

Notes on
The Chinn-Ito Financial Openness Index
2020 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 2021*, which contains the information on regulatory restrictions on cross-border financial transactions as of the end of 2020.¹

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).

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

kaopen_2020.xls (Excel format) or *kaopen_2020.dta* (STATA 17 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 **1970-2020** for **182 countries**. In the dataset, *cn* refers to IMF-World Bank three-

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.

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 2020 using the data from *AREAER 2021*.
- 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

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

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 2020. The furthest right column indicates whether a country of concern increased (“Up”) or decreased (“Down”) the level of *KAOPEN* compared to that as of 2019. There are 53 countries that score the “most financially open” value of 2.31 as of 2020 whereas there are 10 countries with the “least financial open” score of -1.93.

Table 3 reports that 4 countries increased the level of *KAOPEN* in 2020 while 6 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 does the same thing for different geographical groups of developing countries.

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.

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 or summer of 2023, following the publication of the IMF’s *AREAER 2022* (probably in the winter of 2022-23) which will contain information on capital controls policies as of 2021. 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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- Chinn, Menzie D. and Hiro Ito (2008). [“A New Measure of Financial Openness”](#). *Journal of Comparative Policy Analysis*, Volume 10, Issue 3, p. 309 – 322 (September).
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- International Monetary Fund (2010, various years). *Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER)*, Washington, D.C.: International Monetary Fund.

Appendix I: Country List

| | cn | ccode | Country Name | Availability | | cn | ccode | Country Name | Availability |
|----|-----|-------|------------------------|--------------|----|-----|-------|--------------------------|--------------|
| | | | | | 30 | 622 | CMR | Cameroon | 1970 - 2020 |
| | | | | | 31 | 156 | CAN | Canada (i) | 1970 - 2020 |
| | | | | | 32 | 624 | CPV | Cape Verde | 1982 - 2020 |
| | | | | | 33 | 626 | CAF | Central African Republic | 1970 - 2020 |
| | | | | | 34 | 628 | TCD | Chad | 1970 - 2020 |
| | | | | | 35 | 228 | CHL | Chile (e) | 1970 - 2020 |
| | | | | | 36 | 924 | CHN | China (e) | 1984 - 2020 |
| | | | | | 37 | 233 | COL | Colombia (e) | 1970 - 2020 |
| | | | | | 38 | 632 | COM | Comoros | 1981 - 2020 |
| | | | | | 39 | 636 | ZAR | Congo, Dem. Rep. | 1970 - 2020 |
| | | | | | 40 | 634 | COG | Congo, Rep. | 1970 - 2020 |
| | | | | | 41 | 238 | CRI | Costa Rica | 1970 - 2020 |
| | | | | | 42 | 960 | HRV | Croatia | 1996 - 2020 |
| | | | | | 43 | 423 | CYP | Cyprus | 1970 - 2020 |
| | | | | | 44 | 935 | CZE | Czech Republic (e) | 1996 - 2020 |
| | | | | | 45 | 128 | DNK | Denmark (i) | 1970 - 2020 |
| | | | | | 46 | 611 | DJI | Djibouti | 1982 - 2020 |
| | | | | | 47 | 321 | DMA | Dominica | 1982 - 2020 |
| | | | | | 48 | 243 | DOM | Dominican Republic | 1970 - 2020 |
| | | | | | 49 | 248 | ECU | Ecuador (e) | 1970 - 2020 |
| | | | | | 50 | 469 | EGY | Egypt, Arab Rep. (e) | 1970 - 2020 |
| | | | | | 51 | 253 | SLV | El Salvador | 1970 - 2020 |
| | | | | | 52 | 642 | GNQ | Equatorial Guinea | 1973 - 2020 |
| | | | | | 53 | 643 | ERI | Eritrea | 1998 - 2020 |
| | | | | | 54 | 939 | EST | Estonia | 1996 - 2020 |
| | | | | | 55 | 734 | SWZ | Eswatini | 1973 - 2020 |
| | | | | | 56 | 644 | ETH | Ethiopia | 1970 - 2020 |
| | | | | | 57 | 819 | FJI | Fiji | 1975 - 2020 |
| | | | | | 58 | 172 | FIN | Finland (i) | 1970 - 2020 |
| | | | | | 59 | 132 | FRA | France (i) | 1970 - 2020 |
| | | | | | 60 | 646 | GAB | Gabon | 1970 - 2020 |
| 1 | 512 | AFG | Afghanistan | 1970 - 2000 | | | | | |
| 2 | 914 | ALB | Albania | 1995 - 2020 | | | | | |
| 3 | 612 | DZA | Algeria | 1970 - 2020 | | | | | |
| 4 | 614 | AGO | Angola | 1993 - 2020 | | | | | |
| 5 | 311 | ATG | Antigua and Barbuda | 1985 - 2009 | | | | | |
| 6 | 213 | ARG | Argentina (e) | 1970 - 2020 | | | | | |
| 7 | 911 | ARM | Armenia | 1996 - 2020 | | | | | |
| 8 | 314 | ABW | Aruba | 1992 - 2020 | | | | | |
| 9 | 193 | AUS | Australia (i) | 1970 - 2020 | | | | | |
| 10 | 122 | AUT | Austria (i) | 1970 - 2020 | | | | | |
| 11 | 912 | AZE | Azerbaijan | 1996 - 2020 | | | | | |
| 12 | 313 | BHS | Bahamas, The | 1977 - 2020 | | | | | |
| 13 | 419 | BHR | Bahrain | 1976 - 2020 | | | | | |
| 14 | 513 | BGD | Bangladesh (e) | 1976 - 2020 | | | | | |
| 15 | 316 | BRB | Barbados | 1974 - 2020 | | | | | |
| 16 | 913 | BLR | Belarus | 1996 - 2020 | | | | | |
| 17 | 124 | BEL | Belgium (i) | 1970 - 2020 | | | | | |
| 18 | 339 | BLZ | Belize | 1985 - 2020 | | | | | |
| 19 | 638 | BEN | Benin | 1979 - 2020 | | | | | |
| 20 | 514 | BTN | Bhutan | 1985 - 2020 | | | | | |
| 21 | 218 | BOL | Bolivia | 1970 - 2020 | | | | | |
| 22 | 963 | BIH | Bosnia and Herzegovina | 1999 - 2020 | | | | | |
| 23 | 616 | BWA | Botswana (e) | 1972 - 2020 | | | | | |
| 24 | 223 | BRA | Brazil (e) | 1970 - 2020 | | | | | |
| 25 | 918 | BGR | Bulgaria (e) | 1994 - 2020 | | | | | |
| 26 | 748 | BFA | Burkina Faso | 1988 - 2020 | | | | | |
| 27 | 618 | BDI | Burundi | 1970 - 2020 | | | | | |
| 28 | 662 | CIV | Côte d'Ivoire (e) | 1970 - 2020 | | | | | |
| 29 | 522 | KHM | Cambodia | 1973 - 2020 | | | | | |

