Appendices

Appendix A

HOW THE GEOGRAPHICAL REGIONS WERE CONSTRUCTED

To allow the analysis of global trends at some level below that of the entire world, it was necessary to break countries up according to an economic and geographic scheme. This meant formulating a set of smaller groupings which were internally coherent – that is, where countries were more similar to others within the group than they were to countries outside of it. As one might imagine, this is a difficult task with no perfect solution.

The basic decision was to divide the world according to some measure of state economic capacity, or, broadly, what has been called "developed" and "developing", or as is currently more fashionable, the "Global North" and the "Global South. This is more difficult than it sounds: countries occupy a spectrum of income and finding a reliable dividing line is difficult. Income changes over time, and countries which might have been on one side of the line in the past might no longer be there now.

Two other factors entered into the decision about classifying countries economically. One had to do with geographic considerations; by and large, it seemed to make more sense to keep geographical regions intact more often than not even if one country was richer and/or poorer than its neighbours. And then there was history, which influenced divisions in two ways. First, higher education systems are a lagging indicator of economic growth, so there are good reasons to weight historical wealth slightly more highly than current wealth. Second, in the specific case of the Soviet Union a number of successor republics shared basically the same higher education structure, so it seemed to make more sense to keep these countries together than to put them apart.

The "Global North" portrayed in this report therefore, is not quite co-equivalent to other definitions of "rich countries". It excludes a number of OECD countries, including Chile, Colombia, Mexico, and Turkey,[1] as well as the petrostate of Saudi Arabia. For historical reasons, Kazakhstan was kept with the other post-Soviet successor countries in a category (Eastern Europe/Central Asia) which groups together states which underwent an economic transition away from socialism in the 1990s.

Within the global North, all of the four geographic sub-groupings are to some degree contestable. "Western Europe" looks a great deal like the pre-2004 European Union, only with Switzerland included. This makes some sense for historical reasons, though some might have preferred a version which more closely resembles the present-day political geography of Europe, in which Poland and Romania were placed with Western Europe rather than with the ex-Soviet countries of Ukraine, Russia and Kazakhstan. Another variation on Western Europe might have excluded the United Kingdom because of Brexit. Indeed, the United Kingdom might have made more sense as part of the "CANZAUS" grouping, turning it into somethings resembling the "Five Eyes" intelligence alliance of (mostly) anglophone countries. However, this is a very present-oriented view of the world, and would not necessarily have made sense in the context of the year 2006, when our work starts.

The "Advanced Asia" grouping of modern Asian economies is mostly understandable, including as it does not just the OECD members Japan and Korea, but also Taiwan, Hong Kong and Singapore, all among the early industrializing countries of the region (though, at the time of writing, it is unclear if Hong Kong should in future continue to be included as a separate jurisdiction or be made and undistinguished part of China). Yet, this region also includes Israel, which is always difficult to classify. Geographically, it belongs to the Middle East, but because of political conflicts between Israel and its neighbours, it

[1] The OECD's recent membership expansion has objectively altered the relevance of membership as an indicator of economic development. For instance, Colombia's GDP per capita in 2020 was just USD 5,333 and Mexico's just USD 8,347 according to the World Bank.

is rarely grouped together with them for international comparative purposes. Often, it is grouped together with Europe, as it is for Eurovision and continental football tournaments, and that was an option except that it was not clear which grouping – west or east – would make more sense. As a result, it was added to the "Asian" category, which is technically correct even if it results in some wide geographic dispersion.

In the Global South, the groupings are more straightforward. Sub-Saharan Africa is a widely-recognized and relatively homogenous grouping, as is South Asia. Latin America has a degree of cultural/historical homogeneity which makes it a natural grouping. East Asia makes geographic sense as well, even if China's sheer size swamps the other members. The one grouping that is potentially problematic is the Middle East/North Africa region. This may be the most economically varied region in the world, due largely to differences in resource endowments. Ethnically, this region is sometimes coterminous with the homelands of the Arab peoples; in others (including this one) it also includes Iran and – less often – Turkey as well. Both of these were located together with Middle East/North Africa (MENA) for lack of geographic alternatives. Turkey, like Israel, could have been lumped in with Europe but its economic development is not on par on Western Europe and it does not share the communist past of Eastern Europe. With Iran the only other choice would have been to group it with South Asia, and that seemed to be even less of coherent grouping than MENA.

