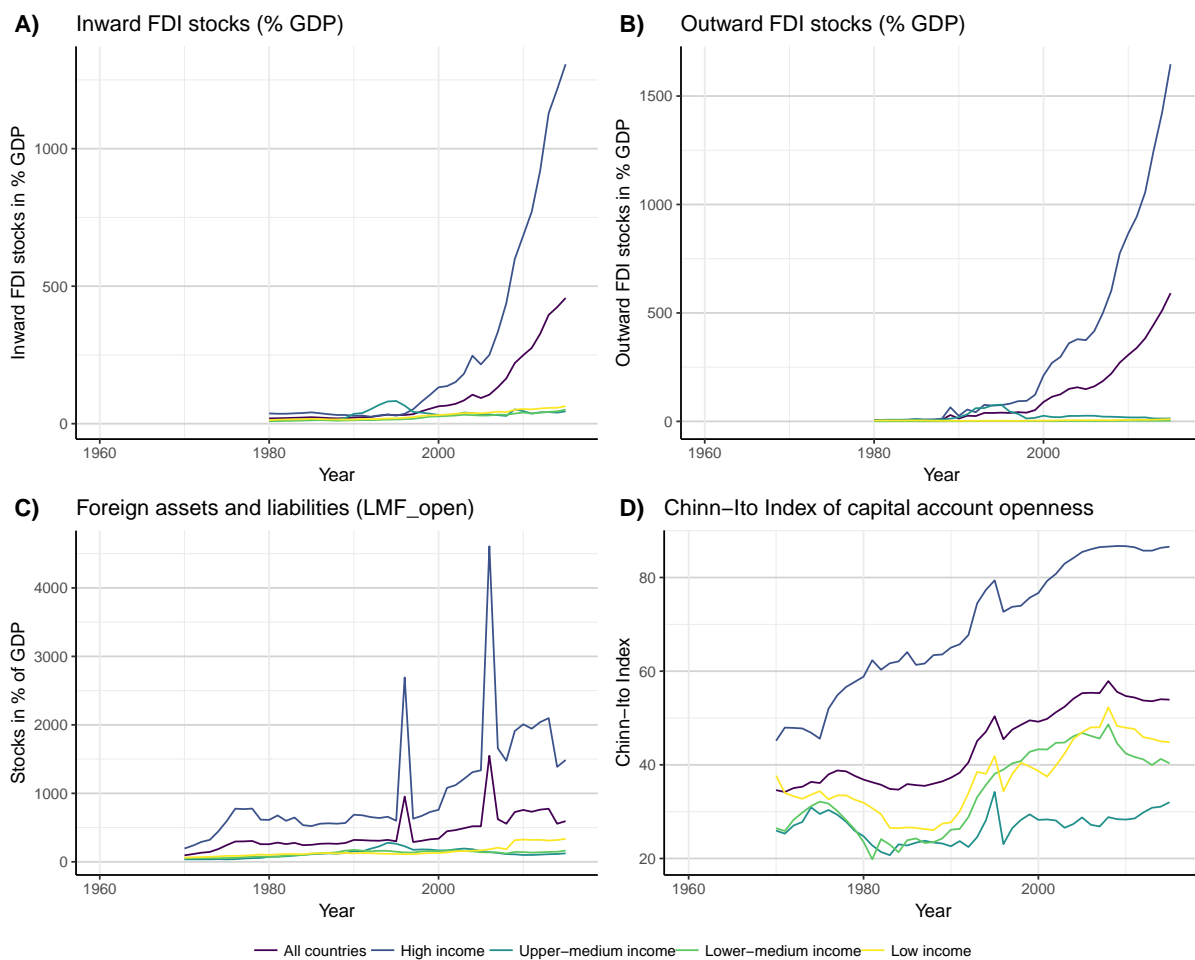— All countries — High income — Upper–medium income — Lower–medium income — Low income

Figure 3: Replication of figure 2 in the main text: the dynamics of financial openness measures.

