Part IV

13. Conclusion
Appendix

Yoshitoshi Tanaka
Mika Goto
Yuji Tou
Suzuka Yoshida

March 2020

This chapter should be cited as
Tanaka, Y., M. Goto, Y. Tou and S. Yoshida (2020), *Future Visions and Policy Recommendations for ASEAN Member States (AMSs) based on Estimation of Industrial Property Applications.* ERIA Research Project Report FY2018 no.23, Jakarta: ERIA

Part IV

13. Conclusion

Using WIPO and World Bank data, forecasting of the number of IP applications for each ASEAN country has been performed in terms of patents, design, trademarks, and the utility model. In practice, the number of industrial property applications in the future were estimated by multiple-regression analysis using historical data provided by public or government sources. The fluctuations seen in the historical number of IP applications extracted from the WIPO database may be the result of system revisions in each country or participation in international treaties, such as the PCT, the Hague, and the Madrid Protocol, etc.

In addition, Indonesia has periods without data on IP applications reported to WIPO. Thus, some years were substituted using values from linear interpolation, i.e. design (2010–2012).

Overall, the forecast shows that patent applications by residents will remain at low rates (10%–20%), although the total number of the four IP applications will increase in each AMS. As long as this forecast is unchanged, most of the patent rights holders will be with companies owned by non-residents. Therefore, the competitiveness that domestic companies usually have against foreign companies cannot be fostered in the future. This will lead to the situation where each AMS is exposed to highly significant risk.

Historically, industrial property applications by residents in most AMS have been lower compared to those by non-residents. However, the outlook for the number of industrial property applications of AMS clarified in this study shows steady growth in most AMS. The multi-regression analysis has also shown that the driving factors which contribute to increase the number of IP applications by residents differ from country to country. Therefore, the individual driving factors and necessary actions should be presented or proposed to each government. This study is significant since it enables discovery of the relevant driving factors to increase the resident applications for each country.

Having said that, the case of Viet Nam can be illustrated as an example according to the multi-regression analysis performed earlier. The findings by IP category are (1) 'high-technology exports (current US$)' should be increased to increase the resident patent applications. (2) In the area of education, 'percentage of graduates from tertiary education graduating from social sciences, business, and law programmes, both sexes (%)' and 'primary completion rate, both sexes (%)' should be increased to increase the resident design applications. (3) Similarly, 'percentage of graduates from tertiary education graduating from social sciences, business, and law programmes, both sexes (%)' should be increased to increase the resident trademark applications. (4) 'Labour force participation rate, total (% of total population aged 15+) (modelled ILO estimate)' should be increased to increase the resident utility model applications. The forecast shows that except for patent applications, all the other IP applications in Viet Nam by residents will increase in the future, while applications by non-residents will decrease. This indicates that these driving factors of design, trademarks, and the utility model have already made effective contributions to increasing the number of IP applications by residents in Viet Nam, but still the number of patent applications by residents is very low and should be improved in the future. To improve this situation, 'high-technology exports' in Viet Nam will become an effective driving factor for increasing the ratio by residents in the future. Keeping with this trend, 'high-technology export' can become a next targeted factor for Viet Nam to strengthen patents by residents. This cannot be achieved with only educational vehicles but should be promoted with political vehicles, such as new related measures and policies from local governments, including experts in the high-tech industry along with IP education.

In the next phase of this study, if possible, specific actions to increase the positive driving factors in each AMS can be discussed among experts nationwide not only from IP-related fields but also other fields, such as education, science and technology, politics, economics, environment, and energy. Then, ideally each AMS can share a common goal and some actions in the future so that all ASEAN Member States can pursue economic growth.

Appendix

Definition of the terms in the World Bank database

Term	***Definition***
Adjusted net enrolment rate, lower-secondary, both sexes (%)	Total number of students of the official lower-secondary school age group who are enrolled in lower-secondary education or higher, expressed as a percentage of the corresponding population. Divide the total number of students in the official lower-secondary school age range who are enrolled in lower-secondary education or higher by the population of the same age group and multiply the result by 100.
Adjusted net national income per capita (annual % growth)	Adjusted net national income is GNI minus consumption of fixed capital and natural resources depletion.
Adjusted net savings, excluding particulate emission damage (% of GNI)	Adjusted net savings are equal to net national savings plus education expenditure and minus energy depletion, mineral depletion, net forest depletion, and carbon dioxide. This series excludes particulate emissions damage.
Adjusted savings: consumption of fixed capital (% of GNI)	Consumption of fixed capital represents the replacement value of capital used up in the process of production.
Adjusted savings: education expenditure (% of GNI)	Education expenditure refers to the current operating expenditures in education, including wages and salaries and excluding capital investments in buildings and equipment.
Adjusted savings: energy depletion (% of GNI)	Energy depletion is the ratio of the value of the stock of energy resources to the remaining reserve lifetime (capped at 25 years). It covers coal, crude oil, and natural gas.

Adjusted savings: natural resources depletion (% of GNI)	Natural resource depletion is the sum of net forest depletion, energy depletion, and mineral depletion. Net forest depletion is the unit resource rents times the excess of roundwood harvest over natural growth. Energy depletion is the ratio of the value of the stock of energy resources to the remaining reserve lifetime (capped at 25 years). It covers coal, crude oil, and natural gas. Mineral depletion is the ratio of the value of the stock of mineral resources to the remaining reserve lifetime (capped at 25 years). It covers tin, gold, lead, zinc, iron, copper, nickel, silver, bauxite, and phosphate.
Agricultural methane emissions (thousand metric tons of CO_2 equivalent)	Agricultural methane emissions are emissions from animals, animal waste, rice production, agricultural waste burning (nonenergy, on-site), and savannah burning.
Agriculture, value added (annual % growth)	Annual growth rate for agricultural value added based on constant local currency. Aggregates are based on constant 2010 US dollars. Agriculture corresponds to ISIC divisions 1–5 and includes forestry, hunting, and fishing, as well as the cultivation of crops and livestock production. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for the depreciation of fabricated assets or the depletion and degradation of natural resources. The origin of value added is determined by the International Standard Industrial Classification (ISIC), revision 3.
Agriculture, value added (current US$)	Agriculture corresponds to ISIC divisions 1–5 and includes forestry, hunting, and fishing, as well as the cultivation of crops and livestock production. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for the depreciation of fabricated assets or the depletion and

	degradation of natural resources. The origin of value added is determined by the International Standard Industrial Classification (ISIC), revision 3. Data are in current US dollars.
All education staff compensation, tertiary (% of total expenditure in tertiary public institutions)	All staff (teacher and non-teachers) compensation is expressed as a percentage of direct expenditure in the public educational institutions (instructional and non-instructional) of the specified level of education. Financial aid to students and other transfers are excluded from direct expenditure. Staff compensation includes salaries, contributions by employers for staff retirement programs, and other allowances and benefits.
Alternative and nuclear energy (% of total energy use)	Clean energy is noncarbohydrate energy that does not produce carbon dioxide when generated. It includes hydropower and nuclear, geothermal, and solar power, among others.
Aquaculture production (metric tons)	Aquaculture is understood to mean the farming of aquatic organisms, including fish, molluscs, crustaceans, and aquatic plants. Aquaculture production specifically refers to output from aquaculture activities, which are designated for final harvest for consumption.
Armed forces personnel (% of total labour force)	Armed forces personnel are active duty military personnel, including paramilitary forces if the training, organisation, equipment, and control suggest they may be used to support or replace regular military forces. Labour force comprises all people who meet the International Labour Organization's definition of the economically active population.
Armed forces personnel, total	Armed forces personnel are active duty military personnel, including paramilitary forces if the training, organisation, equipment, and control suggest they may be used to support or replace regular military forces.

Bank capital to assets ratio (%)	Bank capital to assets is the ratio of bank capital and reserves to total assets. Capital and reserves include funds contributed by owners, retained earnings, general and special reserves, provisions, and valuation adjustments. Capital includes tier 1 capital (paid-up shares and common stock), which is a common feature in all countries' banking systems, and total regulatory capital, which includes several specified types of subordinated debt instruments that need not be repaid if the funds are required to maintain minimum capital levels (these comprise tier 2 and tier 3 capital). Total assets include all nonfinancial and financial assets.
Birth rate, crude (per 1,000 people)	Th crude birth rate indicates the number of live births occurring during the year, per 1,000 population estimated at midyear. Subtracting the crude death rate from the crude birth rate provides the rate of natural increase, which is equal to the rate of population change in the absence of migration.
Capital expenditure as % of total expenditure in tertiary public institutions (%)	Capital expenditure expressed as a percentage of direct expenditure in public educational institutions (instructional and non-instructional) of the specified level of education. Financial aid to students and other transfers are excluded from direct expenditure. Capital expenditure is for education goods or assets that yield benefits for a period of more than one year. It includes expenditure for construction, renovation and major repairs of buildings and the purchase of heavy equipment or vehicles. Divide capital expenditure in public institutions of a given level of education (ex. primary, secondary, or all levels combined) by total expenditure (current and capital) in public institutions of the same level of education, and multiply by 100. For more information, consult the UNESCO Institute of Statistics website: http://www.uis.unesco.org/Education/

Charges for the use of intellectual property, payments (BoP, current US$)	Charges for the use of intellectual property are payments and receipts between residents and non-residents for the authorised use of proprietary rights (such as patents, trademarks, copyrights, industrial processes and designs including trade secrets, and franchises) and for the use, through licensing agreements, of produced originals or prototypes (such as copyrights on books and manuscripts, computer software, cinematographic works, and sound recordings) and related rights (such as for live performances and television, cable, or satellite broadcast). Data are in current US dollars.
Charges for the use of intellectual property, receipts (BoP, current US$)	Charges for the use of intellectual property are payments and receipts between residents and non-residents for the authorised use of proprietary rights (such as patents, trademarks, copyrights, industrial processes, designs including trade secrets, and franchises) and for the use, through licensing agreements, of produced originals or prototypes (such as copyrights on books and manuscripts, computer software, cinematographic works, and sound recordings) and related rights (such as for live performances and television, cable, or satellite broadcast). Data are in current US dollars.
Chemicals (% of value added in manufacturing)	Value added in manufacturing is the sum of gross output less the value of intermediate inputs used in production for industries classified in ISIC major division D. Chemicals correspond to ISIC division 24.
CO_2 emissions (kg per PPP US$ of GDP)	Carbon dioxide emissions are those stemming from the burning of fossil fuels and the manufacture of cement. They include carbon dioxide produced during consumption of solid, liquid, and gas fuels and gas flaring.