Alternative groupings of countries and regions could certainly be used. However, to the extent that any single alteration to the groupings used here makes one country be in "better company", it usually makes another grouping less coherent. Thus, while not all groupings are ideal, they appear pareto-optimal as a whole.

Appendix B

SUMMARY REGARDING DATA QUALITY

The data presented in this report arguably offer the best snapshot of global higher education (HE) ever assembled. However, as might be expected in any undertaking of this size, data quality is uneven.

We gathered data from official, national sources wherever possible, including from governments, their affiliated steering agencies, and HE associations. Data from these sources alone, however, were often incomplete. They might not cover all years for all variables of interest. They might also have elements that are incorrect. Where we suspect data may be incorrect but do not know for sure, we have sought to indicate such in country profiles. Where we know the data are incorrect we have applied some form of estimation to address this.

Occasionally, we have supplemented national data sources with unofficial or non-national sources. These can include reports from international organisations such as the World Bank and UNESCO, or sometimes from peer-reviewed books or articles. We generally use these options only where official, national sources are very inadequate.

Data quality tends to vary in predictable ways. Countries in the Global South generally have less complete data than countries in the Global North. Data on enrolments is the most reliable typically, followed by higher education institution (HEI) counts, though in both cases reliability weakens as we begin to try to separate providers into various "types". With respect to financial matters, data on total public HE spending are generally available, although what is included in public spending may vary by jurisdiction. Data quality worsens as we proceed away from public spending and towards other HEI resources, as we break down resources by HEI-type, and especially once we consider private HEIs' finances. Student fees data are among the least complete in this publication, especially concerning amounts paid. Finally, government student financial aid data are entirely missing for a few countries, and were a serious challenge to gather especially across much of the Global South.

The estimations in this volume take various forms. By far the most common from is interpolation. In most cases, we interpolated on a linear basis, such that the 2007 figure would equal the 2006 figure plus 50% of the difference between 2006 and 2008. In some cases, we interpolated on an exponential basis, so that the 2007 figure would equal the square root of (the 2008 figure divided by the 2006 figure) times the 2006 figure. Interpolation is the most reliable form of estimation because it does not alter the overall direction of trends, it merely smooths out some variations that might occur over time. In a few cases we had to project our data forward or backward based on the years that we did have, because our data were incomplete for years at the end or the beginning of our time series. To fill in one missing year for enrolments say in 2006, we might assume enrolments stayed the same as in 2007, or for the breakdown of enrolments by HEI-type we might assume the proportions remained constant. In some rare occasions, we did more complex operations based on whatever information we could find. For instance, in the absence of public HE spending data in Ethiopia for the last years of our time series we used reporting on total public spending on education, and planning documents regarding the share of spending to go to HE to generate our projections.

National reporting practices and methodologies sometimes changed one or more times during the thirteen-year span covered by this report, and this created series breaks that required some estimation in order to maintain consistency. Wherever possible, we sought to find as many overlapping years as possible and then understand consistent patterns in the difference between the time series with the different methodologies. We then adjusted the data in one direction or the other based on this pattern of difference. Where there were differences between two methods, we tended to default to the more recent methodology, except where we had reasons to judge the most

recent data as unreliable – for example in the UK which has systematically under-reported public HE expenditures that take the form of loan losses.

Our use of estimation may make the findings of this report appear less reliable, and certainly country-level data in some cases should be treated as approximate rather than exact. However, without these estimation practices it would be nearly impossible to produce consistent data across all countries and all years, which would severely limit the quality and comprehensiveness of this report.

The chart below outlines our assessment of data quality in this report by country and subject of the data. We hope to continue improving the accuracy of our data moving forward. We invite those who believe they can help us improve the quality of our data in a specific country to please let us know.

