

Notes on
The Chinn-Ito Financial Openness Index
2015 Update

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The Chinn-Ito index (*KAOPEN*) is an index measuring a country's degree of capital account openness. The index was initially introduced in Chinn and Ito (*Journal of Development Economics*, 2006). *KAOPEN* is based on the binary dummy variables that codify the tabulation of restrictions on cross-border financial transactions reported in the IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER)*. This update is based on *AREAER 2016*, which contains the information on regulatory restrictions on cross-border financial transactions as of the end of 2015.¹

More information on how the index is constructed and how it compares with other measures of cross-border financial flows can be found in:

[“A New Measure of Financial Openness”](#), *Journal of Comparative Policy Analysis*, Volume 10, Issue 3 September 2008, p. 309 - 322. Note that this paper uses the 2007 version of the dataset (containing data up to only 2005), which will differ from the current version of the dataset.

When you use the index, please acknowledge the following paper as the data source:

Chinn, Menzie D. and Hiro Ito. 2006. [“What Matters for Financial Development? Capital Controls, Institutions, and Interactions.”](#) *Journal of Development Economics*, Volume 81, Issue 1, Pages 163-192 (October).

We are not responsible for the results of the estimations that use the index. Although the index is based on the information released by the International Monetary Fund, the index is not associated with the Fund. All the errors of the index are the authors' own. All rights reserved.

The dataset is available at http://web.pdx.edu/~ito/Chinn-Ito_website.htm .

¹ Not all the countries report their regulatory controls as of the end of the year of concern. For each country, the report stipulates the date as of which the data are based.

kaopen_2015.xlsx (Excel format) or *kaopen_2015.dta* (STATA 13 dataset format) is a data file that contains the updated version of the Chinn and Ito index series. The dataset encompasses the time period of **1970-2015** for **182 countries**. In the dataset, *cn* refers to IMF-World Bank three-digit code; *ccode* to “ISO Alpha-3 Code”; *kaopen* to the Chinn-Ito index; and *ka_open* to the Chinn-Ito index normalized to range between zero and one. A complete list of the countries and their data availability are presented in the *Country List* shown below.

Regarding KAOPEN

As is explained with details in Chinn and Ito (2006, 2008), *KAOPEN* is the first principal component of the original variables pertaining to regulatory controls over current or capital account transactions, the existence of multiple exchange rates, and the requirements of surrendering export proceeds. For more details, refer to Chinn and Ito (2006, 2008).

Principal component analysis (PCA) is a statistical tool that extracts principal components (PCs), which are orthogonal linear combinations of a set of variables based on their ability to capture the variations of these variables. The first PC covers the greatest variance of the original variables: (i.e., *k1*, *k2*, *Share_k3*, and *k4*). In the process of constructing PCs, the original variables are standardized, which makes the mean of the PC zero, i.e., make the PC range between negative and positive territories. See Anderson (2003) and other standard statistics textbooks for additional discussions of PCA.

By the nature of the principal component, every time the data are updated to include the most recent year’s data, the index is recalculated using the *entire* sample of the original variables, including corrected/fixed data. Because of this procedure, the data for the older years are recalculated, and the *KAOPEN* index becomes incompatible across different versions. Hence, the summary statistics change across different versions of the index.

What’s new?

- *KAOPEN* is updated for 2015 using the “Summary Features of Exchange Arrangements and Regulatory Frameworks for Current and Capital Transactions in IMF Member Countries” included in *AREAER 2016*.
- It appears that the international sanctions against terrorist states have made some countries, especially industrialized countries, start reporting implementations of capital controls from 2005 on. Hence, in the *AREAER*, the following countries appear as though they “imposed” capital controls since 2005. However, given the nature of the “capital controls” and also given the lack of perception or evidence that these countries did actually implement capital controls in economically meaningful ways, we decided to consider that these countries did not impose capital controls from 2005 on. Specifically, the original *k3* is given the value of zero for the following countries, except for France and Japan which appear to have imposed

“international sanctions” through $k2$ restrictions from 2006 on.

The countries of our concern here are:²

United States (111), Austria (122), Belgium (124), France (132), Germany (134), Sweden (144), Switzerland (146), Japan (158), Finland (172), Greece (174), Portugal (182), Spain (184), Czech Rep. (935), and Hungary (944).

- The variables of *KAOPEN*, $k1$, $k2$, $k3$, and $k4$ are replaced with missing variables for the following countries and years because of the lack of functioning governments and financial markets.

Afghanistan in 2001 to present

Iraq in 2003 to present

Somalia in 2008 to present

Summary Statistics of *KAOPEN*

The summary statistics of *KAOPEN* for different income groups are shown in Table 1.

Figure 1 compares the subsample averages of *KAOPEN* for different income groups of countries.³ Figure 2 does the same thing, but in terms of ratios with the maximal value normalized as 1.00 (i.e., ka_open) for different income groups and decades. Figure 3 compares the ratios of *KAOPEN* for developing countries across different geographical regions.

