ON THE CLASSIFICATION OF SMALL STATES

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In the literature on small states, there is no universally agreed upon definition of what a small state is. This paper essays to furnish a definition that could fill this gap. A static definition would be undesirable since it is imperative to keep the set of small states open to ensure an inclusive approach for current and future research. Moreover, it is helpful that the definition would also include non-states (such as sui generis territories) to allow researchers to identify common issues resulting from 'smallness.' Therefore, the paper provides an open (time-variant, scale-variant) definition of political entities (both states and non-states). The analytical framework imposes a quartile criterion on the state definition of the Montevideo Convention on the Rights and Duties of States. This framework results in nine classes of small entities that provide simultaneous multiple perspectives (or a cubist perspective). These classes are then aggregated into a core-periphery taxonomy that identifies a total of ninety-three entities (roughly two-fifths of the World Bank dataset) as small: thirty-five entities as core and fifty-eight as periphery.

Si l'on s'en tient à la seule littérature scientifique consacrée aux petits États, on observe qu'aucun consensus ne se dégage s'agissant de s'accorder sur ce que doit être la définition d'un petit État. Cet article tente de combler cette lacune.

Une définition trop stricte ne serait guère souhaitable car elle doit toujours pouvoir permettre l'étude du plus grand nombre de ces petits États.

De plus, il est utile que la définition prenne également en compte les espaces géographiques qui ne répondraient pas stricto sensu à la notion d'États (tels que les

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territoires sui generis), ceci permettrait aux chercheurs d'identifier les problèmes communs résultant de leur «petite taille».

Par conséquent, l'auteur ambitionne de proposer une définition ouverte des entités États et non-États prenant en compte leur durée d'existence et leur taille.

Cette approche scientifique propose une nouvelle grille de lecture et d'analyse de la définition des États telle qu'elle ressort de la Convention de Montevideo sur les Droits et Devoirs des États.

Ce cadre d'analyse permet ainsi de dégager neuf catégories de petites entités offrant plusieurs perspectives simultanées (ou une perspective 'cubiste').

Ces catégories sont ensuite sur la base d'un modèle "centre-périphérie" agrégées dans un classement qui permet d'identifier un total de quatre-vingt-treize entités (soit environ les deux cinquièmes de l'ensemble de territoires et États listées par la Banque mondiale) qui pourraient répondre à la définition de petits États ou entité géographiques: trente-cinq entités en formant le noyau dur et cinquante-huit à la périphérie.

Pri la Klasifiko de Malgrandaj Ŝtatoj

En la literaturo pri malgrandaj ŝtatoj, ne estas universale konsentito pri difino de malgranda ŝtato. Ĉi tiu artikolo provas provizi difinon de politikaj entoj, kiuj povus plenigi ĉi tiun breĉon. Sen ŝanĝa difino estus dezirinda, ĉar ĝi estas necesa teni la grupon de malgrandaj ŝtatoj malfermita por certigi inkluzivan aliron por nunaj kaj estontaj esploroj. Plue, estas utila, ke la difino ankaŭ inkluzivus neŝtatajn (kiel ekzemple teritorioj sui generis) por permesi al esploristoj identigi komunajn demandojn pro 'malgranda grandeco.' Sekve, la papero provizas malferman (tempo-varianta, skalo-varianta) difino de politikaj entoj (ambaŭ ŝtatoj kaj neŝtatoj). La artikolo adoptas la difino de ŝtato en la Konvencio de Montevideo pri la rajtoj kaj devoj de ŝtatoj, kaj postulas statistikan kriterion pri tio, kio faras malgrandan ŝtaton. Ĉi tiu analitika kadro rezultas en naŭ klasoj de malgrandaj entoj, kiuj provizas samtempajn multoblajn perspektivojn (aŭ kubismajn perspektivojn) pri ĉi tiuj ŝtatoj. La kadro identigas en tuto naŭdek tri landoj (aŭ proksimume du kvinonoj de mondaj landoj) kiel malgrandaj ŝtatoj: tridek kvin landoj kiel kernaj landoj kaj kvindek ok kiel periferiaj landoj.

I INTRODUCTION

The literature on the definition of small states provides a number of taxonomies.[1] One of the more comprehensive taxonomies is the Väyrynen matrix,[2] shown in Figure 1 below.