LEGEND

COLOUR	DATA
Green	We recopied data directly from a source.
Yellow	We made some estimation to modify data from a source, but generally we were closely guided by a source.
Orange	We have relatively low confidence in the data due to the extent of estimation required, or because the original source data appears of questionable reliability.
Red	We were not able to obtain data.
Grey	Not applicable

GLOBAL NORTH

COUNTRY	ENROLMENT AND INSTITUTIONS	FINANCING (PUBLIC SECTOR)	FINANCING (PRIVATE SECTOR)	STUDENT FEES IN PUBLIC SECTOR	STUDENT FINANCIAL AID
Australia	Green	Green	Yellow: Data missing university colleges, as well as Torrens University until 2018.	Green	Yellow: All grant amounts and recipient numbers estimated, loan amounts estimated for 2014 to 2018.
Canada	Orange: Had to do own assessment to develop enrolment and institution counts for short-cycle HEIs and hybrids. Private data are incomplete - substantial private sector uncounted.	Yellow: Generated own estimates of total public spending on higher education - challenges discerning federal and provincial spending not provided directly to institutions. Developed estimates for short-cycle HEIs due to omissions of some smaller institutions and unclear distinctions from semi-HEIs	Yellow: Data developed largely from institutional financial reports. Includes data only on religious comprehensive universities. Incomplete as private sector generally not tracked in Canada.	Orange: Breakdown of fees by international and domestic entirely estimated based on data on average undergraduate fees at universities for domestic and international students.	Yellow: Basically all data estimated for Canada regarding recipients in an effort to tackle challenges in counting between federal and provincial governments.
Finland	Green: Assuming there is in fact no private sector	Green	Grey: Not applicable so far as discernible from the data	Green	Green
France	Yellow: Some estimation with regards to breakdown of counts of public and private specialised universities.	Green	Green	Yellow: Estimated breakdown of exemption recipients by institution type before 2017.	Yellow: Estimated data on residence subsidy recipients based on interpolation for the years 2006-2008 and 2010-2018. Estimated values of grants and loans from 2006 to 2009 (basically had to subtract modest estimated loan amounts to get grants).

COUNTRY	ENROLMENT AND INSTITUTIONS	FINANCING (PUBLIC SECTOR)	FINANCING (PRIVATE SECTOR)	STUDENT FEES IN PUBLIC SECTOR	STUDENT FINANCIAL AID
Germany	Yellow: Some estimation of breakdown of HE enrolments in public and private secondary schools.	Yellow: Very difficult to discern precise amounts transferred to institutions from governments - estimated. Also little reporting on total government spending on higher education. Weak reporting on fachschulen specifically in general.	Yellow: Very difficult to discern precise amounts transferred to institutions from governments - estimated. Weak reporting on fachschulen specifically in general.	Yellow: Modest estimation of fees. Not clear that we are fully tracking fee exemptions that have been in place over period of interest and may vary based on the state.	Green
Hong Kong	Green	Yellow: Gaps in reporting on short-cycle HEIs before 2010. Data limitations on transfers to private HEIs.	Red: No data	Orange: Can only track numbers of high differential payers versus normal fee payers, but no data on amounts from each.	Green
Ireland	Yellow: Some estimation of enrolments at start and end of time series for private HEIs, and in 2007 for public university colleges. Counts of private HEIs estimated throughout.	Yellow: All figures estimated for public transfers to HEIs because data do not distinguish funding provided as student grants according to our methodology.	Red: No data	Yellow: All data estimated for amounts paid by students under different fee regimes. Estimated number of students on reduced fees at hybrids in 2006.	Yellow: Estimated grants data for 2015 to 2018.
Israel	Yellow: Short-cycle breakdown by public and private all estimated for enrolments and institution counts. University colleges institution counts estimated, as were enrolments in 2009 - may have simply stopped gathering data on these institutions.	Green	Yellow: Data very good. Only gap is confirmed government funding to private HEIs before 2013.	Green	Red: No data. There are multiple government grant and loan programs in operation but not tracked and reported.
Italy	Yellow: Modest patchiness in public/private breakdown of enrolment data particularly for specialised universities prior to 2009, resolved through estimation. 2007 universities count estimated.	Yellow: Had to do some estimation for all final figures on total institutional spending. Minor issues in data on government transfers to universities.	Yellow: Had to do some estimation for all final figures on total institutional spending. Minor issues in data on government transfers to universities.	Yellow: Estimated full tuition recipients in 2007.	Yellow: Estimated amounts of residence subsidies from 2011 to 2017. Estimated recipients of grants from 2006 to 2011.
Japan	Green	Yellow: Required some estimation for total public spending prior to 2010, and public transfers to public HEIs in all years.	Yellow: Modest requirement for estimation of government funding of private HEIs after 2011.	Green	Green