Table 2 ranks countries based on the level of *KAOPEN* as of 2015. The furthest right column indicates whether a country of concern increased (“Up”) or decreased (“Down”) the level of *KAOPEN* compared to that as of 2014. There are 53 countries that score the “most financially open” value of 2.37 as of 2015 whereas there are 16 countries with the “least financial open” score of -1.90.

Table 3 reports that 6 countries increased the level of *KAOPEN* in 2015 while 3 countries decreased the level of *KAOPEN* the same year.

Figure 4 compares the averages of annual changes in *KAOPEN* (i.e., the first-differenced change in the normalized *KAOPEN*) for different time periods and different income groups. Figure 5

² The figure in parentheses denotes the IMF-World Bank three-digit code. The same is true for the remainder of the paper.

³ The industrialized countries (IDC) refer to traditional OECD countries, leaving the other countries as the developing countries (LDC). The emerging market countries (EMGs), a subgroup of LDC, are defined as the countries classified as either emerging or frontier during the period of 1980-1997 by the International Financial Corporation plus Hong Kong and Singapore. In the country list shown in Appendix I, IDCs and EMGs are denoted by “i” and “e”, respectively.

does the same thing for different geographical groups of developing countries.

Notes

The dataset is available at http://web.pdx.edu/~ito/Chinn-Ito_website.htm.

The document "[A New Measure of Financial Openness](#)" details the construction of the index and other relevant information. Please consult with that document before sending inquiries to ito@pdx.edu.

The IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER)* of 2010 has a survey of the literature on various measures of capital account restrictiveness in Appendix to Introduction (p. 48–53).

Next Update: The index might be updated in the spring of 2018, following the publication of the IMF's *AREAER 2017* (probably in the winter of 2017-18) which will contain information on capital controls policies as of 2016. The release of the update may change due to a variety of reasons. Please check http://web.pdx.edu/~ito/Chinn-Ito_website.htm before sending us inquiries.

Disclaimer: When you use the index, please acknowledge our *JDE* paper (see below) as the data source. We are not responsible for the results of the estimations that use the index. Although the index is based on the information released by the International Monetary Fund, the index is not associated with the Fund. All the errors of the index are the authors' own. All rights reserved.

References

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Appendix I: Country List

	cn	ccode	Country Name	Availability			cn	ccode	Country Name	Availability			
1	512	AFG	Afghanistan	1970	-	2000	30	622	CMR	Cameroon	1970	-	2015
2	914	ALB	Albania	1995	-	2015	31	156	CAN	Canada (i)	1970	-	2015
3	612	DZA	Algeria	1970	-	2015	32	624	CPV	Cape Verde	1982	-	2015
4	614	AGO	Angola	1993	-	2015	33	626	CAF	Central African Republic	1970	-	2015
5	311	ATG	Antigua and Barbuda	1985	-	2009	34	628	TCD	Chad	1970	-	2015
6	213	ARG	Argentina (e)	1970	-	2015	35	228	CHL	Chile (e)	1970	-	2015
7	911	ARM	Armenia	1996	-	2015	36	924	CHN	China (e)	1984	-	2015
8	314	ABW	Aruba	1992	-	2015	37	233	COL	Colombia (e)	1970	-	2015
9	193	AUS	Australia (i)	1970	-	2015	38	632	COM	Comoros	1981	-	2015
10	122	AUT	Austria (i)	1970	-	2015	39	636	ZAR	Congo, Dem. Rep.	1970	-	2012
11	912	AZE	Azerbaijan	1996	-	2015	40	634	COG	Congo, Rep.	1970	-	2015
12	313	BHS	Bahamas, The	1977	-	2015	41	238	CRI	Costa Rica	1970	-	2015
13	419	BHR	Bahrain	1976	-	2015	42	960	HRV	Croatia	1996	-	2015
14	513	BGD	Bangladesh (e)	1976	-	2015	43	423	CYP	Cyprus	1970	-	2015
15	316	BRB	Barbados	1974	-	2015	44	935	CZE	Czech Republic (e)	1996	-	2015
16	913	BLR	Belarus	1996	-	2015	45	128	DNK	Denmark (i)	1970	-	2015
17	124	BEL	Belgium (i)	1970	-	2015	46	611	DJI	Djibouti	1982	-	2015
18	339	BLZ	Belize	1985	-	2015	47	321	DMA	Dominica	1982	-	2015
19	638	BEN	Benin	1979	-	2015	48	243	DOM	Dominican Republic	1970	-	2015
20	514	BTN	Bhutan	1985	-	2015	49	248	ECU	Ecuador (e)	1970	-	2015
21	218	BOL	Bolivia	1970	-	2015	50	469	EGY	Egypt (e)	1970	-	2015
22	963	BIH	Bosnia and Herzegovina	1999	-	2015	51	253	SLV	El Salvador	1970	-	2015
23	616	BWA	Botswana (e)	1972	-	2015	52	642	GNQ	Equatorial Guinea	1973	-	2015
24	223	BRA	Brazil (e)	1970	-	2015	53	643	ERI	Eritrea	1998	-	2015
25	918	BGR	Bulgaria (e)	1994	-	2015	54	939	EST	Estonia	1996	-	2015
26	748	BFA	Burkina Faso	1988	-	2015	55	644	ETH	Ethiopia	1970	-	2015
27	618	BDI	Burundi	1970	-	2015	56	819	FJI	Fiji	1975	-	2015
28	662	CIV	Côte d'Ivoire (e)	1970	-	2015	57	172	FIN	Finland (i)	1970	-	2015
29	522	KHM	Cambodia	1973	-	2015	58	132	FRA	France (i)	1970	-	2015
							59	646	GAB	Gabon	1970	-	2015
							60	648	GMB	Gambia, The	1971	-	2015