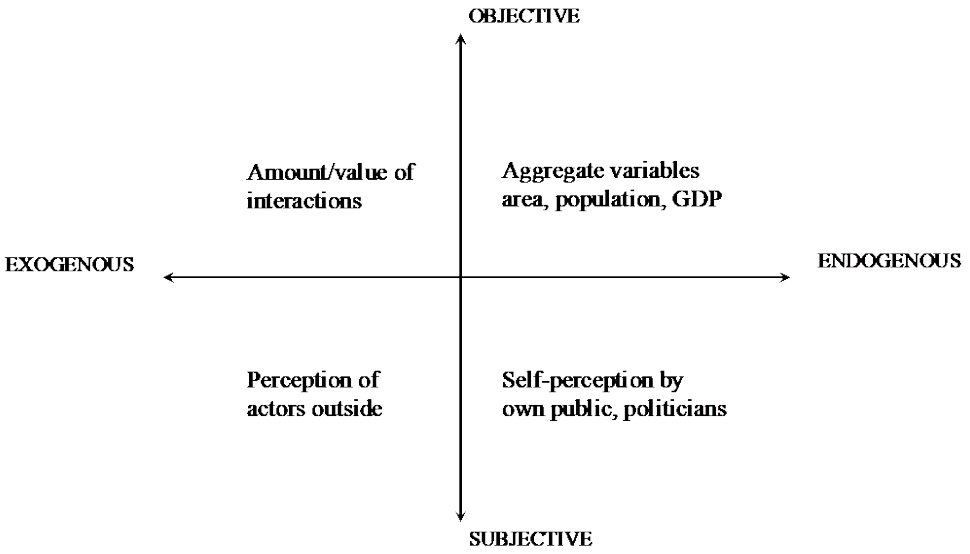

Figure 1: Väyrynen's matrix

The matrix has two dimensions: endogenous/exogenous and objective/subjective. In the first quadrant, we find endogenous and objective variables such as area, population and GDP. These aggregate variables can be used to define small states either individually, or as part of a composite score. The same three variables are also suggested by Anders Wivel, both as absolute and as relative variables for defining small states.[3] Among those who use absolute variables is the Centre for Small States

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1 For a summary of these approaches refer to Matthias Maass "The Elusive Definition of the Small State" (2009) 46(1) International Politics 65.

2 For background information, see Raimo Väyrynen "Small states in different theoretical traditions of international relations research" in Otmar Holl (ed) *Small States in Europe and Dependence* (Westview, 1983) 33.

3 Wivel goes further by defining four more criteria within the context of international relations: situational criteria, behavioural criteria, perception criteria and focusing devices. See Andres Wivel "The Security Challenge of Small EU Member States: Interests, Identity and the Development of the EU as a Security Actor" (2005) 43(2) Journal of Common Market Studies 393; Anders Wivel "From Small State to Smart State: Devising a Strategy for Influence in the European Union" in Robert Steinmetz and Anders Wivel (eds) *Small States in Europe: Challenges and Opportunities* (Ashgate, 2010) 15.

(CSS) at Queen Mary University of London. The Centre defines small states "as those with a population of 1.5 [million] or less."[4] The same approach is adopted by the World Bank and the Commonwealth,[5] although within the Forum of Small States at the United Nations, the threshold is 10 million.[6] Others define clusters of small states to provide specific (absolute) thresholds for each one of these variables.[7]

There are two main difficulties with the above approaches. First, they suggest a static definition of small states. They use thresholds that do not change over time. This static definition is a direct result from adopting absolute values. Hence, the CSS definition has a static cut-off on population. However, even where relative values are used, the definition is still static – indirectly. For example, Crowards defines small states as those having the following attributes: total population of less than 2.7 million, area (territory) of less than 40,000 square kilometres, and a GDP of less than USD 2.5 billion.[8] However, even when using absolute values, 'smallness' is informed by the size of other states. The thresholds, including that for territory, are time-variant; although population and GDP are under the control of countries' socio-economic policies more so than territory. Second, the composite approaches, such as that of Crowards, do not provide a precise (statistical) criterion for defining small states. The approach, instead, looks for observable breaks in the rankings of countries and combines these breaks with value judgments to construct clusters of countries, from which emerges a group of small states.

Static definitions provide a polar solution to an inherent tension between the precision of a definition and its usefulness. Achieving precision through a cut-off point (to define smallness) is not necessarily deficient. However, where the cut-off point itself is based on a simple criterion, such as a population under 1.5 million, the high precision comes at the cost of low usefulness. Not only because of the likely arbitrariness of the cut-off point, which excludes political entities that face challenges analogous to those included in the definition, but also because of the expected increase in population that over times excludes entities originally defined

4 See <http://www.centreforsmallstates.com/purpose>.

5 Andrea Ó Súilleabháin *Small States at the United Nations: Diverse Perspectives, Shared Opportunities* (International Peace Institute, 2014) 3.