COUNTRY	ENROLMENT AND INSTITUTIONS	FINANCING (PUBLIC SECTOR)	FINANCING (PRIVATE SECTOR)	STUDENT FEES IN PUBLIC SECTOR	STUDENT FINANCIAL AID
Kazakhstan	Yellow: Considerable estimation in breakdowns of enrolments by public/private and between comprehensive and specialised universities. Similar difficulties with specialised and comprehensive universities for institution counts.	Yellow: Data gap in 2007 required estimation to fill except for short-cycle HEIs.	Red: No data	Yellow: Only have solid data for universities. Had to estimate data for vocational higher education.	Orange: Grant amounts are minimal while loan amounts are maxima. Numbers of loan recipients all estimated for each year based on multi-year totals.
Netherlands	Green	Green	Grey: Not applicable so far as discernible from the data	Orange: All data estimated for international student fees as counts of such students not reported. Only able to directly gather data on standard fees.	Yellow: Estimated grants data for 2006 to 2009.
New Zealand	Green	Green	Grey: Not applicable	Yellow: Had to estimate numbers of free tuition students at hybrids and short-cycle HEIs in 2018.	Green
Poland	Yellow: Modest estimation in 2007 regarding breakdown of enrolments between private hybrids and specialised universities, and in 2006 for public-private breakdown of short-cycle enrolments. Estimation in 2006 and 2007 of counts of short-cycle HEIs.	Green	Green	Yellow: Had to do some very modest estimation to calculate number of students paying fees accounting for international students.	Yellow: Estimated loan amounts in 2006, 2007 and 2011-2016. Program modest in size however.
Romania	Yellow: All enrolment data estimated for 2006 to 2009 as incomplete tracking of graduate students. Estimates of institution counts by institution type in 2006 to 2009.	Yellow: Required considerable estimation for total public spending and total institutional spending.	Red: No data	Yellow: Estimated tuition exemption recipients for 2006	Yellow: Basic structure is that money provided to institutions to offer student financial aid. Can track money provided, but not how the money is used. Under this structure, by our approach there basically is no government SFA provided directly to students.
Russia	Green	Yellow: Data for 2006 estimated based on interpolation.	Orange: No data prior to 2010 for short-cycle and 2009 for universities.	Yellow: Estimated tuition exemption recipients for 2015.	Orange: Grant amounts are minimal only. Estimated grant recipients after 2014.

COUNTRY	ENROLMENT AND INSTITUTIONS	FINANCING (PUBLIC SECTOR)	FINANCING (PRIVATE SECTOR)	STUDENT FEES IN PUBLIC SECTOR	STUDENT FINANCIAL AID
Singapore	Green	Yellow: Considerable estimation in total public spending data. Some gap filling for finances of public short-cycle HEIs in 2008 and 2009	Orange: Estimation and gaps for private short-cycle and hybrids.	Red: Could not pull together complete data. Know that there are differentials	Red: Could not pull together complete data. There are substantial SFA programs in operation - grants and loans at least.
South Korea	Green	Yellow: All total public spending figures are estimates. Estimated public student fee revenues from 2016 to 2018.	Green	Yellow: Estimated public student fee revenues from 2016 to 2018.	Green
Spain	Green	Yellow: Modest gaps in data on finances of public universities.	Orange: Finances of private HEIs tracked based on interpolation between surveys completed at gaps of as many as six years. Some estimation of revenue sources for publics in 2006, 2008 and 2009.	Yellow: Estimated public student fee revenues in 2006, 2008 and 2009.	Yellow: Estimated grants data for 2006 to 2010.
Sweden	Yellow: Modest estimation of breakdown in short-cycle HEI enrolments from 2008 to 2011 by public/private.	Yellow: Total expenditures data actually reflect total revenues. Total expenditures of public short-cycle HEIs are estimated.	Orange: Missing data on finances of private short-cycle HEIs aside from government transfers. No reliable data on student fee revenues.	Green	Green
Switzerland	Green	Yellow: Data estimates for transfers to public short-cycle HEIs and entirely missing for student fee revenues and total expenditures at these institutions. Estimates for specialised universities in 2006 and 2007.	Red: Basically no data.	Orange: Entirely missing fees data for public short-cycle HEIs. Estimates for specialised universities in 2006 and 2007.	Green
Taiwan	Yellow: Estimates of enrolments in private semi-HE after 2011.	Yellow: All data estimated for transfers to institutions because difficult to discern amounts to modest short-cycle HEI sector. Student fee revenues all estimated	Yellow: All data estimated for transfers to institutions because difficult to discern amounts to modest short-cycle HEI sector. Student fee revenues all estimated	Green	Yellow: Estimated data for grants in 2006.
Ukraine	Yellow: All 2018 data estimated due to change in methodology of tracking.	Orange: Missing data for short-cycle HEIs. Figures for universities specifically are estimated because cannot distinguish perfectly amounts from those to short-cycle HEIs. Figures in 2006 and 2007 fully estimated.	Red: No data	Orange: Missing data for short-cycle HEIs. Figures for universities specifically are estimated because cannot distinguish perfectly amounts from those to short-cycle HEIs. Figures in 2006 and 2007 fully estimated. All final data on tuition exemptions at publics are estimated.	Orange: Grant amounts are minima only.