	cn	ccode	Country Name	Availability				cn	ccode	Country Name	Availability		
61	915	GEO	Georgia	1996	-	2015	92	941	LVA	Latvia	1996	-	2015
62	134	DEU	Germany (i)	1970	-	2015	93	446	LBN	Lebanon	1970	-	2015
63	652	GHA	Ghana (e)	1970	-	2015	94	666	LSO	Lesotho	1972	-	2015
64	174	GRC	Greece (i)	1970	-	2015	95	668	LBR	Liberia	1970	-	2015
65	328	GRD	Grenada	1979	-	2015	96	672	LBY	Libya	1970	-	2015
66	258	GTM	Guatemala	1970	-	2015	97	946	LTU	Lithuania (e)	1996	-	2015
67	656	GIN	Guinea	1970	-	2015	98	962	MKD	Macedonia, FYR	1997	-	2015
68	654	GNB	Guinea-Bissau	1981	-	2015	99	674	MDG	Madagascar	1970	-	2015
69	336	GUY	Guyana	1970	-	2015	100	676	MWI	Malawi	1970	-	2015
70	263	HTI	Haiti	1970	-	2015	101	548	MYS	Malaysia (e)	1970	-	2015
71	268	HND	Honduras	1970	-	2015	102	556	MDV	Maldives	1982	-	2015
72	532	HKG	Hong Kong, China (e)	1970	-	2015	103	678	MLI	Mali	1970	-	2015
73	944	HUN	Hungary (e)	1986	-	2015	104	181	MLT	Malta (i)	1972	-	2015
74	176	ISL	Iceland (i)	1970	-	2015	105	867	MHL	Marshall Islands	1996	-	2015
75	534	IND	India (e)	1970	-	2015	106	682	MRT	Mauritania	1970	-	2015
76	536	IDN	Indonesia (e)	1970	-	2015	107	684	MUS	Mauritius (e)	1972	-	2015
77	429	IRN	Iran, Islamic Rep.	1970	-	2015	108	273	MEX	Mexico (e)	1970	-	2015
78	433	IRQ	Iraq	1970	-	2002	109	868	FSM	Micronesia, Fed. Sts.	1996	-	2015
79	178	IRL	Ireland (i)	1970	-	2015	110	921	MDA	Moldova	1996	-	2015
80	436	ISR	Israel (e)	1970	-	2015	111	948	MNG	Mongolia	1995	-	2015
81	136	ITA	Italy (i)	1970	-	2015	112	686	MAR	Morocco (e)	1970	-	2015
82	343	JAM	Jamaica (e)	1970	-	2015	113	688	MOZ	Mozambique	1988	-	2015
83	158	JPN	Japan (i)	1970	-	2015	114	518	MMR	Myanmar	1970	-	2015
84	439	JOR	Jordan (e)	1970	-	2015	115	728	NAM	Namibia	1994	-	2015
85	916	KAZ	Kazakhstan	1996	-	2015	116	558	NPL	Nepal	1970	-	2015
86	664	KEN	Kenya (e)	1970	-	2015	117	138	NLD	Netherlands (i)	1970	-	2015
87	826	KIR	Kiribati	1990	-	2005	118	353	ANT	Netherlands Antilles	1970	-	2009
88	542	KOR	Korea, Rep. (e)	1970	-	2015	119	196	NZL	New Zealand (i)	1970	-	2015
89	443	KWT	Kuwait	1970	-	2015	120	278	NIC	Nicaragua	1970	-	2015
90	917	KGZ	Kyrgyz Republic	1997	-	2015	121	692	NER	Niger	1970	-	2015
91	544	LAO	Lao PDR	1970	-	2015	122	694	NGA	Nigeria (e)	1970	-	2015