6 Ibid.

7 Tom Crowards "Defining the Category of 'Small' States" (2002) 14 Journal of International Development 143. Crowards looks at breaks in the continuum of the country rankings for the three variables, namely, territory, population and GDP. His analysis then proceeds to identify clusters of countries that correspond with the observational analysis. This analysis leads to classifying seventy-nine countries as small (42 percent of the total number of countries in the dataset).

8 Crowards, above n 8, 153.

as small. In the long run, the group of small states becomes smaller, unless of course, the cut-off criterion itself is updated at regular intervals – an approach that literally tags some states as small and benchmarks others to this group.

Composite approaches also provide a polar position, but in the other direction. Here emphasis is on usefulness rather precision. The usefulness (seen in the inclusiveness of a definition such as Crowards') comes at the expense of understanding the rationale for the definition. Although, the trade-off can be optimized by first 'building' such composite definitions from the bottom-up, and then refining the final definition. Here, precision requires a cut-off criterion than can inform the 'building' process. Later aggregation proceeds without the need for any further characterisation of smallness.

Similarly, the lower half of the Väyrynen matrix represents approaches that are based on perceptions, both endogenous and exogenous. These approaches assign an 'importance' or 'power' score to small states lower than that assigned to other states. While this approach is premised on policy actions by small states, the essence of the approach is founded on the assumption that a small state has capabilities inferior to those of medium or large states. However, countries like Qatar and Singapore, suggest that a perception-based taxonomy is not helpful – even if there is consensus on what constitutes power or importance. Moreover, the approach suggests a static view of scientific and technological knowledge. It assumes that importance and power will not change with technological advances. This, again, is questionable in the age of the *Fourth Industrial Revolution*.[9] The *Internet of Things*,[10] and its increasingly connected world, are changing the calculus of power, especially in terms of territory and population. With the effect of almost zero marginal and transaction costs flowing from this revolution, countries are able to afford a higher quality of life at the same GDP level. Holding constant territory, population and GDP, small countries are able to leverage cyberspace for more power, both economically (online trade) and politically (online presence and security).

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9 Sometimes also referred to as the *Third Industrial Revolution*. See Jeremy Rifkin *The Third Industrial Revolution* (Palgrave Macmillan, 2011); Klaus Schwab *The Fourth Industrial Revolution* (World Economic Forum, 2016).

10 The *Internet of Things* expands the connectivity of the internet to physical devices. The original use of the internet was to allow humans to exchange data through electronic networks. The *Internet of Things* allows devices, such as home devices, to exchange data directly without the need for human intervention. This type of data exchange allows for diagnostics on the performance of these devices and for monitoring and controlling such devices remotely. For an introduction to the *Internet of Things*, see Friedemann Mattern and Christian Floerkemeier "From the Internet of Computer to the Internet of Things" (2010) 33(2) Informatik-Spektrum 107.

The same technological impact suggests difficulties with the second quadrant approach (in the Väyrynen matrix), namely the amount or value of interactions (an exogenous/objective approach). While this approach is quantitative, it uses foreign policy behaviour, or even trade, as a proxy for size.[11] The *Fourth Industrial Revolution*, however, identifies an emerging process of *continentalization* where cities participate directly in trade unions (and even confederal orders) that are created on a continental scale (for example the Americas). Larger nation-states are being transformed into a network of global cities that are redefining the world system of the 21st century.[12] These cities work directly with other world cities to inform international policy and trade. A case in point is the role that American cities are playing in giving effect to the *Paris Agreement* (under the *United Nations Framework Convention on Climate Change, UNFCCC*), and its implications on climate change and trade.[13] This revolution is changing the meaning and significance of both trade and foreign policy.

The above critique is focused on certain aspects of some definitions. However, some might also have doubts as to the usefulness of any definition of small states. One seeks to classify in aid of particular purpose or for answering a particular research question. What would then be the value of a taxonomy, let alone a universal one? The value of taxonomies is in providing a structure that helps transfer research findings. When a certain political entity (whether a state or a non-state) is classified as small based on pre-determined classes of smallness, researchers can inform their own research into this entity by looking at other entities with similar classification. The classification creates an 'information ecology' that allows for time-series comparison. Of course, it is possible that a particular research question justifies using a specific classification. The outcome of the analysis, however, is more likely to

11 See, for example, Maurice A East "Size and Foreign Policy Behaviour: A Test of Two Models" (1973) 25(4) World Politics 556.