COUNTRY	ENROLMENT AND INSTITUTIONS	FINANCING (PUBLIC SECTOR)	FINANCING (PRIVATE SECTOR)	STUDENT FEES IN PUBLIC SECTOR	STUDENT FINANCIAL AID
United Kingdom	Orange: Substantial estimation of trends in the private sector based on fragmented data.	Yellow: Public spending figures calculated to address methodological challenges relating to tracking of student loans not to be paid off - particularly after 2014. Some gaps in 2006 and 2007 data at public HEIs.	Red: No reliable data could only have provided analysis for many years at University of Buckingham, which is a fraction of the private sector.	Yellow: Very modest estimation of tuition payments in 2006 and 2007 in Northern Ireland.	Yellow: Estimation of grants data in 2006 and 2007 in Northern Ireland.
United States	Yellow: Data by institution-type largely estimated because typical tracking of institution-types data does not align to preferred Carnegie classifications measure, which is reported only intermittently (each 3-5 years).	Yellow: Developed own tracking of total public spending to account for federal and state moneys not going directly to HEIs. Data by institution-type largely estimated because typical tracking of institution-types data does not align to preferred Carnegie classifications measure, which is reported only intermittently (each 3-5 years).	Yellow: Data by institution-type largely estimated because typical tracking of institution-types data does not align to preferred Carnegie classifications measure, which is reported only intermittently (each 3-5 years).	Red: Not able to distinguish numbers of in-state versus out-of-state students and differences in fee amounts which will vary by state.	Yellow: Estimated data on recipients of grants because not possible to perfectly discern recipients of state and federal - provides a minimum estimate of recipients which means per-student grant amounts are maxima. Excludes modest state-level loan programs.

GLOBAL SOUTH

COUNTRY	ENROLMENT AND INSTITUTIONS	TOTAL GOVERNMENT SPENDING	FINANCES OF PUBLIC HEIS	FINANCING (PRIVATE SECTOR)	STUDENT FEES IN PUBLIC SECTOR	STUDENT FINANCIAL AID
Algeria	Green	Green	Orange: Only have transfers to institutions data which are wholly estimated relative to total public spending.	Grey: Not applicable so far as discernible from the data	Red: No data, though fees are minimal	Yellow: All grant amounts estimated. All recipient figures estimated before 2011. No data on value of residence subsidies.
Argentina	Green	Green	Yellow: Data breaking down transfers to public non-university HEIs by institution type are entirely estimated - assume same amounts to hybrids and short-cycle HEIs. All data on total expenditures of public universities are estimated except for 2011, 2012, 2014 and 2019	Red: No data	Green: No fees	Yellow: Grants data estimated after 2013, except recipient numbers in 2018.