A) KOF Econ Globalization Index – complete version

B) KOF Econ Globalization Index – de facto **C)** KOF Econ Globalization Index – de jure

— All countries — High income — Upper–medium income — Lower–medium income — Low income
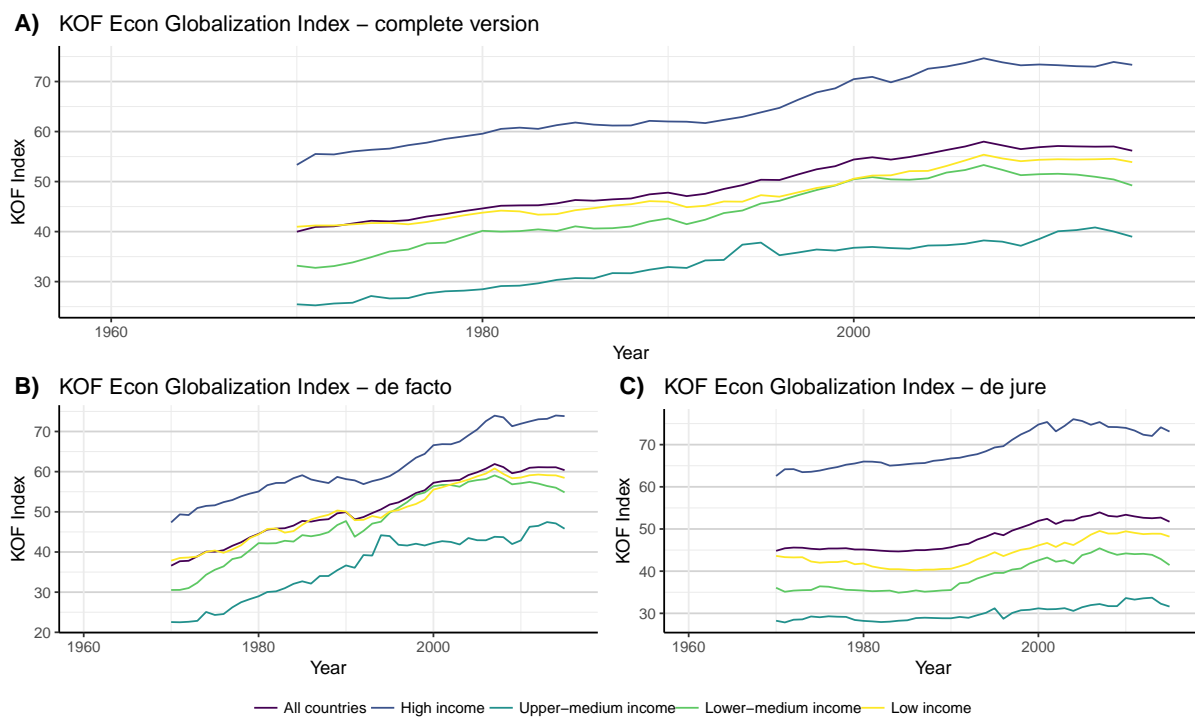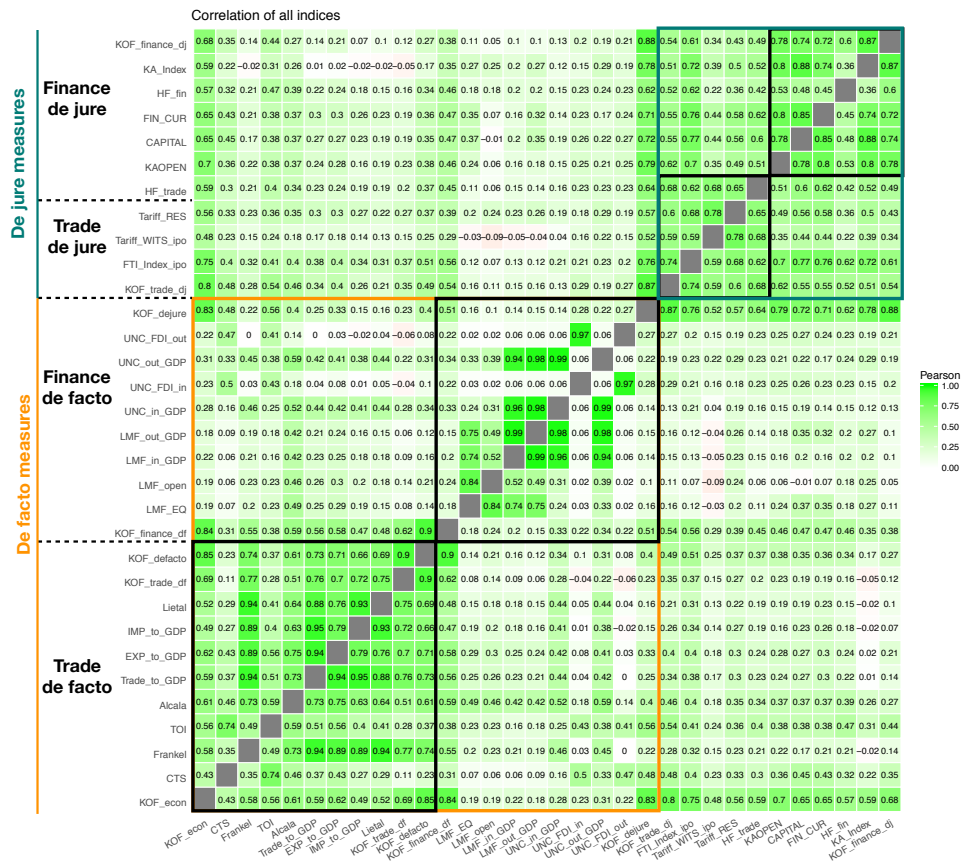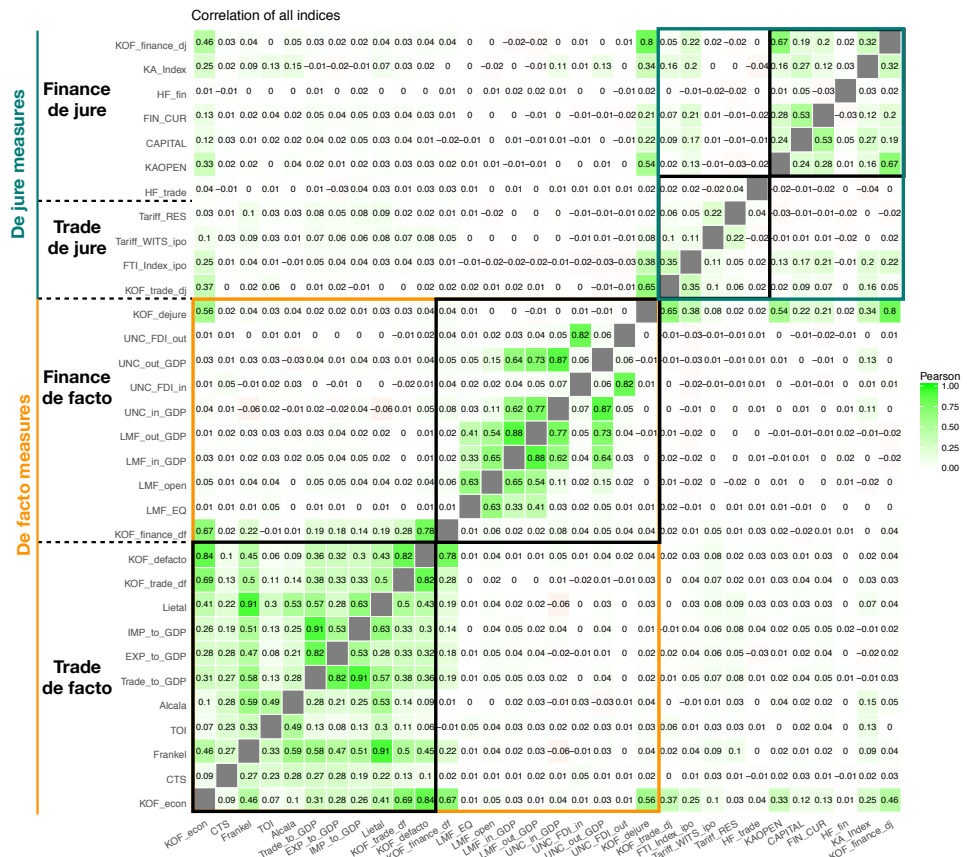
Figure 4: Replication of figure 3 in the main text: the dynamics of the KOF hybrid measure.