12 See Rifkin, above n 10, chapter 3; Klaus Schwab *The Fourth Industrial Revolution* (World Economic Forum, 2016) chapter 3. What Rifkin refers to as the *Third Industrial Revolution* is what Schwab call the *Fourth Industrial Revolution*. Both terms are used to designate the *Internet of Things* and the technological innovation enabled by such connectivity (through big data diagnostics). See also, BF Gussen "On the Problem of Scale: A General Theory of Morphogenesis and Normative Policy Signals for Economic Evolution" (2015) 12(1) Evolutionary and Institutional Economics Review 81. See also, BF Gussen *Ranking Economic Performance and Efficiency in the Global Market: Emerging Research and Opportunities* (IGI Global, 2018); BF Gussen "Can charter cities 'anabolise' the Australian Federation?" (2017) 20(1*)* Public Administration and Policy 18 (ISSN 1022-0275); BF Gussen "On the territorial evolution of the Australian Federation in the 21st century" (2017) 22 James Cook University Law Review 15.

13 See, for example, Mark Cooper "Governing the Global Climate Commons: The political economy of state and local action, after the US flip-flop on the Paris Agreement" (2018) 118 Energy Policy 440.

therefore be as specific. Islands of research finds are expected. However, ameliorating the research program into small states can also benefit from a research 'highway' that fits outcomes into an *a priori* classification. This in itself does not prevent static or sui generis classifications where optimal for the purpose of the analysis.

This paper provides a Väyrynen matrix first quadrant approach to classifying small states, but one that is dynamic (time-variant) and based on statistical quartiles. The paper uses relative territory, population and GDP jointly and severally to identify the fourth quartile (Q4) of world political entities (states and non-states) as representative of small 'states.' This is the lowest twenty-five percent of 'states' in relation to their area, population, and GDP. The motivation for using these three variables flows directly from the 1933 *Montevideo Convention on the Rights and Duties of States*.

To help maintain an open research program into small states, I opt for a universal classification. I endow the term 'small states' with elasticity to allow capturing non-states in the analysis – hence my use of the term 'political entity.' The motivation is to enable the taxonomy to inform policy interventions in non-states and states alike. Smallness, while defined with the state in mind, is not limited to challenges faced by states. A universal classification should allow for these challenges to be analysed irrespective of statehood. This envisaged universality (of the classification) informed the choice of the dataset used in the analysis. I chose the data catalogue of the World Bank since it also includes non-states (such as New Caledonia and American Samoa).

The analytical approach in this paper is *cubist*, in the sense that it provides multiple perspectives on smallness – simultaneously.[14] Cubism, for example in the works of Pablo Picasso, rendered three-dimensional objects on two dimensional canvases, which resulted in multiple perspectives of these objects. This paper provides multiple perspectives by classifying political entities in terms of smallness using different classes (or perspectives). Smallness is a complex concept that cannot be reduced to a single perspective. The intention is that the analysis proceeds through these multiple perspectives simultaneously, rather than choosing a single approach as the optimal one. With this understanding, approaches in the second, third and fourth quadrants of the Väyrynen matrix can complement the multiple perspectives

14 On cubism and its multiple perspectives, see Christopher Green *Cubism, Meaning and Interpretation* (Oxford University Press, 2009). On the more general concept of social cubism, see Sean Byrne, Neal Carter, Jessica Senehi "Social Cubism and Social Conflict: Analysis and Resolution" (2002) 8 ILSA Journal of International & Comparative Law 725.

obtained from the first quarter analytical framework delineated below. Adopting this multiplicity helps enrich the post-definitional analysis when applied to specific countries.

The rest of this paper delineates this approach and its consequences for the definition and analysis of small states.

II THE ANALYTICAL FRAMEWORK

This analytical framework places 'small states' in the historical context of the modern state system. More specifically, the taxonomy developed in this paper adopts the statehood definition in the 1933 *Montevideo Convention on the Rights and Duties of States*. Article 1 of the *Convention* stipulates for four statehood criteria: (a) permanent population; (b) a defined territory; (c) government; and (d) capacity to enter into relations with other states. It follows that a state is small if it can be classified as a *state* (satisfying the fourth element), and as *small* in relation to its: (1) territory; (2) population; and (3) government. A state is defined as 'small' if it qualifies as small at least under one of the three variables (territory, population and government). In terms of the Väyrynen matrix, this analytical framework can be classified as a first quadrant (endogenous/objective) taxonomy. The paper, however, for reasons stated earlier, extrapolates the definition of a state to non-states. Non-states, while they do not satisfy the fourth *Montevideo Convention* criterion, are considered small vis-à-vis states and other non-states in relation to the same three variables of territory, population and government. All political entities in the World Bank data catalogue are classified in relation to these three variables.[15]

The next step is to choose a proxy for each one of the three elements constituting a 'state.' For territory and population, the choice is straight forward: total area in square kilometres and headcount. As to the third variable, the literature usually uses government expenditure as a percentage of total GDP as a proxy for government size. For the purpose of defining small states, however, GDP is opted for instead. Using the usual proxy for government size introduces countries such as India and Mexico, which do not fit as small in terms of territory and population (on a global scale).[16] The GDP measure is more compatible with defining 'smallness' in combination with territory and population.