COUNTRY	ENROLMENT AND INSTITUTIONS	TOTAL GOVERNMENT SPENDING	FINANCES OF PUBLIC HEIS	FINANCING (PRIVATE SECTOR)	STUDENT FEES IN PUBLIC SECTOR	STUDENT FINANCIAL AID
Bangladesh	Yellow: Considerable estimation particularly for 2006-2008, and in other years notably for enrolment breakdown between comprehensive universities and semi-HE.	Yellow: Data estimated up to 2009 and for 2011 and 2017.	Orange: Government transfers data wholly estimated. Total institutional spending has some gaps estimated - most especially 2006 and 2007. For both these data series, limited to exclude university colleges.	Red: No data	Red: No data on amounts, though fees are very modest	Yellow: Data only after 2012. Assuming no national program before 2013.
Benin	Yellow: Data estimation in 2006-2007 and 2011-2013.	Green	Orange: All figures estimated for all years. Student fee revenues estimated based on per-student amounts. Total expenditures correspond to sum of student fee revenues and government transfers.	Red: No data	Yellow: Yes — all data estimated based on per-student amounts for amounts. Data on tuition exemptions calculated based on students not receiving grants.	Orange: Grant recipients estimated in 2006, residence recipients tracked and estimated in 2006, 2007 and 2011-2013. Significant estimation of grant amounts - all years by 2006 and 2010.
Brazil	Green	Yellow: All data estimated.	Yellow: All data estimated.	Red: No data	Yellow: No fees - may not be exactly right for all states.	Yellow: Loan amounts estimated for 2007.
Burkina faso	Yellow: Estimated breakdown of private enrolments by institution type from 2006 to 2013.	Yellow: Data estimated for 2006	Orange: All data estimated except for 2007, 2014 and modestly in 2018. Total institutional expenditures estimated as sum of transfers to institutions and student fee revenues.	Orange: All figures estimated for all years. Student fee revenues estimated based on per-student amounts. Total expenditures correspond to sum of student fee revenues and government transfers.	Yellow: Yes — all data estimated based on per-student amounts.	Orange: All grant amounts estimated. No data on residence subsidy amounts. Grant recipients estimated for 2006-2008, and residence subsidies for 2007, 2008 and 2010.
Cameroon	Yellow: Enrolments estimated in 2014. All private institution counts data estimated.	Green	Orange: Transfers to institutions data estimated before 2016 based on total government spending data. Only have total institutional spending data for 2016 to 2018.	Red: No data	Red: No data	Red: No data
Chile	Green	Green	Yellow: Data estimated for 2017 and 2018 due to reporting change in data sources.	Orange: Very little data prior to 2011 - data on government transfers only and these are entirely estimated.	Yellow: Total amounts data estimated for 2017 and 2018 due to reporting change in data sources. Exemption recipients data estimated for private universities.	Green

COUNTRY	ENROLMENT AND INSTITUTIONS	TOTAL GOVERNMENT SPENDING	FINANCES OF PUBLIC HEIS	FINANCING (PRIVATE SECTOR)	STUDENT FEES IN PUBLIC SECTOR	STUDENT FINANCIAL AID
China	Orange: Breakdowns between comprehensive and specialised universities all estimated. Short-cycle data estimated in most years. Difficult notably to assign students in distance learning.	Green	Yellow: Some estimation in breakdown by institution type in 2006 and 2007.	Yellow: Some estimation in breakdown by institution type in 2006 and 2007.	Yellow: Some estimation in breakdown by institution type in 2006 and 2007.	Yellow: Loan and grant amounts estimated in 2006 and 2007, as were grant recipient numbers.
Colombia	Green	Yellow: All data estimated.	Orange: All data estimated before 2011. Estimation also common for 2017 and 2018.	Orange: All data estimated before 2011. Estimation also common for 2017 and 2018.	Orange: Data estimated before 2011. Estimation also common for 2017 and 2018.	Yellow: Loan amounts estimated in 2015 and 2016.
Côte-d'Ivoire	Yellow: Enrolments estimated in 2006 for all but secondary schools, as well as institution counts. Secondary school enrolments estimated in 2013. Breakdown of specialised university and public comprehensive university enrolments estimated for 2006 to 2011.	Yellow: Data estimated for 2006 and 2007	Orange: Almost all figures estimated for all years. Student fee revenues estimated based on per-student amounts. Total expenditures correspond to sum of student fee revenues and government transfers.	Orange: Almost all figures estimated for all years, except for transfers from 2009 to 2016. Student fee revenues estimated based on per-student amounts. Total expenditures correspond to sum of student fee revenues and government transfers.	Yellow: Yes - all data estimated based on per-student amounts.	Orange: Intermittent estimation of grant amounts. Recipients estimated in 2006-2007 and 2010-2012. No data on residence subsidy amounts, but recipients complete with estimation for 2006-2008.
Egypt	Yellow: Estimation of figures for private non-university institution counts from 2007 to 2010 and 2015 to 2018.	Green	Yellow: All data estimated to convert to actuals.	Red: No data	Red: No data, though fees are very modest	Red: No data
Ethiopia	Yellow: Institution counts estimated for public institutions in 2006 and 2010, and for privates in 2007, 2009, 2010 and 2015.	Orange: Data estimated in particular for 2016 to 2018.	Orange: Only have transfers to institutions data which are wholly estimated relative to total public spending.	Red: No data	Orange: No data except regarding students exempt from fees - estimated in 2012.	Red: No data
Ghana	Yellow: Some estimation in 2009 and 2012 for enrolment data. Some estimation of institution counts in 2010.	Yellow: Data estimated for 2008, 2010-2012	Orange: Almost all data estimated prior to 2013 and only have transfers data for 2010 and earlier. Additional gaps for more recent data require additional estimation. Does not cover all short-cycle HEIs.	Red: No data	Orange: No data before 2011, estimated up to 2014. Does not include all short-cycle HEIs.	Orange: All grants data estimated. Loans data estimated for 2006 only.