(a) Figure 5a: The correlation analysis for level data using the Pearson correlation coefficient.

(b) Figure 5b: The correlation analysis for differenced using the Pearson correlation coefficient.

G   More detailed regression results

Here we provide the detailed results for the regressions summarized in table 7 in the main paper.

Table 5 provides the results for de facto trade openness measures, table 6 for de jure trade openness measures, table 7a for de facto financial openness measures, and, finally, table 7b for de jure financial openness measures.

	Dependent variable: GDP per capita growth					
	(1)	(2)	(3)	(4)	(5)	(6)
log(Trade_to_GDP)	1.229**					
	(0.570)					
log(Alcala)		−0.081				
		(0.591)				
log(Lietal)			0.136			
			(0.889)			
log(TOI)				1.261**		
				(0.544)		
log(KOF_defacto)					0.402	
					(0.523)	
log(CTS)						1.849
						(3.939)
log(initial_GDP_pc)	−2.316***	−2.699***	−2.812***	−2.352***	−2.399***	−3.536***
	(0.452)	(0.610)	(0.590)	(0.562)	(−4.848)	(−4.759)
log(hc)	4.081***	9.812***	9.868***	9.713***	5.442	12.392
	(1.214)	(2.389)	(1.941)	(1.935)	(3.775)	(5.812)
pop_growth	−0.281	−0.380	−0.331	−0.380	−0.398***	−0.280***
	(0.231)	(0.370)	(0.385)	(0.366)	(−2.059)	(−0.716)
inflation	−0.002***	−0.003***	−0.003***	−0.003***	−0.002***	−0.002***
	(0.0004)	(0.0005)	(0.0005)	(0.0005)	(−3.788)	(−6.531)
log(inv_share)	0.972**	1.394**	1.319*	1.263*	1.691	0.417
	(0.495)	(0.695)	(0.706)	(0.753)	(2.883)	(0.550)
Observations	1,186	978	947	867	1,173	895
R^2	0.092	0.133	0.134	0.133	0.102	0.167
F Statistic	17.445***	21.164***	20.665***	18.790***	19.359***	25.009***