| | cn | ccode | Country Name | Availability | |
|----|-----|-------|----------------------|--------------|--------|
| 61 | 648 | GMB | Gambia, The | 1971 | - 2020 |
| 62 | 915 | GEO | Georgia | 1996 | - 2020 |
| 63 | 134 | DEU | Germany (i) | 1970 | - 2020 |
| 64 | 652 | GHA | Ghana (e) | 1970 | - 2020 |
| 65 | 174 | GRC | Greece (i) | 1970 | - 2020 |
| 66 | 328 | GRD | Grenada | 1979 | - 2020 |
| 67 | 258 | GTM | Guatemala | 1970 | - 2020 |
| 68 | 656 | GIN | Guinea | 1970 | - 2020 |
| 69 | 654 | GNB | Guinea-Bissau | 1981 | - 2020 |
| 70 | 336 | GUY | Guyana | 1970 | - 2020 |
| 71 | 263 | HTI | Haiti | 1970 | - 2020 |
| 72 | 268 | HND | Honduras | 1970 | - 2020 |
| 73 | 532 | HKG | Hong Kong, China (e) | 1970 | - 2020 |
| 74 | 944 | HUN | Hungary (e) | 1986 | - 2020 |
| 75 | 176 | ISL | Iceland (i) | 1970 | - 2020 |
| 76 | 534 | IND | India (e) | 1970 | - 2020 |
| 77 | 536 | IDN | Indonesia (e) | 1970 | - 2020 |
| 78 | 429 | IRN | Iran, Islamic Rep. | 1970 | - 2020 |
| 79 | 433 | IRQ | Iraq | 1970 | - 2002 |
| 80 | 178 | IRL | Ireland (i) | 1970 | - 2020 |
| 81 | 436 | ISR | Israel (e) | 1970 | - 2020 |
| 82 | 136 | ITA | Italy (i) | 1970 | - 2020 |
| 83 | 343 | JAM | Jamaica (e) | 1970 | - 2020 |
| 84 | 158 | JPN | Japan (i) | 1970 | - 2020 |
| 85 | 439 | JOR | Jordan (e) | 1970 | - 2020 |
| 86 | 916 | KAZ | Kazakhstan | 1996 | - 2020 |
| 87 | 664 | KEN | Kenya (e) | 1970 | - 2020 |
| 88 | 826 | KIR | Kiribati | 1990 | - 2005 |
| 89 | 542 | KOR | Korea, Rep. (e) | 1970 | - 2020 |
| 90 | 443 | KWT | Kuwait | 1970 | - 2020 |
| 91 | 917 | KGZ | Kyrgyz Republic | 1997 | - 2020 |