CO_2 emissions from electricity and heat production, total (% of total fuel combustion)	CO_2 emissions from electricity and heat production are the sum of three International Energy Agency categories of CO_2 emissions: (1) Main Activity Producer Electricity and Heat, which contains the sum of emissions from main activity producer electricity generation, combined heat and power generation and heat plants. Main activity producers (formerly known as public utilities) are defined as those undertakings whose primary activity is to supply the public. They may be publicly or privately owned. This corresponds to IPCC Source/Sink Category 1 A 1 a. For the CO_2 emissions from fuel combustion (summary) file, emissions from own on-site use of fuel in power plants (EPOWERPLT) are also included. (2) Unallocated Autoproducers, which contains the emissions from the generation of electricity and/or heat by autoproducers. Autoproducers are defined as undertakings that generate electricity and/or heat, wholly or partly for their own use as an activity which supports their primary activity. They may be privately or publicly owned. In the 1996 IPCC Guidelines, these emissions would normally be distributed between industry, transport and 'other' sectors. (3) Other Energy Industries contains emissions from fuel combusted in petroleum refineries, for the manufacture of solid fuels, coal mining, oil and gas extraction and other energy-producing industries. This corresponds to the IPCC Source/Sink Categories 1 A 1 b and 1 A 1 c. According to the 1996 IPCC Guidelines, emissions from coke inputs to blast furnaces can either be counted here or in the Industrial Processes source/sink category. Within detailed sectoral calculations, certain non-energy processes can be distinguished. In the reduction of iron in a blast furnace through the combustion of coke, the primary purpose of the coke oxidation is to produce pig iron and the emissions can be considered as an industrial process. Care must be taken not to

	double count these emissions in both Energy and Industrial Processes. In the IEA estimations, these emissions have been included in this category.
CO_2 emissions from manufacturing industries and construction (% of total fuel combustion)	CO_2 emissions from manufacturing industries and construction contains the emissions from combustion of fuels in industry. The IPCC Source/Sink Category 1 A 2 includes these emissions. However, in the 1996 IPCC Guidelines, the IPCC category also includes emissions from industry autoproducers that generate electricity and/or heat. The IEA data are not collected in a way that allows the energy consumption to be split by specific end-use and therefore, autoproducers are shown as a separate item (Unallocated Autoproducers). Manufacturing industries and construction also includes emissions from coke inputs into blast furnaces, which may be reported either in the transformation sector, the industry sector or the separate IPCC Source/Sink Category 2, Industrial Processes.
Communications, computer, etc. (% of service exports, BoP)	Communications, computer, information, and other services cover international telecommunications; computer data; news-related service transactions between residents and non-residents; construction services; royalties and license fees; miscellaneous business, professional, and technical services; personal, cultural, and recreational services; manufacturing services on physical inputs owned by others; and maintenance and repair services and government services not included elsewhere.
Compensation of employees (% of expense)	Compensation of employees consists of all payments in cash, as well as in kind (such as food and housing), to employees in return for services rendered, and government contributions to social insurance schemes such as social security and pensions that provide benefits to employees.

Computer, communications and other services (% of commercial service exports)	Computer, communications and other services (% of commercial service exports) include such activities as international telecommunications, and postal and courier services; computer data; news-related service transactions between residents and non-residents; construction services; royalties and license fees; miscellaneous business, professional, and technical services; and personal, cultural, and recreational services.
Computer, communications and other services (% of commercial service imports)	Computer, communications and other services (% of commercial service imports) include such activities as international telecommunications, and postal and courier services; computer data; news-related service transactions between residents and non-residents; construction services; royalties and license fees; miscellaneous business, professional, and technical services; and personal, cultural, and recreational services.
Consumer price index (2010 = 100)	Consumer price index reflects changes in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. The Laspeyres formula is generally used. Data are period averages.
Contributing family workers, total (% of total employment)	Contributing family workers are those workers who hold 'self-employment jobs' as own-account workers in a market-oriented establishment operated by a related person living in the same household.
Cost of business start-up procedures (% of GNI per capita)	Cost to register a business is normalised by presenting it as a percentage of gross national income (GNI) per capita.

Cost to import (US$ per container)	Cost measures the fees levied on a 20-foot container in US dollars. All the fees associated with completing the procedures to export or import the goods are included. These include costs for documents, administrative fees for customs clearance and technical control, customs broker fees, terminal handling charges, and inland transport. The cost measure does not include tariffs or trade taxes. Only official costs are recorded.
Cumulative drop-out rate to the last grade of lower-secondary general education, both sexes (%)	Proportion of pupils from a cohort enrolled in a given grade at a given school year who are no longer enrolled in the following school year. Cumulative dropout rate in lower-secondary general education is calculated by subtracting the survival rate from 100 at a given grade.
Current education expenditure, tertiary (% of total expenditure in tertiary public institutions)	Current expenditure is expressed as a percentage of direct expenditure in public educational institutions (instructional and non-instructional) of the specified level of education. Financial aid to students and other transfers are excluded from direct expenditure. Current expenditure is consumed within the current year and would have to be renewed if needed in the following year. It includes staff compensation and current expenditure other than for staff compensation (ex. on teaching materials, ancillary services and administration).
Current expenditure as % of total expenditure in tertiary public institutions (%)	Current expenditure expressed as a percentage of direct expenditure in public educational institutions (instructional and non-instructional) of the specified level of education. Financial aid to students and other transfers are excluded from direct expenditure. Current expenditure is consumed within the current year and would have to be renewed if needed in the following year. It includes staff compensation and current expenditure other than for staff compensation (ex. on teaching materials, ancillary services and administration). Divide all current expenditure in public institutions of a given level of

	education (ex. primary, secondary, or all levels combined) by total expenditure (current and capital) in public institutions of the same level of education, and multiply by 100. For more information, consult the UNESCO Institute of Statistics website: http://www.uis.unesco.org/Education/
Current expenditure other than staff compensation as % of total expenditure in tertiary public institutions (%)	Current expenditure other than for staff compensation expressed as a percentage of direct expenditure in public educational institutions (instructional and non-instructional) of the specified level of education. Financial aid to students and other transfers are excluded from direct expenditure. Current expenditure other than for staff compensation includes expenditure on school books and teaching materials, ancillary services (ex. food, transport), and administration and other support activities. Divide current expenditure other than staff compensation in public institutions of a given level of education (ex. primary, secondary, or all levels combined) by total expenditure (current and capital) in public institutions of the same level of education, and multiply by 100. For more information, consult the UNESCO Institute of Statistics website: http://www.uis.unesco.org/Education/
Current health expenditure (% of GDP)	Level of current health expenditure expressed as a percentage of GDP. Estimates of current health expenditures include healthcare goods and services consumed during each year. This indicator does not include capital health expenditures such as buildings, machinery, IT, and stocks of vaccines for emergency or outbreaks.

Customs and other import duties (% of tax revenue)	Customs and other import duties are all levies collected on goods that are entering the country or services delivered by non-residents to residents. They include levies imposed for revenue or protection purposes and determined on a specific or ad valorem basis as long as they are restricted to imported goods or services.
Effective transition rate from primary to lower-secondary general education, both sexes (%)	Number of students admitted to the first grade of a higher level of education in a given year, expressed as a percentage of the number of students enrolled in the final grade of the lower level of education in the previous year. Divide the number of new entrants in the first grade of the specified higher cycle or level of education by the number of pupils who were enrolled in the final grade of the preceding cycle or level of education in the previous school year, and multiply by 100. High transition rates indicate a high level of access or transition from one level of education to the next. They also reflect the intake capacity of the next level of education. Inversely, low transition rates can signal problems in the bridging between two cycles or levels of education, due to either deficiencies in the examination system, or inadequate admission capacity in the higher cycle or level of education, or both. This indicator can be distorted by incorrect distinction between new entrants and repeaters, especially in the first grade of the specified higher level of education. Students who interrupted their studies for one or more years after having completed the lower level of education, together with the migrant students, could also affect the quality of this indicator.
Electric power consumption (kWh per capita)	Electric power consumption measures the production of power plants and combined heat and power plants less transmission, distribution, and transformation losses and own use by heat and power plants.

Employers, total (% of total employment)	Employers are those workers who, working on their own account or with one or a few partners, hold the type of jobs defined as a 'self-employment jobs', i.e. jobs where the remuneration is directly dependent upon the profits derived from the goods and services produced, and, in this capacity, have engaged, on a continuous basis, one or more persons to work for them as employee(s).
Employment in industry (% of total employment)	Employment is defined as persons of working age who were engaged in any activity to produce goods or provide services for pay or profit, whether at work during the reference period or not at work due to temporary absence from a job, or to working-time arrangement. The industry sector consists of mining and quarrying, manufacturing, construction, and public utilities (electricity, gas, and water), in accordance with divisions 2-5 (ISIC 2) or categories C-F (ISIC 3) or categories B-F (ISIC 4).
Employment in industry (% of total employment) (modelled ILO estimate)	Employment is defined as persons of working age who were engaged in any activity to produce goods or provide services for pay or profit, whether at work during the reference period or not at work due to temporary absence from a job, or to working-time arrangement. The industry sector consists of mining and quarrying, manufacturing, construction, and public utilities (electricity, gas, and water), in accordance with divisions 2-5 (ISIC 2) or categories C-F (ISIC 3) or categories B-F (ISIC 4).

Employment in services (% of total employment)	Employment is defined as persons of working age who were engaged in any activity to produce goods or provide services for pay or profit, whether at work during the reference period or not at work due to temporary absence from a job, or to working-time arrangement. The services sector consists of wholesale and retail trade and restaurants and hotels; transport, storage, and communications; financing, insurance, real estate, and business services; and community, social, and personal services, in accordance with divisions 6-9 (ISIC 2) or categories G-Q (ISIC 3) or categories G-U (ISIC 4).
Employment-to-population ratio, 15+, total (%) (modelled ILO estimate)	The employment-to-population ratio is the proportion of a country's population that is employed. Employment is defined as persons of working age who, during a short reference period, were engaged in any activity to produce goods or provide services for pay or profit, whether at work during the reference period (i.e. who worked in a job for at least one hour) or not at work due to temporary absence from a job, or to working-time arrangements. Those aged 15 years and older are generally considered the working-age population.
Enrolment in early childhood education, both sexes (number)	Total number of students enrolled in public and private early childhood education institutions (ISCED 0) regardless of age. Within ISCED 0, early childhood educational development programmes are targeted at children aged 0 to 2 years; and pre-primary education programmes are targeted at children aged 3 years until the age to start ISCED 1.
Enrolment in pre-primary education, both sexes (number)	Total number of students enrolled in public and private pre-primary education institutions (ISCED 0.2) regardless of age. Within ISCED 0, early childhood educational development programmes are targeted at children aged 0 to 2 years; and pre-primary education programmes are targeted at children aged 3 years until the age to start ISCED 1.