	cn	ccode	Country Name	Availability		
123	142	NOR	Norway (i)	1970	-	2015
124	449	OMN	Oman	1977	-	2015
125	564	PAK	Pakistan (e)	1970	-	2015
126	283	PAN	Panama	1970	-	2015
127	853	PNG	Papua New Guinea	1979	-	2015
128	288	PRY	Paraguay	1970	-	2015
129	293	PER	Peru (e)	1970	-	2015
130	566	PHL	Philippines (e)	1970	-	2015
131	964	POL	Poland (e)	1986	-	2015
132	182	PRT	Portugal (i)	1970	-	2015
133	453	QAT	Qatar	1976	-	2015
134	968	ROM	Romania	1976	-	2015
135	922	RUS	Russia (e)	1996	-	2015
136	714	RWA	Rwanda	1970	-	2015
137	716	STP	Sao Tome and Principe	1981	-	2015
138	862	WSM	Samoa	1975	-	2015
139	135	SMR	San Marino	1996	-	2015
140	456	SAU	Saudi Arabia	1970	-	2015
141	722	SEN	Senegal	1970	-	2015
142	718	SYC	Seychelles	1981	-	2015
143	724	SLE	Sierra Leone	1970	-	2015
144	576	SGP	Singapore (e)	1970	-	2015
145	936	SVK	Slovak Republic (e)	1996	-	2015
146	961	SVN	Slovenia (e)	1996	-	2015
147	813	SLB	Solomon Islands	1982	-	2015
148	726	SOM	Somalia	1970	-	2007
149	199	ZAF	South Africa (e)	1970	-	2015
150	184	ESP	Spain (i)	1970	-	2015
151	524	LKA	Sri Lanka (e)	1970	-	2015
152	361	KNA	St. Kitts and Nevis	1988	-	2015
153	362	LCA	St. Lucia	1983	-	2015

	cn	ccode	Country Name	Availability		
154	364	VCT	St. Vincent & the Grenad.	1983	-	2015
155	732	SDN	Sudan	1970	-	2015
156	366	SUR	Suriname	1970	-	2015
157	734	SWZ	Swaziland	1973	-	2015
158	144	SWE	Sweden (i)	1970	-	2015
159	146	CHE	Switzerland (i)	1996	-	2015
160	463	SYR	Syrian Arab Republic	1970	-	2015
161	923	TJK	Tajikistan	1997	-	2015
162	738	TZA	Tanzania	1970	-	2015
163	578	THA	Thailand (e)	1970	-	2015
164	742	TGO	Togo	1970	-	2015
165	866	TON	Tonga	1989	-	2015
166	369	TTO	Trinidad & Tobago (e)	1970	-	2015
167	744	TUN	Tunisia (e)	1970	-	2015
168	186	TUR	Turkey (e)	1970	-	2015
169	925	TKM	Turkmenistan	1996	-	2015
170	746	UGA	Uganda	1970	-	2015
171	926	UKR	Ukraine	1996	-	2015
172	466	ARE	United Arab Emirates	1976	-	2015
173	112	GBR	United Kingdom (i)	1970	-	2015
174	111	USA	United States (i)	1970	-	2015
175	298	URY	Uruguay	1970	-	2015
176	927	UZB	Uzbekistan	1996	-	2015
177	846	VUT	Vanuatu	1985	-	2000
178	299	VEN	Venezuela (e)	1970	-	2015
179	582	VNM	Vietnam	1970	-	2015
180	474	YEM	Yemen, Rep.	1995	-	2015
181	754	ZMB	Zambia	1970	-	2015
182	698	ZWE	Zimbabwe (e)	1984	-	2015

Notes: “cn” refers to IMF-World Bank three-digit code. “ccode” to “ISO Alpha-3 Code”. “(i)” and “(e)” refer to IDCs and EMGs, respectively.

Table 1: Summary Statistics (as of 2015)

	Minimum	Mean	Median	Maximum	Standard Deviation
Full Sample	-1.90	0.00	-0.13	2.37	1.53
Industrialized Countries	-1.90	1.30	2.37	2.37	1.35
Developing Countries	-1.90	-0.23	-1.19	2.37	1.44
Emerging Markets	-1.90	-0.18	-0.61	2.37	1.44