| | cn | ccode | Country Name | Availability | |
|-----|-----|-------|-----------------------|--------------|--------|
| 92 | 544 | LAO | Lao PDR | 1970 | - 2020 |
| 93 | 941 | LVA | Latvia | 1996 | - 2020 |
| 94 | 446 | LBN | Lebanon | 1970 | - 2020 |
| 95 | 666 | LSO | Lesotho | 1972 | - 2020 |
| 96 | 668 | LBR | Liberia | 1970 | - 2020 |
| 97 | 672 | LBY | Libya | 1970 | - 2020 |
| 98 | 946 | LTU | Lithuania (e) | 1996 | - 2020 |
| 99 | 674 | MDG | Madagascar | 1970 | - 2020 |
| 100 | 676 | MWI | Malawi | 1970 | - 2020 |
| 101 | 548 | MYS | Malaysia (e) | 1970 | - 2020 |
| 102 | 556 | MDV | Maldives | 1982 | - 2020 |
| 103 | 678 | MLI | Mali | 1970 | - 2020 |
| 104 | 181 | MLT | Malta (i) | 1972 | - 2020 |
| 105 | 867 | MHL | Marshall Islands | 1996 | - 2020 |
| 106 | 682 | MRT | Mauritania | 1970 | - 2020 |
| 107 | 684 | MUS | Mauritius (e) | 1972 | - 2020 |
| 108 | 273 | MEX | Mexico (e) | 1970 | - 2020 |
| 109 | 868 | FSM | Micronesia, Fed. Sts. | 1996 | - 2020 |
| 110 | 921 | MDA | Moldova | 1996 | - 2020 |
| 111 | 948 | MNG | Mongolia | 1995 | - 2020 |
| 112 | 686 | MAR | Morocco (e) | 1970 | - 2020 |
| 113 | 688 | MOZ | Mozambique | 1988 | - 2020 |
| 114 | 518 | MMR | Myanmar | 1970 | - 2020 |
| 115 | 728 | NAM | Namibia | 1994 | - 2020 |
| 116 | 558 | NPL | Nepal | 1970 | - 2020 |
| 117 | 138 | NLD | Netherlands (i) | 1970 | - 2020 |
| 118 | 353 | ANT | Netherlands Antilles | 1970 | - 2009 |
| 119 | 196 | NZL | New Zealand (i) | 1970 | - 2020 |
| 120 | 278 | NIC | Nicaragua | 1970 | - 2020 |
| 121 | 692 | NER | Niger | 1970 | - 2020 |
| 122 | 694 | NGA | Nigeria (e) | 1970 | - 2020 |

| | cn | ccode | Country Name | Availability |
|-----|-----------|--------------|------------------------|---------------------|
| 123 | 962 | MKD | North Macedonia, FYR | 1997 - 2020 |
| 124 | 142 | NOR | Norway (i) | 1970 - 2020 |
| 125 | 449 | OMN | Oman | 1977 - 2020 |
| 126 | 564 | PAK | Pakistan (e) | 1970 - 2020 |
| 127 | 283 | PAN | Panama | 1970 - 2020 |
| 128 | 853 | PNG | Papua New Guinea | 1979 - 2020 |
| 129 | 288 | PRY | Paraguay | 1970 - 2020 |
| 130 | 293 | PER | Peru (e) | 1970 - 2020 |
| 131 | 566 | PHL | Philippines (e) | 1970 - 2020 |
| 132 | 964 | POL | Poland (e) | 1986 - 2020 |
| 133 | 182 | PRT | Portugal (i) | 1970 - 2020 |
| 134 | 453 | QAT | Qatar | 1976 - 2020 |
| 135 | 968 | ROM | Romania | 1976 - 2020 |
| 136 | 922 | RUS | Russian Federation (e) | 1996 - 2020 |
| 137 | 714 | RWA | Rwanda | 1970 - 2020 |
| 138 | 716 | STP | Sao Tome and Principe | 1981 - 2020 |
| 139 | 862 | WSM | Samoa | 1975 - 2020 |
| 140 | 135 | SMR | San Marino | 1996 - 2020 |
| 141 | 456 | SAU | Saudi Arabia | 1970 - 2020 |
| 142 | 722 | SEN | Senegal | 1970 - 2020 |
| 143 | 718 | SYC | Seychelles | 1981 - 2020 |
| 144 | 724 | SLE | Sierra Leone | 1970 - 2020 |
| 145 | 576 | SGP | Singapore (e) | 1970 - 2020 |
| 146 | 936 | SVK | Slovak Republic (e) | 1996 - 2020 |
| 147 | 961 | SVN | Slovenia (e) | 1996 - 2020 |
| 148 | 813 | SLB | Solomon Islands | 1982 - 2020 |
| 149 | 726 | SOM | Somalia | 1970 - 2007 |
| 150 | 199 | ZAF | South Africa (e) | 1970 - 2020 |
| 151 | 184 | ESP | Spain (i) | 1970 - 2020 |
| 152 | 524 | LKA | Sri Lanka (e) | 1970 - 2020 |
| 153 | 361 | KNA | St. Kitts and Nevis | 1988 - 2020 |