COUNTRY	ENROLMENT AND INSTITUTIONS	TOTAL GOVERNMENT SPENDING	FINANCES OF PUBLIC HEIS	FINANCING (PRIVATE SECTOR)	STUDENT FEES IN PUBLIC SECTOR	STUDENT FINANCIAL AID
India	Orange: All data estimated with considerable difficulty, especially for data prior to 2011 when the All India Survey of Higher Education was launched. Estimation tries to correct for under-reporting of enrolments and difficult-to track data by institution type before 2011. Institution counts data slightly more reliable than enrolments data, especially from 2011 on.	Green	Orange: All data estimated from total public spending. Only covers transfers to institutions.	Red: No data	Red: No data	Orange: All loans amounts estimated before 2015 based on cumulative data. Grant amounts estimated in 2015. Grant recipients estimated before 2016 (except in 2006 and 2007) and loan recipients estimated before 2015.
Indonesia	Yellow: Only data without any estimation from 2012-2015 for enrolments. Other data required some estimation, notably for specialised universities. Institution counts data required estimation only in 2006, 2007 and 2018.	Orange: All data estimated	Orange: Almost all data estimated. Only generated for universities	Red: No data	Orange: All data estimated and for universities only. May miss data on tuition exemption beneficiaries.	Orange: Grant amounts data involves intermittent estimation. All recipients data estimated before 2016.
Iran	Orange: Institution counts data estimated for 2008, 2016 and 2018. Breakdowns by institution type estimated for 2018.	Orange: Data from UNESCO best available	Orange: Can only generate estimates from interspersed years based on budgets by institution type. Interpolating estimates in other years.	Red: No data	Red: No data	Red: No data
Kenya	Green	Green	Orange: Estimated for transfers to institutions before 2013. Only have from 2011 (with estimates) for total institutional spending. Only have partial data on fee revenues.	Orange: Data only from 2011 on. Estimated before 2014.	Orange: Calculated with considerable interpolation.	Yellow: Estimation for 2006 and 2007.
Malaysia	Yellow: Some estimation for private enrolments in 2006-2008 and 2013. Some estimation of private institution counts in 2008 and 2016.	Yellow: Estimated before 2012	Orange: Only have transfers to institutions data. Estimated in many years for short-cycle HEIs - does not include all such institutions.	Red: No data	Red: No data	Orange: Unable to gather high quality data on grants. All loan recipient figures estimated.