Table 2: Country Ranking as of 2015

Ranking	Country Name	KAOPEN	Change in KAOPEN	Ranking	Country Name	KAOPEN	Change in KAOPEN
1	Armenia	2.37		64	Korea, Rep.	1.16	
1	Austria	2.37		64	Russian Federation	1.16	
1	Bahrain	2.37		64	Sao Tome and Principe	1.16	Down
1	Belgium	2.37		68	Chile	1.08	
1	Botswana	2.37		68	Croatia	1.08	
1	Bulgaria	2.37		68	Djibouti	1.08	
1	Canada	2.37		68	Ecuador	1.08	Up
1	Costa Rica	2.37	Up	68	El Salvador	1.08	
1	Czech Republic	2.37		68	Jamaica	1.08	
1	Denmark	2.37		68	Kenya	1.08	
1	Estonia	2.37		68	Kuwait	1.08	
1	Finland	2.37		68	Marshall Islands	1.08	
1	France	2.37		68	Mauritius	1.08	
1	Gambia, The	2.37		68	Mexico	1.08	
1	Georgia	2.37		68	Poland	1.08	Up
1	Germany	2.37		68	San Marino	1.08	
1	Guatemala	2.37		68	Saudi Arabia	1.08	
1	Guyana	2.37		68	Slovenia	1.08	
1	Haiti	2.37		83	Azerbaijan	0.10	
1	Hong Kong, China	2.37		84	Bolivia	0.02	
1	Hungary	2.37		84	Lebanon	0.02	Down
1	Ireland	2.37		84	Macedonia, FYR	0.02	
1	Israel	2.37		84	Paraguay	0.02	
1	Italy	2.37		84	Philippines	0.02	
1	Japan	2.37		84	St. Lucia	0.02	
1	Jordan	2.37		84	Tonga	0.02	
1	Latvia	2.37		84	Turkey	0.02	
1	Liberia	2.37		92	Albania	-0.13	
1	Malta	2.37		92	Colombia	-0.13	
1	Micronesia, Fed. Sts.	2.37		92	Dominica	-0.13	
1	Netherlands	2.37		92	Indonesia	-0.13	
1	New Zealand	2.37		92	Madagascar	-0.13	
1	Nicaragua	2.37		92	Malaysia	-0.13	
1	Norway	2.37		92	Vietnam	-0.13	
1	Oman	2.37		92	Zimbabwe	-0.13	Up
1	Panama	2.37		100	Nigeria	-0.61	
1	Peru	2.37		100	Sudan	-0.61	
1	Portugal	2.37		102	Iran, Islamic Rep.	-0.69	
1	Qatar	2.37		102	Kyrgyz Republic	-0.69	
1	Romania	2.37		104	Bosnia and Herzegovina	-0.94	Down
1	Seychelles	2.37		105	Algeria	-1.19	
1	Singapore	2.37		105	Aruba	-1.19	
1	Spain	2.37		105	Bangladesh	-1.19	
1	Sweden	2.37		105	Barbados	-1.19	
1	Switzerland	2.37		105	Belize	-1.19	
1	Trinidad and Tobago	2.37		105	Benin	-1.19	
1	Uganda	2.37		105	Bhutan	-1.19	
1	United Arab Emirates	2.37		105	Brazil	-1.19	Down
1	United Kingdom	2.37		105	Burkina Faso	-1.19	
1	United States	2.37		105	Côte d'Ivoire	-1.19	
1	Uruguay	2.37		105	Cameroon	-1.19	
1	Yemen, Rep.	2.37		105	Cape Verde	-1.19	
1	Zambia	2.37		105	Central African Republic	-1.19	
54	Australia	2.12	Up	105	Chad	-1.19	
55	Cyprus	1.86		105	China	-1.19	
56	Maldives	1.67		105	Comoros	-1.19	
56	Mongolia	1.67		105	Congo, Rep.	-1.19	
58	Dominican Republic	1.34	Down	105	Egypt, Arab Rep.	-1.19	
58	Lithuania	1.34	Up	105	Equatorial Guinea	-1.19	
60	Greece	1.31	Down	105	Ethiopia	-1.19	
60	Papua New Guinea	1.31		105	Fiji	-1.19	
60	Rwanda	1.31		105	Gabon	-1.19	
60	Slovak Republic	1.31		105	Grenada	-1.19	
64	Cambodia	1.16		105	Guinea-Bissau	-1.19	

Ranking	Country Name	KAOPEN	Change in KAOPEN
105	Honduras	-1.19	
105	Iceland	-1.19	
105	India	-1.19	
105	Kazakhstan	-1.19	
105	Lao PDR	-1.19	
105	Lesotho	-1.19	
105	Libya	-1.19	
105	Malawi	-1.19	
105	Mali	-1.19	
105	Mauritania	-1.19	
105	Moldova	-1.19	
105	Morocco	-1.19	
105	Mozambique	-1.19	
105	Namibia	-1.19	
105	Nepal	-1.19	
105	Niger	-1.19	
105	Pakistan	-1.19	
105	Samoa	-1.19	
105	Senegal	-1.19	
105	Solomon Islands	-1.19	
105	South Africa	-1.19	
105	Sri Lanka	-1.19	
105	St. Kitts and Nevis	-1.19	
105	St. Vincent and the Grenadines	-1.19	
105	Swaziland	-1.19	
105	Tanzania	-1.19	
105	Thailand	-1.19	
105	Togo	-1.19	
105	Tunisia	-1.19	
105	Turkmenistan	-1.19	
159	Angola	-1.90	
159	Argentina	-1.90	
159	Bahamas, The	-1.90	
159	Belarus	-1.90	
159	Burundi	-1.90	
159	Eritrea	-1.90	
159	Ghana	-1.90	
159	Guinea	-1.90	
159	Myanmar	-1.90	
159	Sierra Leone	-1.90	
159	Suriname	-1.90	
159	Syrian Arab Republic	-1.90	
159	Tajikistan	-1.90	Down
159	Ukraine	-1.90	
159	Uzbekistan	-1.90	
159	Venezuela, RB	-1.90	