| | cn | ccode | Country Name | Availability |
|-----|-----------|--------------|-----------------------------|---------------------|
| 154 | 362 | LCA | St. Lucia | 1983 - 2020 |
| 155 | 364 | VCT | St. Vincent and the Grenad. | 1983 - 2020 |
| 156 | 732 | SDN | Sudan | 1970 - 2020 |
| 157 | 366 | SUR | Suriname | 1970 - 2020 |
| 158 | 144 | SWE | Sweden (i) | 1970 - 2020 |
| 159 | 146 | CHE | Switzerland (i) | 1996 - 2020 |
| 160 | 463 | SYR | Syrian Arab Republic | 1970 - 2020 |
| 161 | 923 | TJK | Tajikistan | 1997 - 2020 |
| 162 | 738 | TZA | Tanzania | 1970 - 2020 |
| 163 | 578 | THA | Thailand (e) | 1970 - 2020 |
| 164 | 742 | TGO | Togo | 1970 - 2020 |
| 165 | 866 | TON | Tonga | 1989 - 2020 |
| 166 | 369 | TTO | Trinidad and Tobago (e) | 1970 - 2020 |
| 167 | 744 | TUN | Tunisia (e) | 1970 - 2020 |
| 168 | 186 | TUR | Turkey (e) | 1970 - 2020 |
| 169 | 925 | TKM | Turkmenistan | 1996 - 2020 |
| 170 | 746 | UGA | Uganda | 1970 - 2020 |
| 171 | 926 | UKR | Ukraine | 1996 - 2020 |
| 172 | 466 | ARE | United Arab Emirates | 1976 - 2020 |
| 173 | 112 | GBR | United Kingdom (i) | 1970 - 2020 |
| 174 | 111 | USA | United States (i) | 1970 - 2020 |
| 175 | 298 | URY | Uruguay | 1970 - 2020 |
| 176 | 927 | UZB | Uzbekistan | 1996 - 2020 |
| 177 | 846 | VUT | Vanuatu | 1985 - 2000 |
| 178 | 299 | VEN | Venezuela, RB (e) | 1970 - 2020 |
| 179 | 582 | VNM | Vietnam | 1970 - 2020 |
| 180 | 474 | YEM | Yemen, Rep. | 1995 - 2020 |
| 181 | 754 | ZMB | Zambia | 1970 - 2020 |
| 182 | 698 | ZWE | Zimbabwe (e) | 1984 - 2020 |

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 2020)

| | Minimum | Mean | Median | Maximum | Standard Deviation |
|--------------------------|---------|-------|--------|---------|--------------------|
| Full Sample | -1.93 | 0.00 | -0.16 | 2.31 | 1.53 |
| Industrialized Countries | -1.93 | 1.35 | 2.31 | 2.31 | 1.31 |
| Developing Countries | -1.93 | -0.23 | -1.23 | 2.31 | 1.44 |
| Emerging Markets | -1.93 | -0.16 | -0.16 | 2.31 | 1.44 |