Enrolment in primary education, both sexes (number)	Total number of students enrolled in public and private primary education institutions regardless of age.
Enrolment in secondary education, both sexes (number)	Total number of students enrolled at public and private secondary education institutions regardless of age.
Enrolment in tertiary education per 100,000 inhabitants, both sexes	Number of students enrolled in tertiary education in a given academic year per 100,000 inhabitants. It is calculated by dividing the total number of students enrolled in tertiary education in a given academic year by the country's population and multiplying the result by 100,000. This indicator shows the general level of participation in tertiary education by indicating the proportion (or density) of students within a country's population.
Enrolment in upper-secondary education, both sexes (number)	Total number of students enrolled in public and private upper-secondary education institutions regardless of age.
Expenditure on education as % of total government expenditure (%)	Total general (local, regional and central) government expenditure on education (current, capital, and transfers), expressed as a percentage of total general government expenditure on all sectors (including health, education, social services, etc.). It includes expenditure funded by transfers from international sources to the government. Public education expenditure includes spending by local/municipal, regional and national governments (excluding household contributions) on educational institutions (both public and private), education administration, and subsidies for private entities (students/households and other private entities). In some instances, data on total public expenditure on education refers only to the ministry of education and can exclude other ministries that spend a part of their budget on educational

	activities. The indicator is calculated by dividing total public expenditure on education incurred by all government agencies/departments by the total government expenditure and multiplying by 100. For more information, consult the UNESCO Institute of Statistics website: http://www.uis.unesco.org/Education/
Expenditure on tertiary education as % of government expenditure on education (%)	Expenditure on education by level of education, expressed as a percentage of total general government expenditure on education. Divide government expenditure on a given level of education (ex. primary, secondary) by total government expenditure on education (all levels combined), and multiply by 100. A high percentage of government expenditure on education spent on a given level denotes a high priority given to that level compared to others. When interpreting this indicator, one should take into account enrolment at that level, and the relative costs per student between different levels of education. For more information, consult the UNESCO Institute of Statistics website: http://www.uis.unesco.org/Education/
Expenditure on tertiary education (% of government expenditure on education)	Expenditure on tertiary education is expressed as a percentage of total general government expenditure on education. General government usually refers to local, regional and central governments.

Exports of goods and services (% of GDP)	Exports of goods and services represent the value of all goods and other market services provided to the rest of the world. They include the value of merchandise, freight, insurance, transport, travel, royalties, license fees, and other services, such as communication, construction, financial, information, business, personal, and government services. They exclude compensation of employees and investment income (formerly called factor services) and transfer payments.
Final consumption expenditure, etc. (% of GDP)	Final consumption expenditure (formerly total consumption) is the sum of household final consumption expenditure (private consumption) and general government final consumption expenditure (general government consumption). This estimate includes any statistical discrepancy in the use of resources relative to the supply of resources.
Food exports (% of merchandise exports)	Food comprises the commodities in SITC sections 0 (food and live animals), 1 (beverages and tobacco), and 4 (animal and vegetable oils and fats) and SITC division 22 (oil seeds, oil nuts, and oil kernels).
Food imports (% of merchandise imports)	Food comprises the commodities in SITC sections 0 (food and live animals), 1 (beverages and tobacco), and 4 (animal and vegetable oils and fats) and SITC division 22 (oil seeds, oil nuts, and oil kernels).
Foreign direct investment, net inflows (% of GDP)	Foreign direct investment is the net inflows of investment to acquire a lasting management interest (10% or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. This series shows net inflows (new investment inflows less disinvestment)

	in the reporting economy from foreign investors, and is divided by GDP.
Foreign direct investment, net outflows (% of GDP)	Foreign direct investment refers to direct investment equity flows in an economy. It is the sum of equity capital, reinvestment of earnings, and other capital. Direct investment is a category of cross-border investment associated with a resident in one economy having control or a significant degree of influence on the management of an enterprise that is resident in another economy. Ownership of 10% or more of the ordinary shares of voting stock is the criterion for determining the existence of a direct investment relationship. This series shows net outflows of investment from the reporting economy to the rest of the world, and is divided by GDP.
GDP (current US$)	GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current US dollars. Dollar figures for GDP are converted from domestic currencies using single year official exchange rates. For a few countries where the official exchange rate does not reflect the rate effectively applied to actual foreign exchange transactions, an alternative conversion factor is used.

GDP per capita (constant 2005 US$)	GDP per capita is gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in constant 2005 US dollars.
GDP per capita growth (annual %)	Annual percentage growth rate of GDP per capita based on constant local currency. Aggregates are based on constant 2010 US dollars. GDP per capita is gross domestic product divided by midyear population. GDP at the purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.
GDP per person employed (constant 2011 PPP US$)	GDP per person employed is gross domestic product (GDP) divided by total employment in the economy. Purchasing power parity (PPP) GDP is GDP converted to 2011 constant international dollars using PPP rates. An international dollar has the same purchasing power over GDP that a US dollar has in the United States.
General government final consumption expenditure (% of GDP)	General government final consumption expenditure (formerly general government consumption) includes all government current expenditures for purchases of goods and services (including compensation of employees). It also includes most expenditures on national defence and security, but excludes government military expenditures that are part of government capital formation.

GNI per capita growth (annual %)	Annual percentage growth rate of GNI per capita based on constant local currency. Aggregates are based on constant 2010 US dollars. GNI per capita is gross national income divided by midyear population. GNI (formerly GNP) is the sum of value added by all resident producers plus any product taxes (less subsidies) not included in the valuation of output plus net receipts of primary income (compensation of employees and property income) from abroad.
Government expenditure on education as % of GDP (%)	Total general (local, regional and central) government expenditure on education (current, capital, and transfers), expressed as a percentage of GDP. It includes expenditure funded by transfers from international sources to government. Divide total government expenditure for a given level of education (ex. primary, secondary, or all levels combined) by the GDP, and multiply by 100. A higher percentage of GDP spent on education shows a higher government priority for education, but also a higher capacity of the government to raise revenues for public spending, in relation to the size of the country's economy. When interpreting this indicator, however, one should keep in mind in some countries, the private sector and/or households may fund a higher proportion of total funding for education, thus making government expenditure appear lower than in other countries. For more information, consult the UNESCO Institute of Statistics website: http://www.uis.unesco.org/Education/
Government expenditure on education, total (% of GDP)	General government expenditure on education (current, capital, and transfers) is expressed as a percentage of GDP. It includes expenditure funded by transfers from international sources to government. General government usually refers to local, regional and central governments.

Government expenditure per student, tertiary (% of GDP per capita)	Government expenditure per student is the average general government expenditure (current, capital, and transfers) per student in the given level of education, expressed as a percentage of GDP per capita.
Government expenditure per tertiary student (US$)	Average total (current, capital, and transfers) general government expenditure per student in the given level of education, expressed in nominal US$ at market exchange rates. Divide total government expenditure (in US$) for a given level of education (ex. primary, secondary) by total enrolment in that same level. This indicator is useful to compare average spending on one student between levels of education, over time, or between countries. Constant US$ allows comparing absolute values using a common currency, however nominal values do not take into account the effect of inflation. This indicator should not be considered a unit cost, since it only includes what the government spends, and not total spending per student (including household contributions). Since it is a simple division of total government expenditure by the number of students at a given level, whether they attend public or private institutions, in countries where private provision and/or funding of education is higher the average amount per student will appear lower. For more information, consult the UNESCO Institute of Statistics website: http://www.uis.unesco.org/Education/
Government expenditure per tertiary student as % of GDP per capita (%)	Average total (current, capital, and transfers) general government expenditure per student in the given level of education, expressed as a percentage of GDP per capita. Divide total government expenditure for a given level of education (ex. primary, secondary) by total enrolment in that same level, divide again by GDP per capita, and multiply by 100. For more

	information, consult the UNESCO Institute of Statistics website: http://www.uis.unesco.org/Education/
Graduates from ISCED 5 programmes in tertiary education, both sexes (number)	Total number of students successfully completing short-cycle tertiary education programmes (ISCED 5) in public and private tertiary education institutions during the reference academic year.
Graduates from tertiary education, both sexes (number)	Total number of students successfully completing tertiary education programmes (ISCED 5 to 8) in public and private tertiary education institutions during the reference academic year.
Gross capital formation (% of GDP)	Gross capital formation (formerly gross domestic investment) consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. Fixed assets include land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. Inventories are stocks of goods held by firms to meet temporary or unexpected fluctuations in production or sales, and 'work in progress.' According to the 1993 SNA, net acquisitions of valuables are also considered capital formation.
Gross domestic savings (% of GDP)	Gross domestic savings are calculated as GDP less final consumption expenditure (total consumption).

Gross enrolment ratio, tertiary, both sexes (%)	Total enrolment in tertiary education (ISCED 5 to 8), regardless of age, expressed as a percentage of the total population of the five-year age group following on from secondary school leaving.
Gross national expenditure (% of GDP)	Gross national expenditure (formerly domestic absorption) is the sum of household final consumption expenditure (formerly private consumption), general government final consumption expenditure (formerly general government consumption), and gross capital formation (formerly gross domestic investment).
Gross national expenditure (current US$)	Gross national expenditure (formerly domestic absorption) is the sum of household final consumption expenditure (formerly private consumption), general government final consumption expenditure (formerly general government consumption), and gross capital formation (formerly gross domestic investment). Data are in current US dollars.
High-technology exports (% of manufactured exports)	High-technology exports are products with high R&D intensity, such as in aerospace, computers, pharmaceuticals, scientific instruments, and electrical machinery.
High-technology exports (current US$)	High-technology exports are products with high R&D intensity, such as in aerospace, computers, pharmaceuticals, scientific instruments, and electrical machinery. Data are in current US dollars.
Household final consumption expenditure (annual % growth)	Annual percentage growth of household final consumption expenditure based on constant local currency. Aggregates are based on constant 2010 US dollars. Household final consumption expenditure (formerly private consumption) is the market value of all goods and services, including durable products (such as cars, washing machines, and home computers), purchased by households. It excludes purchases of dwellings but includes imputed rent for owner-occupied

	dwellings. It also includes payments and fees to governments to obtain permits and licenses. Here, household consumption expenditure includes the expenditures of non-profit institutions serving households, even when reported separately by the country.
Household final consumption expenditure (current US$)	Household final consumption expenditure (formerly private consumption) is the market value of all goods and services, including durable products (such as cars, washing machines, and home computers), purchased by households. It excludes purchases of dwellings but includes imputed rent for owner-occupied dwellings. It also includes payments and fees to governments to obtain permits and licenses. Here, household consumption expenditure includes the expenditures of non-profit institutions serving households, even when reported separately by the country. Data are in current US dollars.
ICT goods exports (% of total goods exports)	Information and communication technology goods exports include computers and peripheral equipment, communication equipment, consumer electronic equipment, electronic components, and other information and technology goods (miscellaneous).
ICT goods imports (% total goods imports)	Information and communication technology goods imports include computers and peripheral equipment, communication equipment, consumer electronic equipment, electronic components, and other information and technology goods (miscellaneous).
ICT service exports (% of service exports, BoP)	Information and communication technology service exports include computer and communications services (telecommunications and postal and courier services) and

	information services (computer data and news-related service transactions).
ICT service exports (BoP, current US$)	Information and communication technology service exports include computer and communications services (telecommunications and postal and courier services) and information services (computer data and news-related service transactions). Data are in current US dollars.
Imports of goods and services (% of GDP)	Imports of goods and services represent the value of all goods and other market services received from the rest of the world. They include the value of merchandise, freight, insurance, transport, travel, royalties, license fees, and other services, such as communication, construction, financial, information, business, personal, and government services. They exclude compensation of employees and investment income (formerly called factor services) and transfer payments.
Industry, value added (% of GDP)	Industry corresponds to ISIC divisions 10-45 and includes manufacturing (ISIC divisions 15–37). It comprises value added in mining, manufacturing (also reported as a separate subgroup), construction, electricity, water, and gas. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. The origin of value added is determined by the International Standard Industrial Classification (ISIC), revision 3. Note: For VAB countries, gross value added at factor cost is used as the denominator.