Table 3: Countries that increased *KAOPEN* in 2015

	Ranking	Country Name	<i>KAOPEN</i> (as of 2015)	Change in <i>KAOPEN</i>
1	1	Costa Rica	2.37	1.21
2	54	Australia	2.12	0.26
3	58	Lithuania	1.34	0.26
4	68	Ecuador	1.08	1.06
4	68	Poland	1.08	1.06
6	92	Zimbabwe	-0.13	1.06

Table 4: Countries that decreased *KAOPEN* in 2015

	Ranking	Country Name	<i>KAOPEN</i> (as of 2015TM)	Change in <i>KAOPEN</i>
1	58	Dominican Republic	1.34	-0.26
2	60	Greece	1.31	-1.06
3	64	Sao Tome and Principe	1.16	-1.21

Figure 1: Development of *KAOPEN* for Different Income Groups, 1970 – 2015

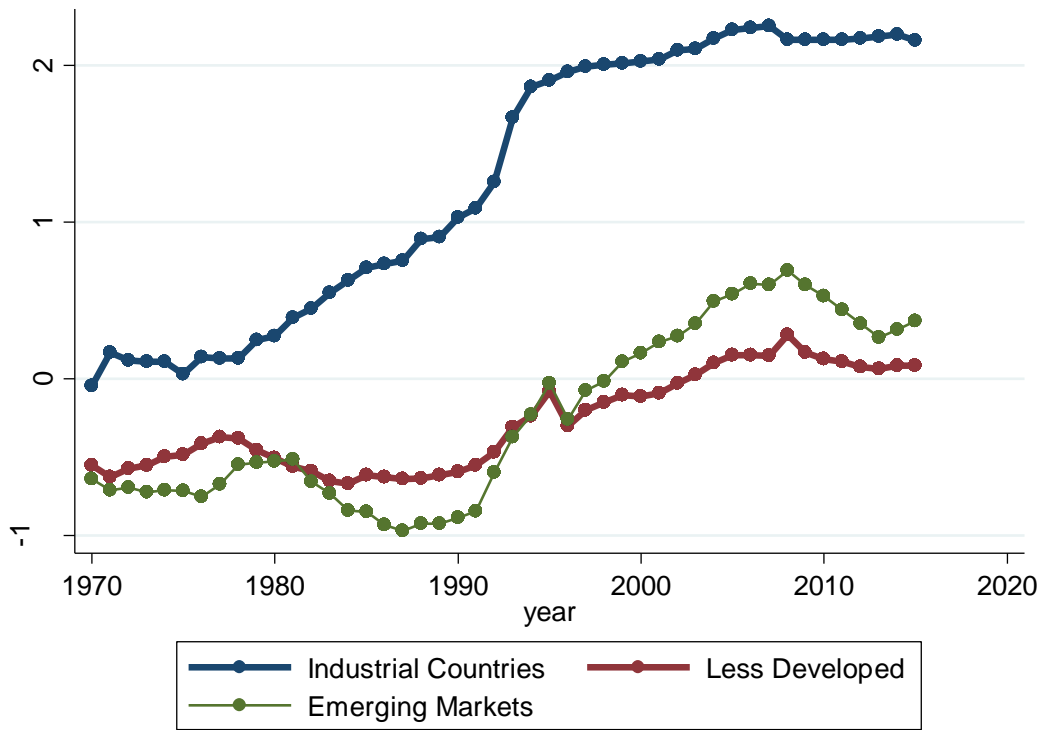
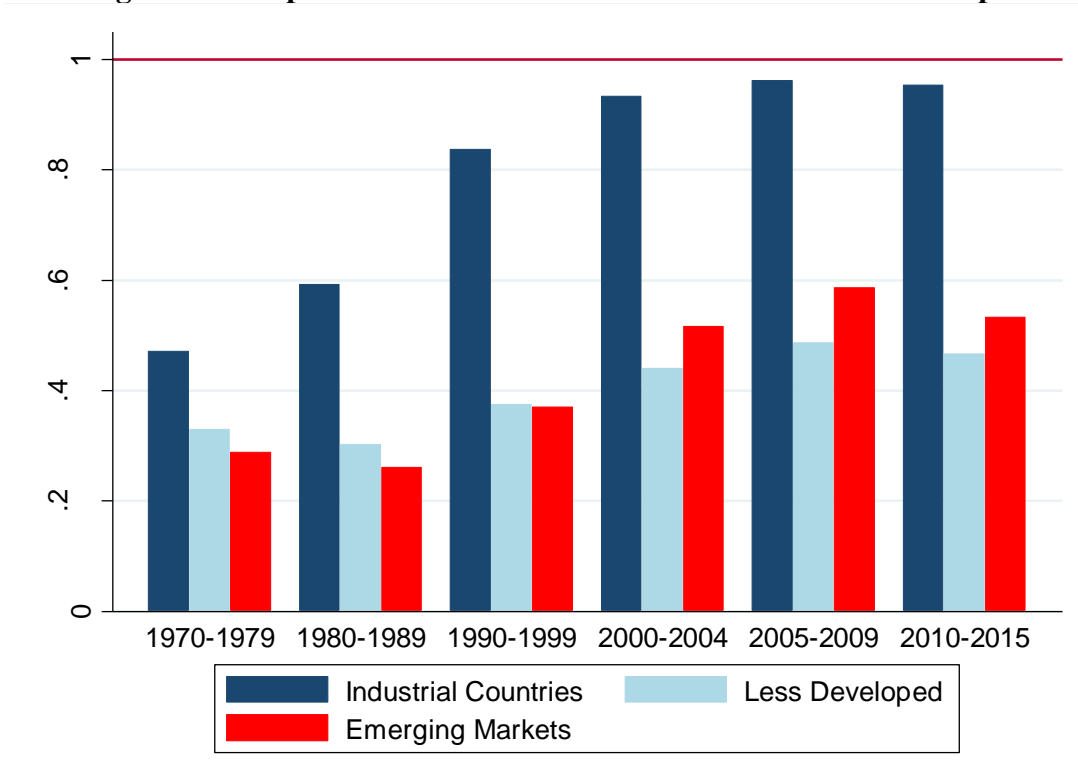
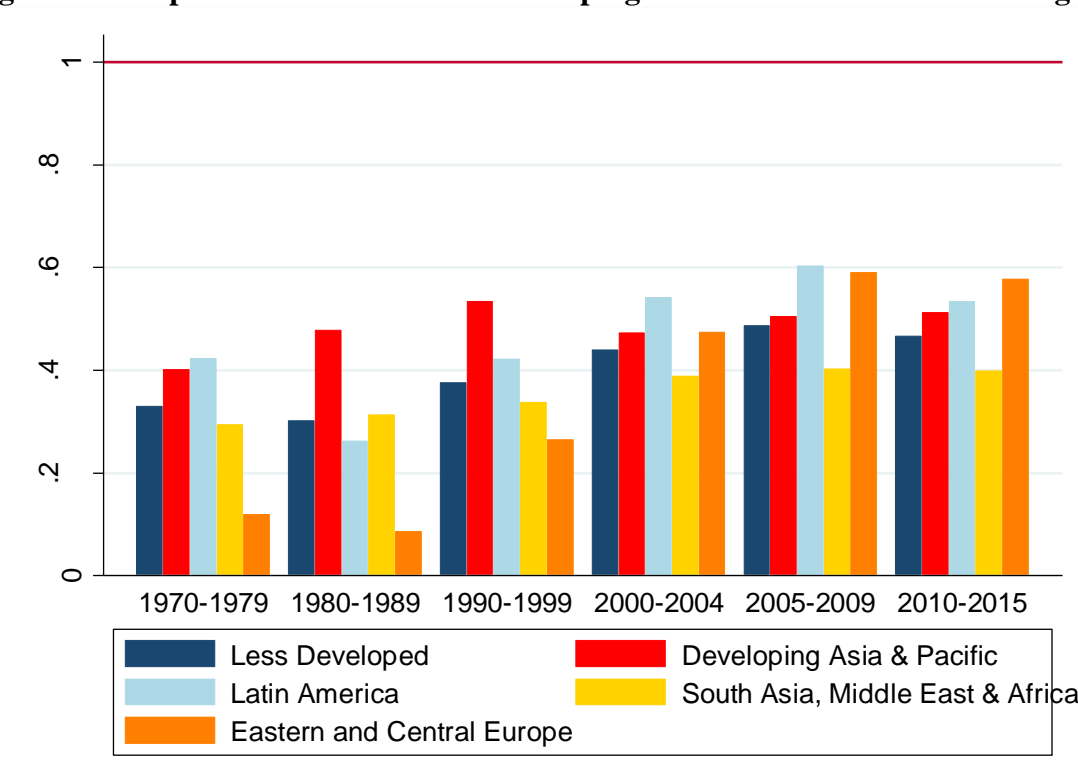