Table 2: Country Ranking as of 2020

| Ranking | Country Name | KAOPEN | Change in KAOPEN |
|---------|--------------------------|--------|------------------|
| 1 | Australia | 2.31 | |
| 1 | Austria | 2.31 | |
| 1 | Bahrain | 2.31 | |
| 1 | Belgium | 2.31 | |
| 1 | Botswana | 2.31 | |
| 1 | Cambodia | 2.31 | |
| 1 | Canada | 2.31 | |
| 1 | Costa Rica | 2.31 | |
| 1 | Cyprus | 2.31 | |
| 1 | Czech Republic | 2.31 | |
| 1 | Denmark | 2.31 | |
| 1 | Estonia | 2.31 | |
| 1 | Finland | 2.31 | |
| 1 | France | 2.31 | |
| 1 | Gambia, The | 2.31 | |
| 1 | Georgia | 2.31 | |
| 1 | Germany | 2.31 | |
| 1 | Greece | 2.31 | |
| 1 | Guatemala | 2.31 | |
| 1 | Haiti | 2.31 | |
| 1 | Hong Kong, China | 2.31 | |
| 1 | Hungary | 2.31 | |
| 1 | Ireland | 2.31 | |
| 1 | Israel | 2.31 | |
| 1 | Italy | 2.31 | |
| 1 | Japan | 2.31 | |
| 1 | Jordan | 2.31 | |
| 1 | Korea, Rep. | 2.31 | |
| 1 | Latvia | 2.31 | |
| 1 | Lithuania | 2.31 | |
| 1 | Malta | 2.31 | |
| 1 | Micronesia, Fed. Sts. | 2.31 | |
| 1 | Netherlands | 2.31 | |
| 1 | New Zealand | 2.31 | |
| 1 | Nicaragua | 2.31 | |
| 1 | Norway | 2.31 | |
| 1 | Oman | 2.31 | |
| 1 | Panama | 2.31 | |
| 1 | Peru | 2.31 | |
| 1 | Portugal | 2.31 | |
| 1 | Qatar | 2.31 | |
| 1 | Seychelles | 2.31 | |
| 1 | Singapore | 2.31 | |
| 1 | Spain | 2.31 | |
| 1 | Sweden | 2.31 | |
| 1 | Switzerland | 2.31 | |
| 1 | Uganda | 2.31 | |
| 1 | United Arab Emirates | 2.31 | |
| 1 | United Kingdom | 2.31 | |
| 1 | United States | 2.31 | |
| 1 | Uruguay | 2.31 | |
| 1 | Yemen, Rep. | 2.31 | |
| 1 | Zambia | 2.31 | |
| 54 | Cape Verde | 2.06 | Up |
| 54 | Romania | 2.06 | Down |
| 56 | Armenia | 1.62 | |
| 56 | Maldives | 1.62 | |
| 56 | Mongolia | 1.62 | |
| 56 | Trinidad and Tobago | 1.62 | |
| 60 | Dominican Republic | 1.55 | |
| 60 | Iceland | 1.55 | Up |
| 60 | Vanuatu | 1.55 | |
| 63 | Antigua and Barbuda | 1.24 | |
| 63 | Rwanda | 1.24 | |
| 65 | Guyana | | 1.11 |
| 65 | Liberia | | 1.11 |
| 67 | Chile | | 1.04 |
| 67 | Croatia | | 1.04 |
| 67 | Djibouti | | 1.04 |
| 67 | Ecuador | | 1.04 |
| 67 | El Salvador | | 1.04 |
| 67 | Kenya | | 1.04 |
| 67 | Kiribati | | 1.04 |
| 67 | Kuwait | | 1.04 |
| 67 | Marshall Islands | | 1.04 |
| 67 | Mauritius | | 1.04 |
| 67 | Mexico | | 1.04 |
| 67 | Poland | | 1.04 |
| 67 | San Marino | | 1.04 |
| 67 | Saudi Arabia | | 1.04 |
| 67 | Slovenia | | 1.04 |
| 82 | Slovak Republic | | 0.98 |
| 83 | Bulgaria | | 0.73 |
| 84 | Sao Tome and Principe | | 0.54 |
| 85 | Sudan | | 0.42 |
| 86 | Kyrgyz Republic | | 0.35 |
| 87 | Azerbaijan | | 0.04 |
| 88 | Bolivia | | -0.03 |
| 88 | Lebanon | | -0.03 |
| 88 | Macedonia, FYR | | -0.03 |
| 88 | Paraguay | | -0.03 |
| 88 | Philippines | | -0.03 |
| 88 | St. Lucia | | -0.03 |
| 94 | Colombia | | -0.16 |
| 94 | Dominica | | -0.16 |
| 94 | Egypt, Arab Rep. | | -0.16 |
| 94 | Indonesia | | -0.16 |
| 94 | Malaysia | | -0.16 |
| 94 | Russian Federation | | -0.16 |
| 94 | Thailand | | -0.16 |
| 94 | Vietnam | | -0.16 |
| 94 | Zimbabwe | | -0.16 |
| 103 | Nigeria | | -0.66 |
| 103 | Papua New Guinea | | -0.66 |
| 105 | Argentina | | -0.73 |
| 106 | Kazakhstan | | -0.98 |
| 107 | Tajikistan | | -1.17 |
| 108 | Albania | | -1.23 |
| 108 | Algeria | | -1.23 |
| 108 | Aruba | | -1.23 |
| 108 | Bangladesh | | -1.23 |
| 108 | Barbados | | -1.23 |
| 108 | Belarus | | -1.23 |
| 108 | Belize | | -1.23 |
| 108 | Benin | | -1.23 |
| 108 | Bhutan | | -1.23 |
| 108 | Bosnia and Herzegovina | | -1.23 |
| 108 | Brazil | | -1.23 |
| 108 | Burkina Faso | | -1.23 |
| 108 | Cote d'Ivoire | | -1.23 |
| 108 | Cameroon | | -1.23 |
| 108 | Central African Republic | | -1.23 |
| 108 | Chad | | -1.23 |
| 108 | China | | -1.23 |
| 108 | Comoros | | -1.23 |
| 108 | Congo, Dem. Rep. | | -1.23 |
| 108 | Congo, Rep. | | -1.23 |
| 108 | Equatorial Guinea | | -1.23 |
| 108 | Ethiopia | | -1.23 |
| 108 | Fiji | | -1.23 |
| 108 | Gabon | | -1.23 |
| 108 | Grenada | | -1.23 |
| 108 | Guinea-Bissau | | -1.23 |
| 108 | Honduras | | -1.23 |