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15 Some of the data in the World Bank catalogue pertains to Special Administrative Regions (SARs) such as Hong Kong, and pertains to partially recognized states such as Kosovo. For the purpose of defining small states, the paper treats these entities as states, although they do not necessarily qualify as such in terms of their capacity to enter into relations with other states.

16 See for example the country ranking by the *Global Economy.com* for 2016. Available at <https://www.theglobaleconomy.com/rankings/Government_size/>.

The last step is to impose a criterion on what is small. Smallness is scale-variant. Hence, Bangladesh is territory-small, population-small and GDP-small when the analysis is limited to a binary comparison with India, but is not small when the analysis is on a global scale. Similarly, Belgium is small in terms of territory, population and GDP when scale is limited to the European Union. However, Belgium is not small on a global scale. The same can be said about a comparison between New Zealand and Australia. Given that the framework is intended as a universal ranking of all political entities,[17] this can be achieved only by imposing a global scale on the analysis. As a result, however, countries such as Belgium and Bangladesh do not qualify as small, as they do not meet the smallness criterion on any of the three variables (on a global scale).[18] This analytical scale-variance needs to be kept in mind when discussing the results flowing from the framework.

The smallness criterion on this global scale classifies quartile entities as small, on each of the three variables: territory, population and GDP.[19] The motivation for using this criterion is as follows. The distribution of states in terms of these three variables is expected to exhibit aggregation towards the mean. This kind of behaviour is similar to what can be seen in a normal distribution. In other words, a distribution of small, medium and large states will have more medium states than small or large ones. If we now arrange all political entities into groups of roughly similar size (in terms of territory, population and GDP), and arrange small entities into one group (for each variable), and all large entities into another, the rest of the entities would be considered medium. The simplest way to achieve the envisaged grouping is to divide all entities into quartiles (four groups). The highest quartile is the group of large entities, while the lowest is the group of the small entities. The other two groups (quartiles two and three) correspond to medium-sized entities.

The paper uses data from the World Bank to divide world political entities into quartiles for each one of the three variables.[20] The calculation of these quartiles

17 Based on World Bank data. Some polities, such as the Holy See (Vatican City), are not included in the taxonomy as they are not part of the dataset. Refer to the World Bank Data Catalogue. Available at <https://datacatalog.worldbank.org/>. Vatican City, and other polities, can be included by expanding the dataset and regenerating the analytical classes.

18 Although Belgium meets the Class VIII criterion for smallness in terms of high-density countries. See Section III and the Appendix (for Class VIII methodology).

19 Note that my earlier point in relation to scale variance also applies to the smallness criterion. Changing the criterion is tantamount to changing the scale of the analysis. In other words, the smallness criterion uses a fixed catalogue of countries (on a global scale). The scale variance changes the catalogue of countries considered in the analysis.

20 The 2017 World Bank data catalogue has 217 political entities that are treated as states for the purposes of defining small states. However, some of these entities, for example New Caledonia,

proceeds as follows. First, the data is divided into two quantiles using the median. The lower half (excluding the median) is then used as a new set, for which the process is repeated again. The resulting bottom half is the fourth quantile (Q4) of small states for each of the three variables. The results from using the three analytical variables jointly and severally (for a total of seven classes) are shown in in the Appendix, Table A1.

Two additional classes (Class VIII and Class IX) were calculated using densities and generalized densities of the three analytical variables. The methodologies are delineated in the Appendix.

One concern with this framework is that it results in many classes, which could potentially pose the risk of missing commonalities and larger picture issues. The number of small states in each class rangers between one to 47. This fine-grain combing of the dataset is however an intermediate step in developing the final classification. As I indicated earlier, composite definitions need to be built from the bottom-up and then aggregated into the final classification. Think of how matter is structured. Subatomic particles coagulate into atoms. The latter bond together into molecules and finally into gases, liquids or solids. The framework imports a similar process into constructing a classification for small states. The nine classes developed under the framework correspond to these subatomic particles. Sometimes, the research question requires delving into this subatomic level (the actual nine classes), or into a meso scale of combinations of these classes. However, the classification itself does not require such fine-graining. The scalability of the framework does not pose a risk of missing larger picture issues.

In summary we have a total of nine classes of small states. Seven classes are based on simple combinations of the three analytical variables, while the last two are based on the relative densities of these variables. The next section delineates the results based on these nine different perspectives of 'smallness.'