Industry, value added (current US$)	Industry corresponds to ISIC divisions 10–45 and includes manufacturing (ISIC divisions 15–37). It comprises value added in mining, manufacturing (also reported as a separate subgroup), construction, electricity, water, and gas. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. The origin of value added is determined by the International Standard Industrial Classification (ISIC), revision 3. Data are in current US dollars.
Internet users (per 100 people)	Internet users are individuals who have used the Internet (from any location) in the last 12 months. Internet can be used via a computer, mobile phone, personal digital assistant, games machine, digital TV, etc.
Labour force participation rate, total (% of total population ages 15+) (modelled ILO estimate)	Labour force participation rate is the proportion of the population ages 15 and older that is economically active: all people who supply labour for the production of goods and services during a specified period.
Labour force, total	Labour force comprises people ages 15 and older who supply labour for the production of goods and services during a specified period. It includes people who are currently employed and people who are unemployed but seeking work as well as first-time jobseekers. Not everyone who works is included, however. Unpaid workers, family workers, and students are often omitted, and some countries do not count members of the armed forces. Labour force size tends to vary during the year as seasonal workers enter and leave.

Listed domestic companies, total	Listed domestic companies, including foreign companies which are exclusively listed, are those which have shares listed on an exchange at the end of the year. Investment funds, unit trusts, and companies whose only business goal is to hold shares of other listed companies, such as holding companies and investment companies, regardless of their legal status, are excluded. A company with several classes of shares is counted once. Only companies admitted to listing on the exchange are included.
Machinery and transport equipment (% of value added in manufacturing)	Value added in manufacturing is the sum of gross output less the value of intermediate inputs used in production for industries classified in ISIC major division D. Machinery and transport equipment correspond to ISIC divisions 29, 30, 32, 34, and 35.
Manufactures exports (% of merchandise exports)	Manufactures comprise commodities in SITC sections 5 (chemicals), 6 (basic manufactures), 7 (machinery and transport equipment), and 8 (miscellaneous manufactured goods), excluding division 68 (non-ferrous metals).
Manufactures imports (% of merchandise imports)	Manufactures comprise the commodities in SITC sections 5 (chemicals), 6 (basic manufactures), 7 (machinery and transport equipment), and 8 (miscellaneous manufactured goods), excluding division 68 (nonferrous metals).
Manufacturing, value added (% of GDP)	Manufacturing refers to industries belonging to ISIC divisions 15–37. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. The origin of value added is determined by the International Standard Industrial Classification (ISIC), revision 3.

	Note: For VAB countries, gross value added at factor cost is used as the denominator.
Manufacturing, value added (current US$)	Manufacturing refers to industries belonging to ISIC divisions 15–37. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. The origin of value added is determined by the International Standard Industrial Classification (ISIC), revision 3. Data are in current US dollars.
Market capitalisation of listed domestic companies (current US$)	Market capitalisation (also known as market value) is the share price times the number of shares outstanding (including their several classes) for listed domestic companies. Investment funds, unit trusts, and companies whose only business goal is to hold shares of other listed companies are excluded. Data are end of year values converted to US dollars using the corresponding year-end foreign exchange rates.
Merchandise exports (current US$)	Merchandise exports show the f.o.b. value of goods provided to the rest of the world valued in current US dollars.
Merchandise trade (% of GDP)	Merchandise trade as a share of GDP is the sum of merchandise exports and imports divided by the value of GDP, all in current US dollars.

Military expenditure (% of GDP)	Military expenditure data from the Stockholm International Peace Research Institute (SIPRI)are derived from the North Atlantic Treaty Organization (NATO) definition, which includes all current and capital expenditures on the armed forces, including peacekeeping forces; defence ministries and other government agencies engaged in defence projects; paramilitary forces, if these are judged to be trained and equipped for military operations; and military space activities. Such expenditures include military and civil personnel, including retirement pensions of military personnel and social services for personnel; operation and maintenance; procurement; military research and development; and military aid (in the military expenditures of the donor country). Excluded are civil defence and current expenditures for previous military activities, such as for veterans' benefits, demobilisation, conversion, and destruction of weapons. This definition cannot be applied for all countries, however, since that would require much more detailed information than is available about what is included in military budgets and off-budget military expenditure items. (For example, military budgets might or might not cover civil defence, reserves and auxiliary forces, police and paramilitary forces, dual-purpose forces such as military and civilian police, military grants in kind, pensions for military personnel, and social security contributions paid by one part of government to another.)
Mineral rents (% of GDP)	Mineral rents are the difference between the value of production for a stock of minerals at world prices and their total costs of production. Minerals included in the calculation are tin, gold, lead, zinc, iron, copper, nickel, silver, bauxite, and phosphate.

Mobile cellular subscriptions	Mobile cellular telephone subscriptions are subscriptions to a public mobile telephone service that provide access to the PSTN using cellular technology. The indicator includes (and is split into) the number of postpaid subscriptions, and the number of active prepaid accounts (i.e. that have been used during the last three months). The indicator applies to all mobile cellular subscriptions that offer voice communications. It excludes subscriptions via data cards or USB modems, subscriptions to public mobile data services, private trunked mobile radio, telepoint, radio paging and telemetry services.
Natural gas rents (% of GDP)	Natural gas rents are the difference between the value of natural gas production at world prices and total costs of production.
Net flow of internationally mobile students (inbound - outbound), both sexes (number)	Number of tertiary students from abroad (inbound students) studying in a given country minus the number of students at the same level from a given country studying abroad (outbound students).
Net foreign assets (current LCU)	Net foreign assets are the sum of foreign assets held by monetary authorities and deposit money banks, less their foreign liabilities. Data are in current local currency.
Net ODA received per capita (current US$)	Net official development assistance (ODA) per capita consists of disbursements of loans made on concessional terms (net of repayments of principal) and grants by official agencies of the members of the Development Assistance Committee (DAC), by multilateral institutions, and by non-DAC countries to promote economic development and welfare in countries and territories in the DAC list of ODA recipients; and is calculated by dividing net ODA received by the midyear population estimate. It

	includes loans with a grant element of at least 25% (calculated at a rate of discount of 10%).
Net ODA and official aid received (current US$)	Net official development assistance (ODA) consists of disbursements of loans made on concessional terms (net of repayments of principal) and grants by official agencies of the members of the Development Assistance Committee (DAC), by multilateral institutions, and by non-DAC countries to promote economic development and welfare in countries and territories in the DAC list of ODA recipients. It includes loans with a grant element of at least 25% (calculated at a rate of discount of 10%). Net official aid refers to aid flows (net of repayments) from official donors to countries and territories in part II of the DAC list of recipients: more advanced countries of Central and Eastern Europe, the countries of the former Soviet Union, and certain advanced developing countries and territories. Official aid is provided under terms and conditions similar to those for ODA. Part II of the DAC List was abolished in 2005. The collection of data on official aid and other resource flows to Part II countries ended with 2004 data. Data are in current US dollars.
Net ODA received (current US$)	Net official development assistance (ODA) consists of disbursements of loans made on concessional terms (net of repayments of principal) and grants by official agencies of the members of the Development Assistance Committee (DAC), by multilateral institutions, and by non-DAC countries to promote economic development and welfare in countries and territories in the DAC list of ODA recipients. It includes loans with a grant

	element of at least 25% (calculated at a rate of discount of 10%). Data are in current US dollars.
New businesses registered (number)	New businesses registered are the number of new limited liability corporations registered in the calendar year.
Oil rents (% of GDP)	Oil rents are the difference between the value of crude oil production at world prices and total costs of production.
Ores and metals exports (% of merchandise exports)	Ores and metals comprise the commodities in SITC sections 27 (crude fertiliser, minerals nes); 28 (metalliferous ores, scrap); and 68 (non-ferrous metals).
Ores and metals imports (% of merchandise imports)	Ores and metals comprise commodities in SITC sections 27 (crude fertiliser, minerals nes); 28 (metalliferous ores, scrap); and 68 (non-ferrous metals).
Percentage of enrolment in tertiary education in private institutions (%)	Total number of students in tertiary education enrolled in institutions that are not operated by a public authority but controlled and managed, whether for profit or not, by a private body (e.g. non-governmental organisation, religious body, special interest group, foundation or business enterprise), expressed as a percentage of total number of students enrolled in tertiary education.
Percentage of graduates from agriculture programmes in tertiary education who are female (%)	Number of female graduates in agriculture expressed as a percentage of the total number of tertiary graduates in agriculture.

Percentage of graduates from engineering, manufacturing and construction programmes in tertiary education who are female (%)	Number of female graduates in engineering, manufacturing and construction expressed as a percentage of the total number of tertiary graduates in engineering, manufacturing, and construction.
Percentage of graduates from science and technology programmes in tertiary education who are female (%)	Number of female graduates in science and technology programmes expressed as a percentage of the total number of tertiary graduates in science and technology programmes.
Percentage of graduates from science programmes in tertiary education who are female (%)	Number of female graduates in science expressed as a percentage of the total number of tertiary graduates in science.
Percentage of graduates from tertiary education graduating from agriculture programmes, both sexes (%)	Share of all tertiary graduates who completed agriculture programmes in the reference year.
Percentage of graduates from tertiary education graduating from engineering, manufacturing, and construction	Share of all tertiary graduates who completed engineering, manufacturing and construction programmes in the reference year.

programmes, both sexes (%)	
Percentage of graduates from tertiary education graduating from science programmes, both sexes (%)	Share of all tertiary graduates who completed science programmes in the reference year.
Percentage of graduates from tertiary education graduating from social sciences, business, and law programmes, both sexes (%)	Share of all tertiary graduates who completed social sciences, business and law programmes in the reference year.
Percentage of male graduates from tertiary education graduating from agriculture programmes, male (%)	Share of all male tertiary graduates who completed agriculture programmes in the reference year.
Percentage of male graduates from tertiary education graduating from engineering, manufacturing, and construction programmes, male (%)	Share of all male tertiary graduates who completed engineering, manufacturing, and construction programmes in the reference year.

Percentage of male graduates from tertiary education graduating from science programmes, male (%)	Share of all male tertiary graduates who completed science programmes in the reference year.
Percentage of male graduates from tertiary education graduating from social sciences, business, and law programmes, male (%)	Share of all male tertiary graduates who completed social sciences, business, and law programmes in the reference year.
Percentage of students in tertiary education enrolled in agriculture programmes, both sexes (%)	Percentage of all tertiary students who are enrolled in agriculture programmes.
Percentage of students in tertiary education enrolled in engineering, manufacturing, and construction programmes, both sexes (%)	Percentage of all tertiary students who are enrolled in engineering, manufacturing, and construction programmes.
Percentage of students in tertiary education enrolled in health and welfare programmes, both sexes (%)	Percentage of all tertiary students who are enrolled in health and welfare programmes.