| | | | |
|-----|--------------------------------|-------|------|
| 108 | India | -1.23 | |
| 108 | Jamaica | -1.23 | Down |
| 108 | Lao PDR | -1.23 | |
| 108 | Lesotho | -1.23 | |
| 108 | Libya | -1.23 | |
| 108 | Madagascar | -1.23 | |
| 108 | Malawi | -1.23 | |
| 108 | Mali | -1.23 | |
| 108 | Mauritania | -1.23 | |
| 108 | Moldova | -1.23 | |
| 108 | Morocco | -1.23 | |
| 108 | Mozambique | -1.23 | |
| 108 | Myanmar | -1.23 | Up |
| 108 | Namibia | -1.23 | |
| 108 | Nepal | -1.23 | |
| 108 | Niger | -1.23 | |
| 108 | Pakistan | -1.23 | |
| 108 | Samoa | -1.23 | |
| 108 | Senegal | -1.23 | |
| 108 | Sierra Leone | -1.23 | |
| 108 | Solomon Islands | -1.23 | |
| 108 | South Africa | -1.23 | |
| 108 | Sri Lanka | -1.23 | |
| 108 | St. Kitts and Nevis | -1.23 | |
| 108 | St. Vincent and the Grenadines | -1.23 | |
| 108 | Suriname | -1.23 | |
| 108 | Swaziland | -1.23 | |
| 108 | Tanzania | -1.23 | |
| 108 | Togo | -1.23 | |
| 108 | Tonga | -1.23 | |
| 108 | Tunisia | -1.23 | |
| 108 | Turkey | -1.23 | |
| 108 | Turkmenistan | -1.23 | |
| 108 | Uzbekistan | -1.23 | |
| 169 | Angola | -1.93 | |
| 169 | Bahamas, The | -1.93 | |
| 169 | Burundi | -1.93 | |
| 169 | Eritrea | -1.93 | |
| 169 | Ghana | -1.93 | |
| 169 | Guinea | -1.93 | |
| 169 | Iran, Islamic Rep. | -1.93 | |
| 169 | Syrian Arab Republic | -1.93 | |
| 169 | Ukraine | -1.93 | |
| 169 | Venezuela, RB | -1.93 | |

Table 3: Countries that increased *KAOPEN* in 2020

| | Ranking | Country Name | <i>KAOPEN</i> (as of 2020) | Change in <i>KAOPEN</i> |
|---|----------------|---------------------|---------------------------------------|------------------------------------|
| 1 | 108 | Myanmar | -1.23 | 0.69 |
| 2 | 54 | Cape Verde | 2.06 | 0.25 |
| 2 | 60 | Iceland | 1.55 | 0.25 |
| 2 | 107 | Tajikistan | -1.17 | 0.25 |

Table 4: Countries that decreased *KAOPEN* in 2020

| | Ranking | Country Name | <i>KAOPEN</i> (as of 2020) | Change in <i>KAOPEN</i> |
|---|----------------|---------------------|---------------------------------------|------------------------------------|
| 1 | 108 | Albania | -1.23 | -1.07 |
| 1 | 108 | Jamaica | -1.23 | -1.07 |
| 3 | 54 | Romania | 2.06 | -0.25 |
| 3 | 82 | Slovak Republic | 0.98 | -0.25 |
| 3 | 94 | Russian Federation | -0.16 | -0.25 |
| 3 | 83 | Bulgaria | 0.73 | -0.25 |