III THE RESULTS

The paper uses data from the World Bank to calculate the nine classes discussed above. The data on territory, population and GDP was collected for all political entities in the dataset ($n = 217$). Territory was obtained in square kilometres, population in total headcount, and GDP in current USD. The data was then ranked in descending order. The median was calculated for each variable. The dataset for

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are not technically independent states. Other entities, such as the Vatican City, are not in the dataset. I opted to leave these out for the purpose of developing the framework (which makes it easier for others to reproduce the results). Later research can augment the database while applying the same analytical approach.

each variable was then split in half, and the process repeated for the lower half. Entities were matched against the three variables as shown in Table A1 in the Appendix.

The first three classes represent entities that are small in relation to one and only one of the three analytical variables (territory, population and GDP). The entities in these classes are referred to as $SS(T)$ for territory-small, $SS(P)$ for population-small and $SS(G)$ for Government-small (as measured by GDP).

Class I is made up of the following 'states':[21]

$$SS(T) = \begin{Bmatrix} El\ Salvador, Hong\ Kong, Jamaica, Kuwait, Lebanon, Puerto\ Rico, \\ Qatar, Singapore, Slovenia, West\ Bank\ and\ Gaza \end{Bmatrix}$$

Four of the ten entities in Class I are in the Middle East, three in the Caribbean Sea, two in Asia, and one in Europe. These entities are relatively developed countries in terms of their economies and institutions. Two, Hong Kong and Singapore, are a highly developed Special Administrative Region (SAR) and city-state respectively. One is a member of the European Union.

The interesting question is whether these entities face similar challenges given their small area, but relatively large population and GDP. These 'states' are situated next to much larger countries, which sometimes poses socio-economic opportunities and challenges. For example, for Hong Kong, its status as a SAR allows the city to access markets in mainland China, but also puts pressures on its basic laws to conform to Chinese principles. Lebanon continues to have strained relations with Israel. Kuwait experienced an invasion by Iraq (its neighbour to the north) in 1990, and continues to feel the tensions between Iran and Saudi Arabia – given that Shi'a form around 40 percent of the population in Kuwait. El Salvador had a protracted civil war (from 1979 to 1992), while the West Bank and Gaza remains in search of peace with Israel. These problems can also be seen in 'states' outside this Class, and it would be interesting to see whether future comparative research can identify common problems and solutions for these entities.

Class II is made up of the following 'states':

$$SS(P) = \{Equatorial\ Guinea, Estonia, Greenland, Iceland\}$$

Three of the Class II entities are in Europe, or associated with European countries (in the case of Greenland), although only Estonia is a member of the EU. The fourth

21 As I have discussed earlier, the classes have both states and non-states to ensure universality. Researchers are able to focus their analysis on sub-sets of each class without losing the generality of the classification.

entity, Equatorial Guinea, is in (central) Africa. These four entities are small only in relation to their population; they are considerably different on the other two variables (territory and GDP). Two, Greenland and Iceland, face similarly harsh climatic conditions, which can (partially) explain the low population in both countries. Equatorial Guinea and Estonia are relatively territory-small at their respective continental scale, and their low population could be explained by their access to larger labour markets. It would be interesting to see whether research can identify common socio-economic challenges in relation to this Class, although it is doubtful that there would be any analytical connection between these entities other than their persistently small population.

The third Class is made up of the following states:

$$SS(G) = \left\{ \begin{matrix} Burundi, Central\ African\ Republic, Guinea - Bissau, Kyrgyz\ Republic, \\ Lesotho, Liberia, Malawi, Mauritania, \\ Sierra\ Leone, Somailia, Tajikistan, Togo \end{matrix} \right\}$$

Ten of these entities are in Africa. Two are in central Asia. These countries are small only in terms of their government as measure by GDP.[22] They represent some of the poorest countries in the world. Identifying them as Class III entities is helpful in comparing and contrasting the challenges that they face in terms of economic development.