Figure 2: Comparison of *KAOPEN* across Different Income Groups



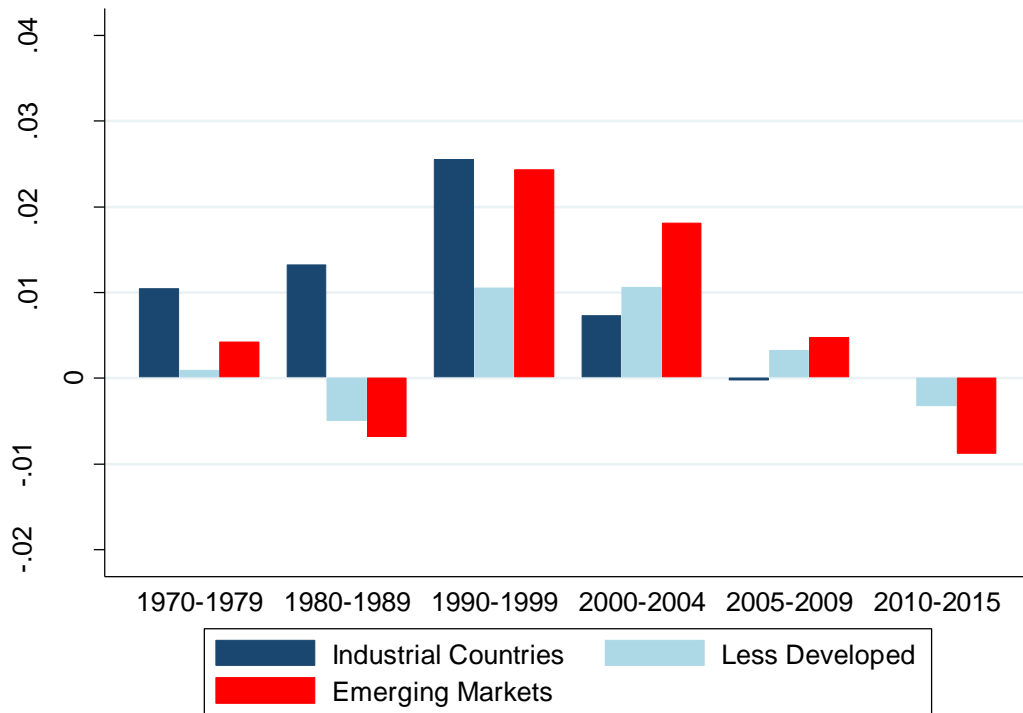
Note: The maximal value of *KAOPEN* is indexed as 1.00 for the sake of easier comparison.

Figure 3: Comparison of *KAOPEN* of Developing Countries across Different Regions



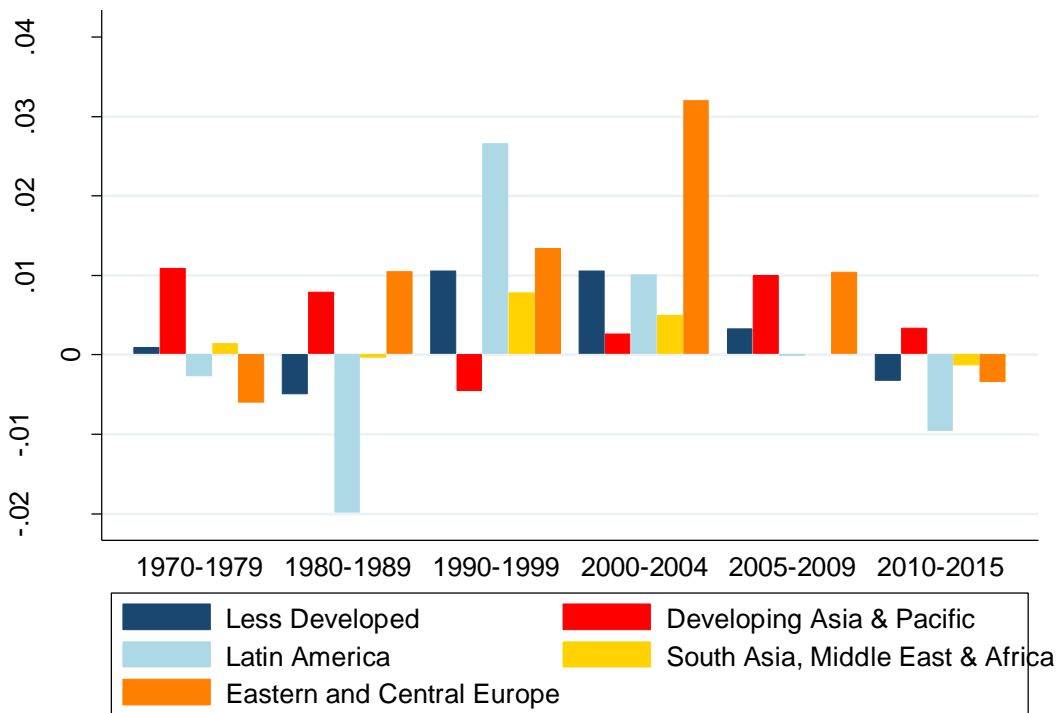
Note: The maximal value of *KAOPEN* is indexed as 1.00.

Figure 4: Change in *KAOPEN* among different income groups



Note: The change in *KAOPEN* is shown as the change in the normalized *KAOPEN* (max=1.00).

Figure 5: Change in *KAOPEN* among geographical groups of developing countries



Note: The change in *KAOPEN* is shown as the change in the normalized *KAOPEN* (max=1.00).