Figure 1: Development of *KAOPEN* for Different Income Groups, 1970 – 2020

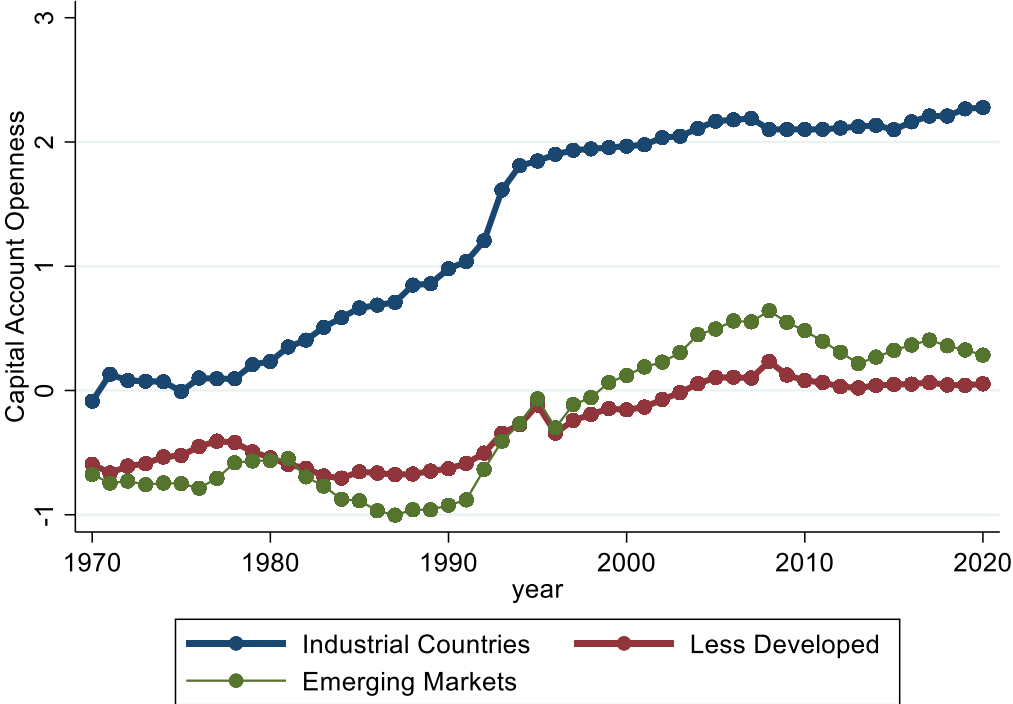
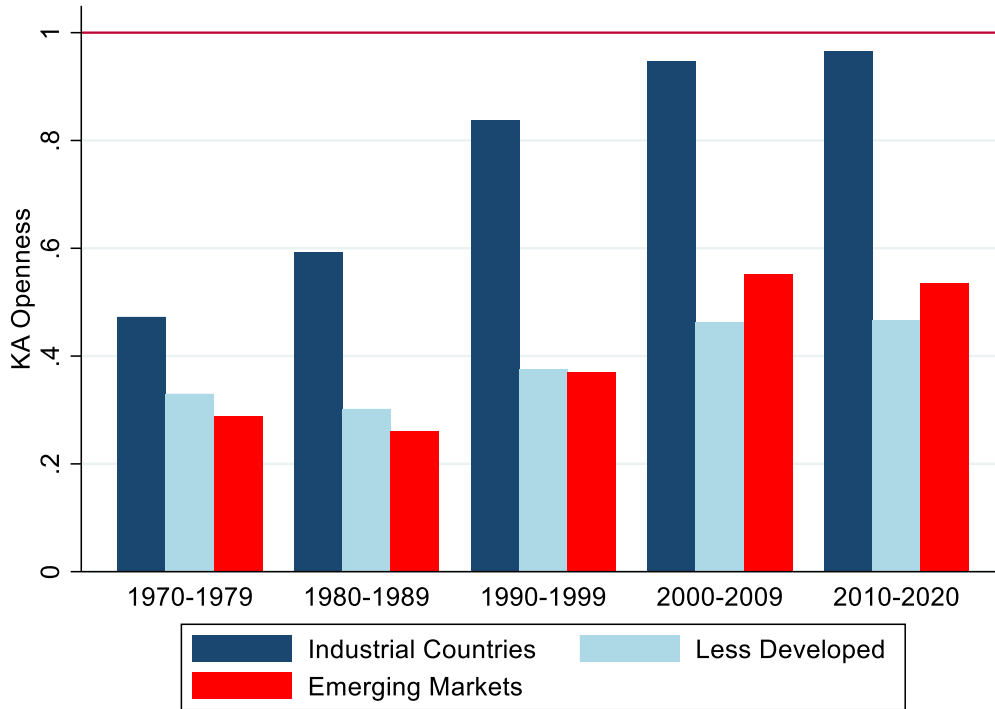
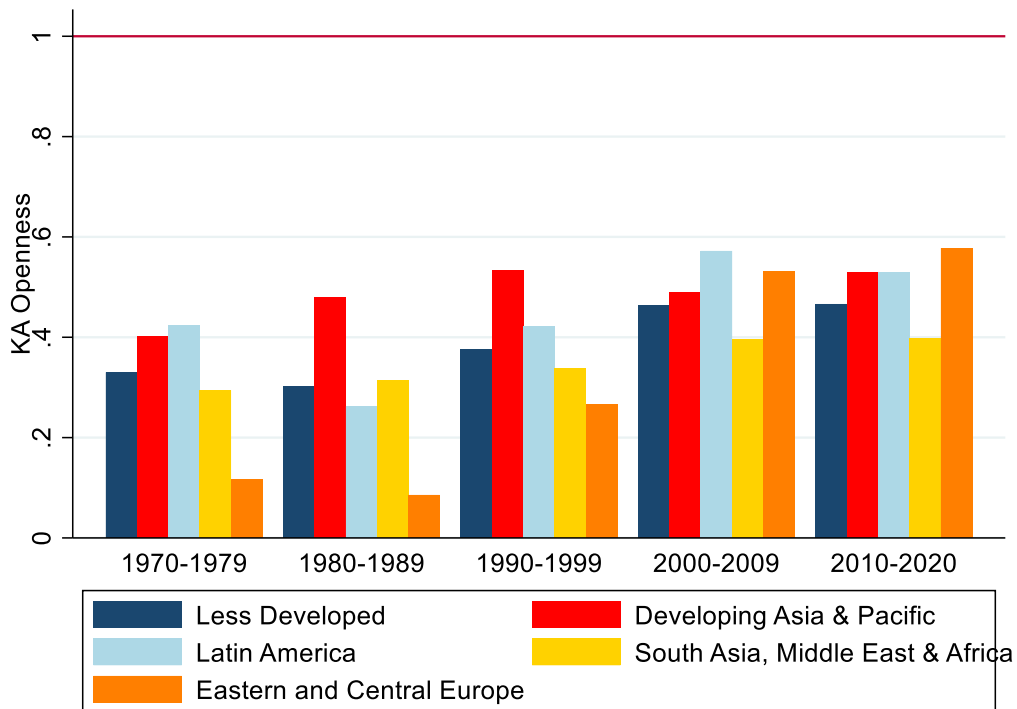