Percentage of students in tertiary education enrolled in science programmes, both sexes (%)	Percentage of all tertiary students who are enrolled in science programmes.
Percentage of students in tertiary education enrolled in social sciences, business, and law programmes, both sexes (%)	Percentage of all tertiary students who are enrolled in social sciences, business, and law programmes.
Percentage of students in upper-secondary education enrolled in vocational programmes, both sexes (%)	Total number of students enrolled in vocational programmes at the upper-secondary education level, expressed as a percentage of the total number of students enrolled in all programmes (vocational and general) at the upper secondary level. Vocational education is designed for learners to acquire the knowledge, skills and competencies specific to a particular occupation or trade or class of occupations or trades. Vocational education may have work-based components (e.g. apprenticeships). Successful completion of such programmes leads to labour-market relevant vocational qualifications acknowledged as occupationally oriented by the relevant national authorities and/or the labour market.
Percentage of teachers in secondary education who are female (%)	Number of female teachers at the secondary level expressed as a percentage of the total number of teachers (male and female) at the secondary level in a given school year. Teachers are persons employed full time or part time in an official capacity to guide and direct the learning experience of pupils and students, irrespective of their qualifications or the delivery mechanism, i.e. face-to-face and/or at a distance. This definition excludes educational personnel who have no active

	teaching duties (e.g. headmasters, headmistresses or principals who do not teach) and persons who work occasionally or in a voluntary capacity in educational institutions.
Percentage of teachers in tertiary education who are female (%)	Number of female teachers at the tertiary level expressed as a percentage of the total number of teachers (male and female) at the tertiary level in a given school year. Teachers are persons employed full time or part time in an official capacity to guide and direct the learning experience of pupils and students, irrespective of their qualifications or the delivery mechanism, i.e. face-to-face and/or at a distance. This definition excludes educational personnel who have no active teaching duties (e.g. headmasters, headmistresses or principals who do not teach) and persons who work occasionally or in a voluntary capacity in educational institutions.
Personal computers (per 100 people)	Personal computers are self-contained computers designed to be used by a single individual.
Population growth (annual %)	Annual population growth rate for year t is the exponential rate of growth of midyear population from year t-1 to t, expressed as a percentage. Population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship.
Population, total	Total population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship. The values shown are midyear estimates.

Price-level ratio of PPP conversion factor (GDP) to market exchange rate	Purchasing power parity conversion factor is the number of units of a country's currency required to buy the same amount of goods and services in the domestic market as a US dollar would buy in the United States. The ratio of PPP conversion factor to market exchange rate is the result obtained by dividing the PPP conversion factor by the market exchange rate. The ratio, also referred to as the national price level, makes it possible to compare the cost of the bundle of goods that make up GDP across countries. It tells how many dollars are needed to buy a dollar's worth of goods in the country as compared to the United States. PPP conversion factors are based on the 2011 ICP round.
Primary completion rate, both sexes (%)	Total number of new entrants in the last grade of primary education, regardless of age, expressed as percentage of the total population of the theoretical entrance age to the last grade of primary. This indicator is also known as 'gross intake rate to the last grade of primary education.' The ratio can exceed 100% due to over-aged and under-aged children who enter primary school late/early and/or repeat grades.

Pupil/trained teacher ratio in primary education (headcount basis)	Average number of pupils per trained teacher at a given level of education, based on headcounts of both pupils and teachers. Divide the total number of pupils enrolled at the specified level of education by the number of trained teachers at the same level. A trained teacher is defined as a teacher who has fulfilled at least the minimum organised teacher-training requirements (pre-service or in-service) to teach a specific level of education according to the relevant national policy or law. These requirements usually include pedagogical knowledge (broad principles and strategies of classroom management and organisation that transcend the subject matter being taught, typically approaches, methods and techniques of teaching), and professional knowledge (knowledge of statutory instruments and other legal frameworks that govern the teaching profession). Some programmes may also cover content knowledge (knowledge of the curriculum and the subject matter to be taught and the use of relevant materials). In computing and interpreting this indicator, one should take into account the existence of part-time teaching, school-shifts, multi-grade classes and other practices that may affect the precision and meaningfulness of pupil-teacher ratios. When feasible, the number of part-time teachers is converted to 'full-time equivalent' teachers; a double-shift teacher is counted twice, etc. Teachers are defined as persons whose professional activity involves the transmitting of knowledge, attitudes and skills that are stipulated in a formal curriculum programme to students enrolled in a formal educational institution.

Pupil-teacher ratio in lower-secondary education (headcount basis)	Average number of pupils per teacher at a given level of education, based on headcounts of both pupils and teachers. Divide the total number of pupils enrolled at the specified level of education by the number of teachers at the same level. In computing and interpreting this indicator, one should take into account the existence of part-time teaching, school-shifts, multi-grade classes and other practices that may affect the precision and meaningfulness of pupil-teacher ratios. When feasible, the number of part-time teachers is converted to 'full-time equivalent' teachers; a double-shift teacher is counted twice, etc. Teachers are defined as persons whose professional activity involves the transmitting of knowledge, attitudes and skills that are stipulated in a formal curriculum programme to students enrolled in a formal educational institution.
Pupil-teacher ratio in pre-primary education (headcount basis)	Average number of pupils per teacher at a given level of education, based on headcounts of both pupils and teachers. Divide the total number of pupils enrolled at the specified level of education by the number of teachers at the same level. In computing and interpreting this indicator, one should take into account the existence of part-time teaching, school-shifts, multi-grade classes and other practices that may affect the precision and meaningfulness of pupil-teacher ratios. When feasible, the number of part-time teachers is converted to 'full-time equivalent' teachers; a double-shift teacher is counted twice, etc. Teachers are defined as persons whose professional activity involves the transmitting of knowledge, attitudes and skills that are stipulated in a formal curriculum programme to students enrolled in a formal educational institution.

Pupil-teacher ratio in primary education (headcount basis)	Average number of pupils per teacher at a given level of education, based on headcounts of both pupils and teachers. Divide the total number of pupils enrolled at the specified level of education by the number of teachers at the same level. In computing and interpreting this indicator, one should take into account the existence of part-time teaching, school-shifts, multi-grade classes and other practices that may affect the precision and meaningfulness of pupil-teacher ratios. When feasible, the number of part-time teachers is converted to 'full-time equivalent' teachers; a double-shift teacher is counted twice, etc. Teachers are defined as persons whose professional activity involves the transmitting of knowledge, attitudes and skills that are stipulated in a formal curriculum programme to students enrolled in a formal educational institution.
Pupil-teacher ratio in secondary education (headcount basis)	Average number of pupils per teacher at a given level of education, based on headcounts of both pupils and teachers. Divide the total number of pupils enrolled at the specified level of education by the number of teachers at the same level. In computing and interpreting this indicator, one should take into account the existence of part-time teaching, school-shifts, multi-grade classes and other practices that may affect the precision and meaningfulness of pupil-teacher ratios. When feasible, the number of part-time teachers is converted to 'full-time equivalent' teachers; a double-shift teacher is counted twice, etc. Teachers are defined as persons whose professional activity involves the transmitting of knowledge, attitudes and skills that are stipulated in a formal curriculum programme to students enrolled in a formal educational institution.

Pupil-teacher ratio in tertiary education (headcount basis)	Average number of pupils per teacher at a given level of education, based on headcounts of both pupils and teachers. Divide the total number of pupils enrolled at the specified level of education by the number of teachers at the same level. In computing and interpreting this indicator, one should take into account the existence of part-time teaching, school-shifts, multi-grade classes and other practices that may affect the precision and meaningfulness of pupil-teacher ratios. When feasible, the number of part-time teachers is converted to 'full-time equivalent' teachers; a double-shift teacher is counted twice, etc. Teachers are defined as persons whose professional activity involves the transmitting of knowledge, attitudes and skills that are stipulated in a formal curriculum programme to students enrolled in a formal educational institution.
Pupil-teacher ratio in upper-secondary education (headcount basis)	Average number of pupils per teacher at a given level of education, based on headcounts of both pupils and teachers. Divide the total number of pupils enrolled at the specified level of education by the number of teachers at the same level. In computing and interpreting this indicator, one should take into account the existence of part-time teaching, school-shifts, multi-grade classes and other practices that may affect the precision and meaningfulness of pupil-teacher ratios. When feasible, the number of part-time teachers is converted to 'full-time equivalent' teachers; a double-shift teacher is counted twice, etc. Teachers are defined as persons whose professional activity involves the transmitting of knowledge, attitudes and skills that are stipulated in a formal curriculum programme to students enrolled in a formal educational institution.
Renewable energy consumption (% of	Renewable energy consumption is the share of renewable energy in total final energy consumption.

total final energy consumption)	
Research and development expenditure (% of GDP)	Expenditures for research and development are current and capital expenditures (both public and private) on creative work undertaken systematically to increase knowledge, including knowledge of humanity, culture, and society, and the use of knowledge for new applications. R&D covers basic research, applied research, and experimental development.
Researchers in R&D (per million people)	Researchers in R&D are professionals engaged in the conception or creation of new knowledge, products, processes, methods, or systems and in the management of the projects concerned. Postgraduate PhD students (ISCED97 level 6) engaged in R&D are included.
School enrolment, tertiary (% gross)	Gross enrolment ratio is the ratio of total enrolment, regardless of age, to the population of the age group that officially corresponds to the level of education shown. Tertiary education, whether or not to an advanced research qualification, normally requires, as a minimum condition of admission, the successful completion of education at the secondary level.
Scientific and technical journal articles	Scientific and technical journal articles refer to the number of scientific and engineering articles published in the following fields: physics, biology, chemistry, mathematics, clinical medicine, biomedical research, engineering and technology, and earth and space sciences.
Secondary education, pupils	Secondary education pupils are the total number of pupils enrolled at secondary level in public and private schools.
Secure Internet servers	Secure servers are servers using encryption technology in Internet transactions.