Note: *p<0.1; **p<0.05; ***p<0.01

Table 5: Detailed regression results for de facto trade openness measures.

	Dependent variable: GDP per capita growth			
	(1)	(2)	(3)	(4)
log(KOF_dejure)	1.510			
	(1.053)			
log(Tariff_WITS_ipo)		−0.660		
		(1.390)		
ln_FTI_Index_ipo			1.451***	
			(0.414)	
log(HF_trade)				0.546
				(1.719)
log(initial_GDP_pc)	−2.498***	−4.054***	−2.230***	−3.948***
	(0.514)	(1.089)	(0.559)	(0.840)
log(hc)	5.337***	17.283***	3.449**	18.972***
	(1.374)	(4.826)	(1.441)	(5.188)
pop_growth	−0.373*	−0.392*	−0.368*	−0.009
	(0.196)	(0.202)	(0.221)	(0.285)
inflation	−0.002***	−0.001***	−0.002***	−0.002***
	(0.001)	(0.0002)	(0.0003)	(0.0004)
log(inv_share)	1.637***	2.070	1.219*	1.105
	(0.608)	(1.444)	(0.686)	(1.078)
Observations	1,160	484	1,047	640
R^2	0.104	0.114	0.112	0.119
F Statistic	19.588***	7.626***	18.992***	11.079***

Note: *p<0.1; **p<0.05; ***p<0.01

Table 6: Detailed regression results for de jure trade openness measures.

	Dependent variable: GDP per capita growth			
	(1)	(2)	(3)	(4)
log(LMF_open)	−0.673**			
	(0.332)			
log(LMF_EQ)		0.444*		
		(0.233)		
log(UNC_in_GDP)			0.530**	
			(0.240)	
log(UNC_out_GDP)				0.091
				(0.192)
log(initial_GDP_pc)	−2.308***	−2.744***	−2.516***	−2.922***
	(0.481)	(0.496)	(0.557)	(0.653)
log(hc)	7.965***	4.761***	8.964***	11.645***
	(1.575)	(1.378)	(1.943)	(2.254)
pop_growth	−0.431**	−0.431**	−0.222	0.183
	(0.198)	(0.197)	(0.211)	(0.286)
inflation	−0.002***	−0.002***	−0.002***	−0.002***
	(0.0004)	(0.0004)	(0.0004)	(0.0004)
log(inv_share)	1.271**	1.581***	0.931	0.201
	(0.554)	(0.565)	(0.678)	(0.871)
Observations	1,144	1,146	992	828
R^2	0.108	0.107	0.136	0.104
F Statistic	20.100***	19.850***	22.111***	13.391***

Note: *p<0.1; **p<0.05; ***p<0.01

(a) Table 7a: Detailed regression results for de facto financial openness measures.

	Dependent variable: GDP per capita growth		
	(1)	(2)	(3)
log(KAOPEN)	0.302		
	(0.203)		
log(HF_fin)		−0.998	
		(0.719)	
log(CAPITAL)			1.512***
			(0.443)
log(initial_GDP_pc)	−2.069***	−3.775***	−2.649***
	(0.463)	(0.892)	(0.697)
log(hc)	4.170***	19.083***	−0.321
	(1.193)	(4.136)	(1.670)
pop_growth	−0.464**	−0.021	−0.934***
	(0.187)	(0.310)	(0.350)
inflation	−0.002***	−0.002***	−0.002***
	(0.0002)	(0.0004)	(0.0005)
log(inv_share)	1.652***	1.149	0.800
	(0.577)	(1.040)	(0.581)
Observations	1,128	641	697
R^2	0.089	0.128	0.111
F Statistic	15.927***	12.057***	12.433***

Note: *p<0.1; **p<0.05; ***p<0.01

(b) Table 7b: Detailed regression results for de jure financial openness measures.

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