COUNTRY	ENROLMENT AND INSTITUTIONS	TOTAL GOVERNMENT SPENDING	FINANCES OF PUBLIC HEIS	FINANCING (PRIVATE SECTOR)	STUDENT FEES IN PUBLIC SECTOR	STUDENT FINANCIAL AID
Mexico	Orange: Institution counts and enrolments estimated for 2006 to 2010. We assigned institutions to institution types.	Yellow: Estimated in 2006.	Orange: Only have transfers to institutions data. Estimated. Hybrids and short-cycle basically estimate as receiving equal funds per student.	Red: No data	Red: No data on amounts, though fees are modest	Green: Not certain we are covering all state programs. Federal only.
Morocco	Yellow: Modest estimation of private enrolment data in all years before 2016, including public-private breakdown of secondary students from 2006-2008.	Green	Orange: Only have transfers to institutions data which are basically estimated relative to total public spending. Only estimate for universities.	Red: No data	Red: No data	Orange: All grants amounts estimated. Residence spending estimated in 2007 and 2008. Grant recipients estimated in 2007 and 2008.
Nigeria	Orange: Short-cycle institution counts data estimated in all years but 2014 and 2015. Most enrolment figures estimated for 2011 to 2018, but other data also may be conflicting between sources.	Orange: Appear to only have federal spending. Estimation in 2007, 2009-2010, 2012-2013, 2018.	Orange: Only appear to have federal spending. Estimation for a number of years for at least one type of HEI - in 2007, 2009-2010, 2012-2013, 2018.	Red: No data	Red: No data	Orange: All grants data estimated. Federal grants only.
Pakistan	Yellow: Some estimation of college enrolments data by public private for 2014 to 2018, and institution counts in 2018.	Yellow: Estimated in 2017	Orange: Only have transfers to institutions data which are basically estimated relative to total public spending.	Red: No data	Red: No data	Orange: All grants data estimated from multi-year data. Loans data estimated in many years between data announcements.
Peru	Yellow: All university enrolment data adjusted to account for differences in figures between sources.	Green	Yellow: Estimated student fee revenues before 2013. Estimated total institutional spending in 2007 and 2009 for hybrids.	Red: No data	Yellow: Estimated student fee revenues before 2013.	Orange: Grants data estimated before 2014. Loans data estimated from 2008-2010 for amounts and for all years before 2011 except 2008 for recipients.
Philippines	Yellow: Institution-type data estimated for 2006 to 2014 and for 2018. Some estimation of university counts in all years, though public universities only for 2015 to 2018.	Orange: All data estimated due to absence of local government data.	Orange: All data estimated due to absence of local government data.	Red: No data	Orange: All data estimated due to absence of local government data.	Yellow: Some estimation in 2010
Saudi Arabia	Green	Yellow: Data estimated after 2017	Orange: Only have transfers to universities.	Red: No data	Red: No data but assumed to be basically nil.	Orange: Grant recipients estimated based on basic program parameters. No data on amounts.

COUNTRY	ENROLMENT AND INSTITUTIONS	TOTAL GOVERNMENT SPENDING	FINANCES OF PUBLIC HEIS	FINANCING (PRIVATE SECTOR)	STUDENT FEES IN PUBLIC SECTOR	STUDENT FINANCIAL AID
South Africa	Yellow: Estimated private enrolments in 2006 and 2007. Institution counts for privates also estimated in early years.	Yellow: Estimated figure for 2010	Green	Red: No data	Green	Yellow: Recipients estimated for 2006-2008
Tanzania	Orange: Enrolments at least partially estimated in all years except 2016.	Orange: All data estimated after 2011.	Orange: Only have transfers to institutions data which are basically estimated relative to total public spending.	Red: No data	Red: No data	Yellow: Grants data estimated for 2006 to 2008 and 2011 to 2016.
Thailand	Green: No data estimated, but assigned categories by HESA.	Green	Yellow: Only have data on transfers to universities	Red: No data	Red: No data	Yellow: Figures estimated prior to 2010
Turkey	Green	Yellow: Estimation in 2007 and 2008	Yellow: Estimation in some data for 2006.	Orange: No data prior to 2012. Data estimated where available. No data on student fee revenues.	Yellow: Estimated exemption recipients in 2013 and 2014.	Green
Vietnam	Orange: Data estimated for university enrolments from 2006 to 2016. College counts data estimated in 2017. General impression is of low reliability of data, particularly for colleges in last years of time series when there are structural changes in the system or methodological changes.	Orange: All data estimated except from 2010-2014. Especially loose estimation after 2014.	Orange: Best data from 2010 to 2014. Estimation for data by institution type. Poorest data after 2014.	Orange: Best data from 2010 to 2014. Estimation for data by institution type. Poorest data after 2014.	Orange: Best data from 2010 to 2014. Estimation for data by institution type. Poorest data after 2014.	Orange: All loans data estimated based on cumulative figures rather than annual.