Figure 2: Comparison of *KAOPEN* across Different Income Groups



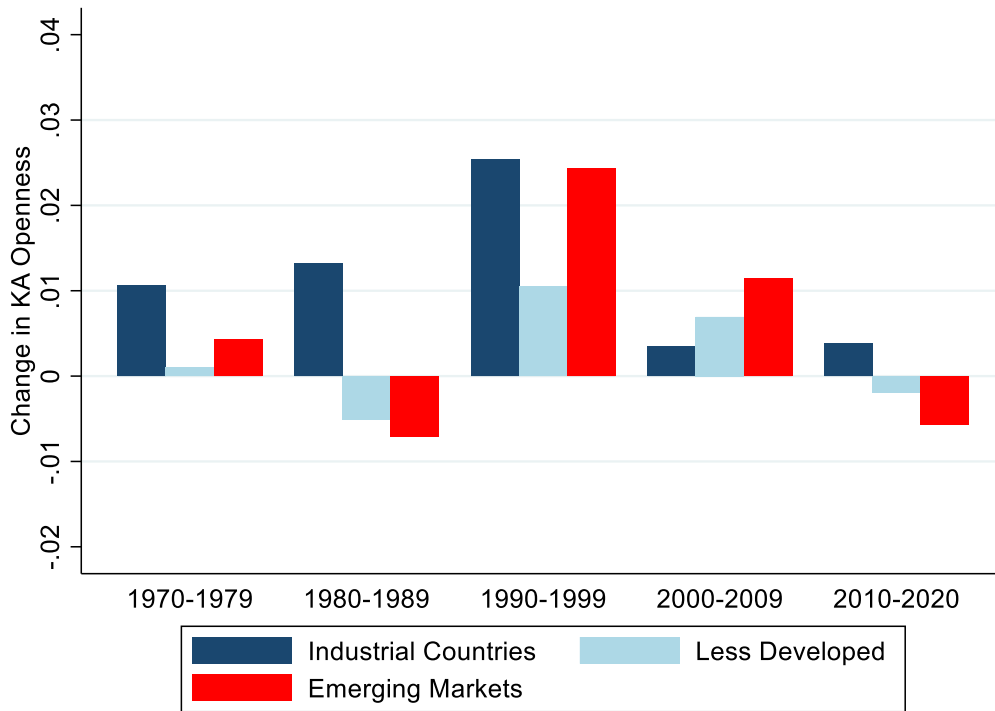
Note: The maximal value of *KAOPEN* is indexed as 1.00 for the sake of easier comparison.

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



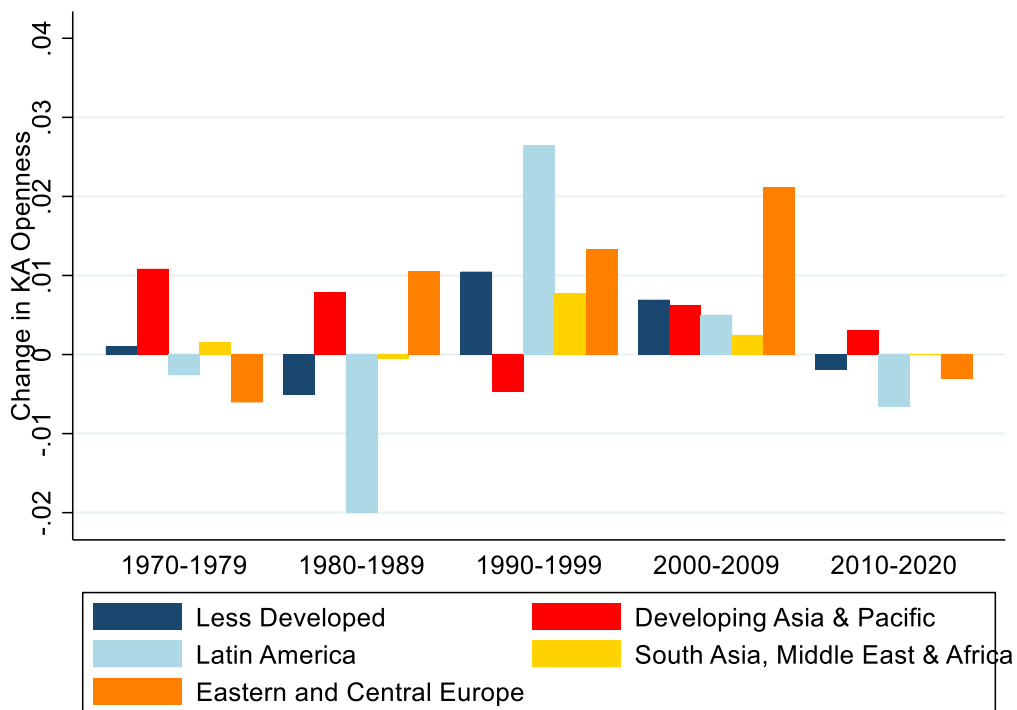
Note: The maximal value of *KAOPEN* is indexed as 1.00.

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).