Self-employed, total (% of total employment) (modelled ILO estimate)	Self-employed workers are those workers who, working on their own account or with one or a few partners or in cooperative, hold the type of jobs defined as a 'self-employment jobs', i.e. jobs where the remuneration is directly dependent upon the profits derived from the goods and services produced. Self-employed workers include four sub-categories of employers, own-account workers, members of producers' cooperatives, and contributing family workers.
Services, etc. value added (% of GDP)	Services correspond to ISIC divisions 50–99 and they include value added in wholesale and retail trade (including hotels and restaurants), transport, and government, financial, professional, and personal services such as education, health care, and real estate services. Also included are imputed bank service charges, import duties, and any statistical discrepancies noted by national compilers as well as discrepancies arising from rescaling. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. The industrial origin of value added is determined by the International Standard Industrial Classification (ISIC), revision 3. Note: For VAB countries, gross value added at factor cost is used as the denominator.
Services, value added per worker (constant 2010 US$)	Value added per worker is a measure of labour productivity—value added per unit of input. Value added denotes the net output of a sector after adding up all outputs and subtracting intermediate inputs. Data are in constant 2010 US dollars. Services corresponds to the International Standard Industrial Classification (ISIC) tabulation categories G-P (revision 3) or tabulation categories G-U (revision 4), and includes wholesale and retail trade and restaurants and hotels; transport, storage,

	and communications; financing, insurance, real estate, and business services; and community, social and personal services.
Start-up procedures to register a business (number)	Start-up procedures are those required to start a business, including interactions to obtain necessary permits and licenses and to complete all inscriptions, verifications, and notifications to start operations. Data are for businesses with specific characteristics of ownership, size, and type of production.
Teachers in lower-secondary education, both sexes (number)	Total number of teachers in public and private lower-secondary education institutions (ISCED 2). Teachers are persons employed full time or part time in an official capacity to guide and direct the learning experience of pupils and students, irrespective of their qualifications or the delivery mechanism, i.e. face-to-face and/or at a distance. This definition excludes educational personnel who have no active teaching duties (e.g. headmasters, headmistresses or principals who do not teach) and persons who work occasionally or in a voluntary capacity in educational institutions.
Teachers in pre-primary education, both sexes (number)	Total number of teachers in public and private pre-primary education institutions. Teachers are persons employed full time or part time in an official capacity to guide and direct the learning experience of pupils and students, irrespective of their qualifications or the delivery mechanism, i.e. face-to-face and/or at a distance. This definition excludes educational personnel who have no active teaching duties (e.g. headmasters, headmistresses or principals who do not teach)

	and persons who work occasionally or in a voluntary capacity in educational institutions.
Teachers in primary education, both sexes (number)	Total number of teachers in public and private primary education institutions. Teachers are persons employed full time or part time in an official capacity to guide and direct the learning experience of pupils and students, irrespective of their qualifications or the delivery mechanism, i.e. face-to-face and/or at a distance. This definition excludes educational personnel who have no active teaching duties (e.g. headmasters, headmistresses or principals who do not teach) and persons who work occasionally or in a voluntary capacity in educational institutions.
Teachers in secondary education, both sexes (number)	Total number of teachers in public and private secondary education institutions (ISCED 2 and 3). Teachers are persons employed full time or part time in an official capacity to guide and direct the learning experience of pupils and students, irrespective of their qualifications or the delivery mechanism, i.e. face-to-face and/or at a distance. This definition excludes educational personnel who have no active teaching duties (e.g. headmasters, headmistresses or principals who do not teach) and persons who work occasionally or in a voluntary capacity in educational institutions.

Teachers in secondary general education, both sexes (number)	Total number of teachers in general programmes in public and private secondary education institutions (ISCED 2 and 3). Teachers are persons employed full time or part time in an official capacity to guide and direct the learning experience of pupils and students, irrespective of their qualifications or the delivery mechanism, i.e. face-to-face and/or at a distance. This definition excludes educational personnel who have no active teaching duties (e.g. headmasters, headmistresses or principals who do not teach) and persons who work occasionally or in a voluntary capacity in educational institutions.
Teachers in secondary vocational education, both sexes (number)	Total number of teachers in vocational programmes in public and private secondary education institutions (ISCED 2 and 3). Teachers are persons employed full time or part time in an official capacity to guide and direct the learning experience of pupils and students, irrespective of their qualifications or the delivery mechanism, i.e. face-to-face and/or at a distance. This definition excludes educational personnel who have no active teaching duties (e.g. headmasters, headmistresses or principals who do not teach) and persons who work occasionally or in a voluntary capacity in educational institutions.
Teachers in tertiary education programmes, both sexes (number)	Total number of teachers in public and private tertiary education institutions (ISCED 5–8). Teachers are persons employed full time or part time in an official capacity to guide and direct the learning experience of pupils and students, irrespective of their qualifications or the delivery mechanism, i.e. face-to-face and/or at a distance. This definition excludes educational personnel who have no active teaching duties (e.g. headmasters, headmistresses or principals who do not teach) and persons who work occasionally or in a voluntary capacity in educational institutions.

Teachers in upper-secondary education, both sexes (number)	Total number of teachers in public and private upper-secondary education institutions (ISCED 3). Teachers are persons employed full time or part time in an official capacity to guide and direct the learning experience of pupils and students, irrespective of their qualifications or the delivery mechanism, i.e. face-to-face and/or at a distance. This definition excludes educational personnel who have no active teaching duties (e.g. headmasters, headmistresses, or principals who do not teach) and persons who work occasionally or in a voluntary capacity in educational institutions.
Technical cooperation grants (BoP, current US$)	Technical cooperation grants include free-standing technical cooperation grants, which are intended to finance the transfer of technical and managerial skills or of technology for the purpose of building up general national capacity without reference to any specific investment projects; and investment-related technical cooperation grants, which are provided to strengthen the capacity to execute specific investment projects. Data are in current US dollars.
Technicians in R&D (per million people)	Technicians in R&D and equivalent staff are people whose main tasks require technical knowledge and experience in engineering, physical and life sciences (technicians), or social sciences and humanities (equivalent staff). They participate in R&D by performing scientific and technical tasks involving the application of concepts and operational methods, normally under the supervision of researchers.
Tertiary education, academic staff (% female)	Tertiary education, academic staff (% female) is the share of female academic staff in tertiary education.

Textiles and clothing (% of value added in manufacturing)	Value added in manufacturing is the sum of gross output less the value of intermediate inputs used in production for industries classified in ISIC major division D. Textiles and clothing correspond to ISIC divisions 17–19.
Time required to start a business (days)	Time required to start a business is the number of calendar days needed to complete the procedures to legally operate a business. If a procedure can be speeded up at additional cost, the fastest procedure, independent of cost, is chosen.
Total fisheries production (metric tons)	Total fisheries production measures the volume of aquatic species caught by a country for all commercial, industrial, recreational and subsistence purposes. The harvest from mariculture, aquaculture and other kinds of fish farming is also included.
Total natural resources rents (% of GDP)	Total natural resources rents are the sum of oil rents, natural gas rents, coal rents (hard and soft), mineral rents, and forest rents.
Trade (% of GDP)	Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product.
Trained teachers in secondary education (% of total teachers)	Trained teachers in secondary education are the percentage of secondary school teachers who have received the minimum organised teacher training (pre-service or in-service) required for teaching in a given country.
Unemployment with advanced education (% of total labour force with advanced education)	The percentage of the labour force with an advanced level of education who are unemployed. Advanced education comprises short-cycle tertiary education, a bachelor's degree or equivalent education level, a master's degree or equivalent education level, or doctoral degree or equivalent education level according to the International Standard Classification of Education 2011 (ISCED 2011).

Unemployment, total (% of total labour force) (modelled ILO estimate)	Unemployment refers to the share of the labour force that is without work but available for and seeking employment.
Urban population	Urban population refers to people living in urban areas as defined by national statistical offices. It is calculated using World Bank population estimates and urban ratios from the United Nations World Urbanization Prospects. Aggregation of urban and rural population may not add up to total population because of different country coverages.
Wage and salaried workers, total (% of total employment)	Wage and salaried workers (employees) are those workers who hold the type of jobs defined as 'paid employment jobs,' where the incumbents hold explicit (written or oral) or implicit employment contracts that give them a basic remuneration that is not directly dependent upon the revenue of the unit for which they work.

Excluded variables from the multiple regression coefficients for which beta In is positive

Malaysia

Malaysia

Excluded Variables from Multiple regression coefficients of Resident Patent applications which Beta In is positive

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance	VIF	Minimum Tolerance
5	Services, etc., value added (% of GDP)	.122[a]	1.733	0.158	0.655	0.069	14.537	0.011
	Aquaculture production (metric tons)	.066[a]	0.595	0.584	0.285	0.044	22.777	0.010
	CO2 emissions from manufacturing industries and construction (% of total fuel combustion)	.009[a]	0.123	0.908	0.062	0.100	10.022	0.015
	Consumer price index (2010 = 100)	.038[a]	0.303	0.777	0.150	0.037	26.949	0.016
	Electric power consumption (kWh per capita)	.109[a]	1.396	0.235	0.572	0.065	15.295	0.013
	Employers, total (% of total employment)	.023[a]	0.640	0.557	0.305	0.410	2.439	0.013
	Employment in services (% of total employment)	.102[a]	1.092	0.336	0.479	0.052	19.285	0.015
	Final consumption expenditure, etc. (% of GDP)	.057[a]	0.945	0.398	0.427	0.135	7.433	0.013
	Food imports (% of merchandise imports)	.041[a]	0.343	0.749	0.169	0.041	24.483	0.016
	GDP per person employed (constant 2011 PPP $)	.011[a]	0.104	0.923	0.052	0.053	19.001	0.014
	General government final consumption expenditure (% of GDP)	.091[a]	1.618	0.181	0.629	0.112	8.893	0.013
	Gross national expenditure (% of GDP)	.025[a]	0.578	0.594	0.278	0.287	3.489	0.016
	High-technology exports (% of manufactured exports)	.063[a]	1.489	0.211	0.597	0.213	4.705	0.015
	Labor force, total	.023[a]	0.375	0.726	0.184	0.157	6.385	0.016

Cont'd

Malaysia

Excluded Variables from Multiple regression coefficients of Resident Patent applications which Beta In is positive

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance	VIF	Minimum Tolerance
	Merchandise exports (current US$)	.002[a]	0.038	0.973	0.018	0.122	8.222	0.011
	Mobile cellular subscriptions	.034[a]	0.356	0.740	0.175	0.062	16.076	0.015
	Net foreign assets (current LCU)	.110[a]	5.006	0.007	0.929	0.169	5.904	0.013
	Net ODA received per capita (current US$)	.024[a]	0.747	0.497	0.350	0.486	2.057	0.015
	Net official development assistance and official aid received (current US$)	.023[a]	0.700	0.523	0.330	0.505	1.981	0.015
	New businesses registered (number)	.085[a]	1.298	0.264	0.544	0.098	10.201	0.013
	Research and development expenditure (% of GDP)	.080[a]	0.647	0.553	0.308	0.035	28.717	0.011
	Researchers in R&D (per million people)	.020[a]	0.271	0.800	0.134	0.106	9.460	0.016
	Scientific and technical journal articles	.023[a]	0.282	0.792	0.140	0.091	11.047	0.016
	Adjusted net enrolment rate, lower secondary, both sexes (%)	.005[a]	0.102	0.924	0.051	0.293	3.412	0.015
	Enrolment in tertiary education per 100,000 inhabitants, both sexes	.026[a]	0.463	0.667	0.226	0.178	5.610	0.010
	GDP per capita (constant 2005 US$)	.021[a]	0.269	0.801	0.133	0.099	10.099	0.015
	Percentage of students in tertiary education enrolled in Science programmes, both sexes (%)	.062[a]	0.554	0.609	0.267	0.044	22.685	0.016
	Percentage of students in upper secondary education enrolled in vocational programmes, both sexes (%)	.034[a]	0.650	0.551	0.309	0.202	4.958	0.015
	Percentage of teachers in secondary education who are female (%)	.063[a]	1.191	0.300	0.512	0.156	6.423	0.014
	Personal computers (per 100 people)	.043[a]	0.481	0.656	0.234	0.071	14.140	0.016

a. Dependent Variable: Patent applications_residents

Malaysia

Excluded Variables from Multiple regression coefficients of Resident Trademark applications which Beta In is positive