The next three classes exhibit an imbalance in terms of only one of the variables. In other words, they qualify as small on only two of the three analytical variables. Hence, Class IV is defined as follows:

$$SS(T,P) = \left\{ \begin{matrix} The\ Bahamas, Bahrain, Brunei\ Darussalam, Cyprus, Luxembourg, \\ Macao, Malta, Mauritius, New\ Caledonia, \\ Trinidad\ and\ Tobago \end{matrix} \right\}$$

Two of these political entities are in the Caribbean, two in Europe, two in Asia, one in the Middle East, one in Oceania, and one in the Indian Ocean (off the coast of Africa). These entities are small in terms of territory and population, but not in terms of their GDP. Otherwise, it seems they have little in common. Notwithstanding that there may be some research insights from comparing the socio-economic problems that these entities face. Moreover, a comparison between Class IV and Class I entities suggests that both classes exhibit economic efficiency in terms of

22 If government size were measured in terms of government expenditure as a percentage of GDP, Lesotho comes on top with around 35 percent of GDP. On the other hand, the Central African Republic has a small government size under this measure, with only seven percent of GDP. See the 2016 *Global Economy.com* ranking at <www.theglobaleconomy.com/rankings/Government_size/>. This measure of government size is influenced by the absolute value of GDP, population size and economic development (inter alia). This is why the GDP is a more accurate measure of government size when used in combination with territory and population.

GDP per territory (as defined under Class VIII below) – irrespective of their population level. In particular, Class IV entities, with the exception of the Bahamas and New Caledonia, have high-density,[23] while Class I entities have high density with the exception of El Salvador, Jamaica and Slovenia. Territory-small entities seem to be able to achieve high levels of economic efficiency (measured in terms of current USD per square kilometre) regardless of the level of their population. This, of course, does not mean that every territory-small entity is expected to achieve high efficiency, as illustrated by the Bahamas and El Salvador. Moreover, entities that are not territory-small (on a global scale), such as Belgium and Israel, are also able to achieve high economic efficiency. These high efficiency countries are listed in the Appendix, under Class VIII, and discussed in more detail below.

The second of the three classes exhibiting imbalances is Class V, which is made up of only one country:

$$SS(T,G) = \{The\ Gambia\}$$

This class is odd in that it has only the Gambia. The country is small in terms of its territory and GDP, but not its population. The fact that the Gambia is surrounded by Senegal, except for its western coastline along the Atlantic Ocean, could help explain this anomaly. The Gambia is a narrow strip of land that follows the Gambia river around 300 kilometres in land. Over 40 percent of the land in the Gambia is arable land. This geography could, if only partially, explain why the population is not restricted by territory and GDP.

Class VI is the last of the scale-imbalance classes, and is made up of the following entities:

$$SS(P,G) = \{Belize, Bhutan, Djibouti, Guyana, Solomon\ Islands, Suriname\}$$

One of these entities is in Central America, two are in South America, one in Africa, one in Asia, and one in Oceania. These countries might have in common an institutional weakness that explains why they are small in terms of population and government. Again, their grouping into this Class envisages conducting comparative analyses as to their institutional development and its impact on population growth and the economy.

In summary, the first six Classes of simple combinations are symptomatic of scale imbalances (Classes IV, V, and VI more so than Classes I, II, and III). The entities in these Classes exhibit different classifications of the three analytical variables

23 In terms of GDP per square kilometre (as a proxy for economic efficiency).

(territory, people and government), where only some (but not all) variables qualify as small. These Classes can hence be used to analyse inter-entity scale imbalances, especially for those entities within the same Class.

The last of the simple combination classes, however, represents entities with a balanced profile, in that they all exhibit smallness across all three analytical variables. Class VII is the largest of the seven simple combination classes. It is made up of the following entities:

$$SS(T,P,G) = \left\{ \begin{array}{c} American\ Samoa, Andorra, Antigua\ and\ Barbuda, Aruba, \\ Barbados, Bermuda, British\ Virgin\ Islands, Cabo\ Verde, \\ Cayman\ Islands, Channel\ Islands, Comoros, Curacao, Dominica, \\ Eswatini\ (Swaziland), Faroe\ Islands, Fiji, French\ Polynesia, \\ Gibraltar, Grenada, Guam, Isle\ of\ Man, \\ Kiribati, Kosovo, Liechtenstein, Maldives, Marshall\ Islands, \\ Micronesia, Monaco, Montenegro, Nauru, Northern\ Mariana\ Islands, \\ Palau, Samoa, San\ Marino, Sao\ Tome\ and\ Principle, Seychelles, \\ Sint\ Maarten\ (Dutch\ part), St\ Kitts\ and\ Nevis, St\ Lucia, St\ Martin\ (French\ part), \\ St\ Vincent\ and\ the\ Grenadines, Timor-Leste, Tonga, Turks\ and\ Caicos\ Islands, \\ Tuvalu, Vanuatu, Virgin\ Islands\ (US) \end{array} \right\}$$

The seventh Class has forty-seven members. All these entities have small territory, people and government. Seventeen of these entities are in the Caribbean Sea, fifteen in Oceania or the Pacific Ocean, ten in Europe, and five are in Africa (or the Indian Ocean). Almost all of these entities are island-states. Most of them are also the product of colonialism. Given the geography of the Caribbean Sea and Oceania, it is not surprising that the majority of these entities are found in these regions. Most of the non-island entities are found in Europe (six). It is hence reasonable to suggest that Class VII mainly represents island nations. This provides a useful comparative platform for future research. The other non-island entities, especially those in Europe, can also have common research themes, especially in relation to their history and the evolution of their independence.