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics: Tolerance	VIF	Minimum Tolerance
4	Industry, value added (% of GDP)	.036[a]	1.051	0.341	0.425	0.204	4.892	0.057
	Manufacturing, value added (% of GDP)	.020[a]	0.435	0.681	0.191	0.135	7.423	0.034
	Adjusted savings: energy depletion (% of GNI)	.061[a]	2.464	0.057	0.741	0.213	4.705	0.069
	Adjusted savings: natural resources depletion (% of GNI)	.058[a]	2.406	0.061	0.732	0.225	4.446	0.069
	Alternative and nuclear energy (% of total energy use)	.043[a]	2.639	0.046	0.763	0.454	2.204	0.078
	Birth rate, crude (per 1,000 people)	.002[a]	0.044	0.967	0.020	0.131	7.657	0.041
	Adjusted net savings, excluding particulate emission damage (% of GNI)	.025[a]	0.737	0.494	0.313	0.218	4.582	0.060
	Armed forces personnel (% of total labor force)	.061[a]	0.218	0.836	0.097	0.004	275.794	0.004
	CO2 emissions from manufacturing industries and construction (% of total fuel combustion)	.053[a]	1.264	0.262	0.492	0.123	8.126	0.039
	Customs and other import duties (% of tax revenue)	.000[a]	-0.012	0.991	-0.005	0.240	4.175	0.055
	Employment in industry (% of total employment)	.022[a]	0.704	0.513	0.300	0.261	3.824	0.055
	Cost of business start-up procedures (% of GNI per capita)	.037[a]	0.485	0.648	0.212	0.047	21.403	0.030
	GDP per person employed (constant 2011 PPP $)	.044[a]	0.608	0.570	0.262	0.052	19.399	0.034
	Cost to import (US$ per container)	.016[a]	0.403	0.703	0.177	0.167	5.993	0.038
	Employment to population ratio, 15+, total (%) (modeled ILO estimate)	.018[a]	0.487	0.647	0.213	0.193	5.173	0.059
	Exports of goods and services (% of GDP)	.070[a]	0.732	0.497	0.311	0.028	35.859	0.020
	Imports of goods and services (% of GDP)	.047[a]	0.732	0.497	0.311	0.063	15.766	0.020
	Listed domestic companies, total	.015[a]	0.185	0.860	0.083	0.042	23.844	0.040
	Merchandise trade (% of GDP)	.038[a]	0.739	0.493	0.314	0.098	10.223	0.031

Cont'd

Malaysia

Excluded Variables from Multiple regression coefficients of Resident Trademark applications which Beta In is positive

Model	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics: Tolerance	VIF	Minimum Tolerance
Gross domestic savings (% of GDP)	.077[a]	1.387	0.224	0.527	0.067	14.960	0.052
Labor force participation rate, total (% of total population ages 15+) (modeled ILO estimate)	.010[a]	0.264	0.802	0.117	0.216	4.632	0.058
New businesses registered (number)	.000[a]	0.000	1.000	0.000	0.046	21.513	0.046
Population growth (annual %)	.031[a]	0.834	0.442	0.349	0.177	5.645	0.057
Merchandise exports (current US$)	.045[a]	1.568	0.178	0.574	0.233	4.295	0.067
Mobile cellular subscriptions	.044[a]	0.397	0.708	0.175	0.023	43.314	0.023
Technical cooperation grants (BoP, current US$)	.001[a]	0.043	0.967	0.019	0.394	2.535	0.079
Time required to start a business (days)	.022[a]	0.325	0.758	0.144	0.063	15.825	0.028
Tertiary education, academic staff (% female)	.038[a]	1.482	0.199	0.552	0.310	3.224	0.066
Current expenditure other than staff compensation as % of total expenditure in tertiary public institutions (%)	.028[a]	0.594	0.578	0.257	0.118	8.489	0.048
Enrolment in secondary education, both sexes (number)	.042[a]	1.005	0.361	0.410	0.139	7.170	0.068
Enrolment in upper secondary education, both sexes (number)	.045[a]	1.708	0.148	0.607	0.261	3.833	0.077
GDP per capita (constant 2005 US$)	.088[a]	0.774	0.474	0.327	0.020	50.130	0.020
Percentage of graduates from Agriculture programmes in tertiary education who are female (%)	.004[a]	0.108	0.918	0.048	0.181	5.510	0.066
Technicians in R&D (per million people)	.039[a]	0.902	0.408	0.374	0.130	7.700	0.067
Percentage of students in tertiary education enrolled in Science programmes, both sexes (%)	.032[a]	0.739	0.493	0.314	0.140	7.124	0.030
Percentage of students in upper secondary education enrolled in vocational programmes, both sexes (%)	.084[a]	3.712	0.014	0.857	0.150	6.674	0.079
Percentage of teachers in tertiary education who are female (%)	.038[a]	1.482	0.199	0.552	0.310	3.224	0.066
Pupil/trained teacher ratio in primary education (headcount basis)	.079[a]	1.136	0.308	0.453	0.047	21.469	0.026
Pupil-teacher ratio in primary education (headcount basis)	.015[a]	0.262	0.804	0.116	0.087	11.468	0.035
Pupil-teacher ratio in secondary education (headcount basis)	.021[a]	0.294	0.780	0.130	0.055	18.147	0.024

a. Dependent Variable: Trademark_resident

Viet Nam

Excluded Variables from Multiple regression coefficients of Resident Patent applications which Beta In is positive

Viet Nam

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance	VIF	Minimum Tolerance
4	Services, etc., value added (% of GDP)	.021[a]	0.383	0.717	0.169	0.361	2.772	0.111
	Armed forces personnel (% of total labor force)	.076[a]	0.877	0.421	0.385	0.123	8.098	0.123
	CO2 emissions from electricity and heat production, total (% of total fuel combustion)	.044[a]	0.681	0.526	0.291	0.234	4.276	0.159
	Compulsory education, duration (years)	.051[a]	0.860	0.429	0.359	0.267	3.748	0.145
	Cost of business start-up procedures (% of GNI per capita)	.175[a]	1.424	0.214	0.537	0.050	19.832	0.050
	Food exports (% of merchandise exports)	.238[a]	1.134	0.308	0.452	0.019	51.424	0.019
	Food imports (% of merchandise imports)	.016[a]	0.161	0.879	0.072	0.110	9.125	0.110
	General government final consumption expenditure (% of GDP)	.022[a]	0.128	0.903	0.057	0.038	26.498	0.038
	Gross capital formation (% of GDP)	.012[a]	0.183	0.862	0.082	0.244	4.101	0.161
	Labor force participation rate, total (% of total population ages 15+) (modeled ILO estimate)	.067[a]	0.360	0.734	0.159	0.030	33.481	0.027
	Listed domestic companies, total	.045[a]	1.027	0.351	0.417	0.453	2.205	0.226
	Manufactures imports (% of merchandise imports)	.026[a]	0.542	0.611	0.236	0.452	2.210	0.253

Cont'd

Excluded Variables from Multiple regression coefficients of Resident Patent applications which Beta In is positive

Viet Nam

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance	VIF	Minimum Tolerance
	Physicians (per 1,000 people)	.030[a]	0.491	0.644	0.214	0.268	3.735	0.103
	Start-up procedures to register a business (number)	.014[a]	0.193	0.854	0.086	0.203	4.937	0.203
	Time required to start a business (days)	.005[a]	0.058	0.956	0.026	0.147	6.790	0.121
	Unemployment, total (% of total labor force) (modeled ILO estimate)	.063[a]	1.258	0.264	0.490	0.323	3.092	0.181
	Cumulative drop-out rate to the last grade of lower secondary general education, both sexes (%) (1)(2)	.023[a]	0.503	0.636	0.219	0.491	2.037	0.212
	Duration of compulsory education (years)	.051[a]	0.860	0.429	0.359	0.267	3.748	0.145
	Percentage of graduates from tertiary education graduating from Agriculture programmes, both sexes (%) (1)	.124[a]	1.103	0.320	0.442	0.068	14.610	0.036
	Percentage of graduates from tertiary education graduating from Engineering, Manufacturing and Construction programmes, both sexes (%) (1)	.124[a]	1.103	0.320	0.442	0.068	14.610	0.036
	Percentage of graduates from tertiary education graduating from Social Sciences, Business and Law programmes, both sexes (%) (1)	.021[a]	0.372	0.725	0.164	0.341	2.930	0.126
	Percentage of male graduates from tertiary education graduating from Social Sciences, Business and Law programmes, male (%) (1)(2)	.050[a]	1.123	0.312	0.449	0.428	2.335	0.238
	Percentage of students in tertiary education enrolled in Engineering, Manufacturing and Construction programmes, both sexes (%) (1)(2)	.011[a]	0.190	0.857	0.085	0.322	3.108	0.155
	Percentage of students in tertiary education enrolled in Social Sciences, Business and Law programmes, both sexes (%) (1)(2)	.123[a]	1.861	0.122	0.640	0.146	6.866	0.120
	Pupil-teacher ratio in primary education (headcount basis)	.083[a]	1.419	0.215	0.536	0.222	4.501	0.195

a. Dependent Variable: Patent applications_residents

Excluded Variables from Multiple regression coefficients of Resident Trademark applications which Beta In is positive

Viet Nam

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance	VIF	Minimum Tolerance
5	Adjusted savings: consumption of fixed capital (% of GNI)	.001[a]	0.027	0.979	0.014	0.288	3.469	0.025
	Adjusted savings: energy depletion (% of GNI)	.135[a]	1.188	0.301	0.510	0.029	34.388	0.024
	Adjusted savings: natural resources depletion (% of GNI)	.199[a]	1.204	0.295	0.516	0.014	72.218	0.014
	Agricultural methane emissions (thousand metric tons of CO2 equivalent)	.116[a]	1.197	0.297	0.514	0.040	25.066	0.017
	Alternative and nuclear energy (% of total energy use)	.031[a]	0.641	0.556	0.305	0.203	4.923	0.021
	Aquaculture production (metric tons)	.129[a]	0.672	0.538	0.318	0.013	78.424	0.012
	CO2 emissions from electricity and heat production, total (% of total fuel combustion)	.040[a]	1.709	0.163	0.650	0.533	1.875	0.028
	Compulsory education, duration (years)	.085[a]	1.881	0.133	0.685	0.134	7.460	0.028
	Consumer price index (2010 = 100)	.056[a]	0.793	0.472	0.389	0.089	11.178	0.020
	Contributing family workers, total (% of total employment)	.026[a]	0.511	0.637	0.247	0.182	5.506	0.028
	Electric power consumption (kWh per capita)	.042[a]	0.588	0.588	0.282	0.091	10.944	0.025
	Employment in industry (% of total employment)	.134[a]	1.499	0.208	0.600	0.041	24.331	0.027
	Employment in services (% of total employment)	.083[a]	1.055	0.351	0.466	0.065	15.400	0.023
	Employment to population ratio, 15+, total (%) (modeled ILO estimate)	.028[a]	0.836	0.450	0.386	0.396	2.527	0.023
	Exports of goods and services (% of GDP)	.048[a]	1.329	0.254	0.554	0.275	3.639	0.026
	Food imports (% of merchandise imports)	.010[a]	0.082	0.939	0.041	0.035	28.880	0.028
	GDP per person employed (constant 2011 PPP $)	.082[a]	1.096	0.335	0.481	0.070	14.322	0.025
	General government final consumption expenditure (% of GDP)	.035[a]	0.568	0.600	0.273	0.123	8.143	0.028
	High-technology exports (% of manufactured exports)	.017[a]	0.415	0.700	0.203	0.294	3.406	0.026
	High-technology exports (current US$)	.036[a]	0.806	0.465	0.374	0.225	4.442	0.024
	Labor force participation rate, total (% of total population ages 15+) (modeled ILO estimate)	.028[a]	0.819	0.459	0.379	0.389	2.570	0.025
	Labor force, total	.072[a]	0.905	0.417	0.412	0.067	14.909	0.023
	Manufactures exports (% of merchandise exports)	.021[a]	0.326	0.761	0.161	0.120	8.325	0.027

Cont'd

Excluded Variables from Multiple regression coefficients of Resident Trademark applications which Beta In is positive

Viet Nam

Model	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance	VIF	Minimum Tolerance
Merchandise exports (current US$)	-.053[a]	1.013	0.368	0.452	0.149	6.692	0.022
Merchandise trade (% of GDP)	-.070[a]	1.517	0.204	0.604	0.152	6.584	0.024
Net foreign assets (current LCU)	-.060[a]	1.086	0.339	0.477	0.131	7.660	0.021
Physicians (per 1,000 people)	-.046[a]	1.426	0.227	0.581	0.322	3.110	0.024
Population growth (annual %)	.012[a]	0.259	0.809	0.128	0.225	4.435	0.025
Price level ratio of PPP conversion factor (GDP) to market exchange rate	.099[a]	0.631	0.562	0.301	0.019	53.122	0.007
Scientific and technical journal articles	-.043[a]	0.672	0.538	0.319	0.114	8.738	0.021
Primary completion rate, both sexes (%) (1)	.041[a]	0.813	0.462	0.377	0.173	5.785	0.028
Cumulative drop-out rate to the last grade of lower secondary general education, both sexes (%) (1)(2)	.015[a]	0.502	0.642	0.244	0.562	1.780	0.028
Duration of compulsory education (years)	.085[a]	1.881	0.133	0.685	0.134	7.460	0.028
Enrolment in early childhood education, both sexes (number) (2)	-.012[a]	0.242	0.821	0.120	0.190	5.263	0.024
Enrolment in pre-primary education, both sexes (number)	-.061[a]	0.979	0.383	0.440	0.107	9.368	0.024
Enrolment in tertiary education per 100,000 inhabitants, both sexes (2)	.039[a]	0.876	0.536	0.320	0.139	7.209	0.027
GDP per capita (constant 2005 US$)	.073[a]	1.030	0.361	0.458	0.080	12.545	0.024
Graduates from ISCED 5 programmes in tertiary education, both sexes (number)	.039[a]	0.865	0.436	0.397	0.223	4.497	0.023
Graduates from tertiary education, both sexes (number) (1)	-.058[a]	1.468	0.216	0.592	0.217	4.616	0.026
Gross enrolment ratio, tertiary, both sexes (%) (1)	-.034[a]	0.641	0.557	0.305	0.160	6.232	0.027
Percentage of enrolment in tertiary education in private institutions (%) (1)	.043[a]	0.595	0.584	0.285	0.090	11.058	0.019
Percentage of graduates from Engineering, Manufacturing and Construction programmes in tertiary education who are female (%) (1)(2)	.010[a]	0.181	0.865	0.090	0.173	5.789	0.028
Percentage of graduates from Science and Technology programmes in tertiary education who are female (%) (1)(2)	.010[a]	0.181	0.865	0.090	0.173	5.789	0.028
Percentage of graduates from tertiary education graduating from Agriculture programmes, both sexes (%) (1)	-.044[a]	0.859	0.439	0.394	0.166	6.037	0.026
Percentage of graduates from tertiary education graduating from Engineering, Manufacturing and Construction programmes, both sexes (%) (1)	.044[a]	0.859	0.439	0.394	0.166	6.037	0.026
Percentage of students in tertiary education enrolled in Health and Welfare programmes, both sexes (%) (1)(2)	.039[a]	0.830	0.563	0.300	0.130	7.704	0.019
Personal computers (per 100 people) (2)	-.088[a]	1.730	0.157	0.656	0.114	8.806	0.026
Pupil-teacher ratio in primary education (headcount basis)	-.006[a]	0.045	0.966	0.023	0.032	31.062	0.022
Teachers in tertiary education programmes, both sexes (number)	-.040[a]	0.679	0.535	0.321	0.135	7.408	0.025

a. Dependent Variable: Trademark_resident

Philippines

Philippines Excluded Variables from Multiple regression coefficients of Resident Patent applications which Beta In is positive

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance	VIF	Minimum Tolerance
7	Charges for the use of intellectual property, receipts (BoP, current US$)	.068[h]	0.535	0.646	0.354	0.036	27.950	0.016
	Unemployment, total (% of total labor force) (modeled ILO estimate)	.115[h]	1.368	0.305	0.695	0.048	20.701	0.017

a. Dependent Variable: Patent applications_residents

Philippines Excluded Variables from Multiple regression coefficients of Resident Trademark applications which Beta In is positive

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance	VIF	Minimum Tolerance
5	Agricultural methane emissions (thousand metric tons of CO2 equivalent)	.114[f]	0.822	0.409	0.419	0.094	29.787	0.022
	Armed forces personnel (% of total labor force)	.028[f]	0.350	0.744	0.172	0.096	10.402	0.018
	CO2 emissions (kg per PPP $ of GDP)	.029[f]	0.405	0.706	0.199	0.117	8.532	0.028
	CO2 emissions from electricity and heat production, total (% of total fuel combustion)	.117[f]	1.511	0.205	0.603	0.066	15.042	0.043
	Consumer price index (2010 = 100)	.090[f]	0.879	0.429	0.402	0.050	20.105	0.035
	Electric power consumption (kWh per capita)	.090[f]	0.898	0.449	0.387	0.046	21.934	0.035
	Employment in services (% of total employment)	.178[f]	1.481	0.219	0.590	0.027	36.426	0.027
	Employment to population ratio, 15+, total (%) (modeled ILO estimate)	.064[f]	1.377	0.240	0.567	0.194	5.167	0.032
	Enrolment in pre-primary education, both sexes (number)	.039[f]	0.643	0.555	0.306	0.161	6.219	0.044
	Enrolment in primary education, both sexes (number)	.135[f]	1.433	0.225	0.582	0.046	21.574	0.035
	Enrolment in secondary education, both sexes (number)	.176[f]	1.795	0.147	0.668	0.036	27.976	0.036

a. Dependent Variable: Trademark_resident

Brunei Darussalam

Brunei Darussalam

Excluded Variables from Multiple regression coefficients of Resident Patent applications which Beta In is positive

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics: Tolerance	VIF	Minimum Tolerance
0	Industry, value added (% of GDP)	.079[a]	2.152	0.121	0.779	0.174	5.746	0.046
	Adjusted savings: energy depletion (% of GNI)	.039[a]	0.866	0.553	0.559	0.130	7.712	0.046
	Adjusted savings: natural resources depletion (% of GNI)	.039[a]	0.866	0.553	0.559	0.130	7.712	0.046
	Charges for the use of intellectual property, payments (BoP, current US$)(2)	.043[a]	0.860	0.453	0.445	0.167	5.990	0.046
	Communications, computer, etc. (% of service exports, BoP)(1)	.027[a]	0.280	0.798	0.160	0.052	19.178	0.039
	Computer, communications and other services (% of commercial service exports)(1)	.027[a]	0.280	0.798	0.160	0.052	19.178	0.039
	Computer, communications and other services (% of commercial service imports)(1)	.113[a]	1.070	0.393	0.526	0.033	30.223	0.033
	Electric power consumption (kWh per capita)(2)	.057[a]	0.356	0.745	0.202	0.019	53.077	0.019
	Exports of goods and services (% of GDP)	.069[a]	1.654	0.197	0.691	0.152	6.592	0.043
	Labor force, total	.041[a]	0.883	0.442	0.454	0.141	7.110	0.044
	Manufactures exports (% of merchandise exports)(1)	.018[a]	0.338	0.758	0.192	0.170	5.878	0.029
	Government expenditure on education as % of GDP (%)(1)	.[a]				0.000		0.000
	Enrolment in early childhood education, both sexes (number)(2)	.007[a]	0.169	0.877	0.097	0.270	3.709	0.036
	Enrolment in tertiary education per 100,000 inhabitants, both sexes(2)	.319[a]	4.119	0.026	0.922	0.013	78.229	0.013
	Gross enrolment ratio, tertiary, both sexes (%)	.394[a]	2.927	0.066	0.853	0.008	132.895	0.008
	Percentage of enrolment in tertiary education in private institutions (%)	.162[a]	2.725	0.072	0.844	0.041	24.202	0.024
	Percentage of graduates from tertiary education graduating from Agriculture programmes, both sexes (%)(1)	.018[a]	0.245	0.822	0.140	0.097	10.340	0.045
	Percentage of graduates from tertiary education graduating from Science programmes, both sexes (%)(1)	.119[a]	1.021	0.382	0.508	0.028	35.490	0.028
	Percentage of male graduates from tertiary education graduating from Science programmes, male (%)(2)	.041[a]	0.934	0.485	0.434	0.170	5.889	0.026
	Percentage of male graduates from tertiary education graduating from Social Sciences, Business and Law programmes, male (%)(2)	.021[a]	0.398	0.717	0.224	0.168	5.944	0.036
	Personal computers (per 100 people)(2)	.043[a]	0.819	0.473	0.427	0.151	6.632	0.045
	Teachers in tertiary education programmes, both sexes (number)	.095[a]	2.426	0.094	0.814	0.112	8.915	0.041

a. Dependent Variable: Patent applications_residents

Brunei Darussalam

Excluded Variables from Multiple regression coefficients of Resident Trademark applications which Beta In is positive

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics: Tolerance	VIF	Minimum Tolerance
4	Primary completion rate, both sexes (%)	.206[a]	0.837	0.441	0.351	0.341	2.935	0.316
	Enrolment in early childhood education, both sexes (number)	.012[a]	0.043	0.968	0.019	0.310	3.225	0.294

a. Dependent Variable: Trademark_resident