The last two classes are different from the previous seven in that they look at the densities of the three analytical variables. In other words, they ascertain 'smallness' based on the relativities between the variables. The eighth Class looks at the product of two densities as shown in Equation A1 in the Appendix. The Class defines smallness as the product of population density (head count divided by square kilometres) and per capita (current USD divided by headcount). The resulting density is population-invariant. It does not change with changes to the population. Smallness under this Class is defined as high GDP per square kilometre. The 54 entities that make up this Class are shown in the Appendix, Table A2. Many of the entities in Class VII are also represented in this Class. However, new entities also feature in Class VIII. For example, Israel and Switzerland. The common feature in this Class is economic efficiency, either due to innovation as in the case of Israel and Switzerland, or due to some endowment, as in the case of Kuwait or Qatar. Note

however, that economic efficiency is not indicative of economic development or even economic prosperity. The latter require further distributional analysis.

The last class, Class IX, extends the density approach to measuring generalized densities. In a nutshell, the approach transforms all three analytical variables into per-unit (generalized) energy-equivalent variables, which can then allow for combining them into one score. The resulting Class is shown in the Appendix, Table A3. This Class is closely related to Class VII. The transformation is as follows:

$$SS^{GD} = SS(T,P,G) - \{Kosovo, Monaco\} + \left\{ \begin{matrix} Belize, Bhutan, Djibouti, The\ Gambia, \\ Guinea - Bissau, Lesotho, Liberia, Sierra\ Leone, Solomon\ Islands \end{matrix} \right\}$$

Classes VIII and IX are the largest of the endogenous-objective classes defined in this paper, with 54 entities as members in each class. Class IX is arguably the most accurate in terms of defining small 'states', given that it balances the scores from each of the three analytical variables.

Note also that Class IX can be rewritten as follows:

$$SS^{GD} = SS(T,P,G) + SS(T,G) + SS(P,G) + \{\ Guinea - Bissau, Lesotho, Liberia, Sierra\ Leone, \} - \{Guyana, Kosovo, Monaco\}$$

These SS^{GD} entities have a combined score of energy-equivalent territory, population and GDP that is small. Smallness in this sense allows for scale imbalances (as seen in $SS(T,G)$ and $SS(P,G)$) as long as the resulting combined score is still within the lowest fourth quantile. The exception is Guyana (due to its relatively much larger territory: around 215,000 square kilometres). Kosovo and Monaco are also outside Class IX due to their relatively high GDP figures.

IV INDEXING AND FUTURE RESEAERCH

The results in the preceding section provide a multiple-perspective classification of world political entities (states and non-states) in relation to their scale. These results can inform research on the socio-economic challenges facing the political entities so classified. States and non-states can now be indexed according to their membership in the nine Classes. For example, the Solomon Islands is a VI, IX country, which is indexed as follows: $Solomon\ Islands\ (VI, IX)$. This means that the Solomon Islands are a small-scale country under Class VI and Class IX. In other words, the Solomon Island is small in terms of population and government, but not territory. Moreover, the country is small in terms of the generalized densities of territory, population and government. Similarly, Belgium can be classified as $Belgium\ (VIII)$. This means that Belgium is a small country only when viewed under Class VIII. In other worlds, Belgium is a small country from the perspective

of its economic output (as measured by GDP) per square kilometre (a high-density suggesting smallness).

This multi-perspective indexing can hence identify a core set of entities that can be indexed as (VII, VIII, IX), which exhibit smallness according to the more comprehensive Classes. The core set is made up of the following thirty-five entities:

Andorra, Antigua and Barbuda, Aruba, Barbados, Bermuda, British Virgin Islands, Cayman Islands, Channel Islands, Curacao, Dominica, Faroe Islands, French Polynesia, Gibraltar, Grenada, Guam, Isle of Man, Liechtenstein, Maldives, Marshall Islands, Micronesia, Nauru, Northern Marina Islands, Palau, San Marino, Sao Tome and Principe, Seychelles, Sint Maarten, St Kitts and Nevis, St Lucia, St Martin, St Vincent and the Grenadines, Tonga, Turks and Caicos Islands, Tuvalu, Virgin Islands.

These entities constitute the core of small 'states.' Another fifty-eight entities constitute periphery small 'states' around this core set. See Figure 2 below. The periphery itself can be broken down into an inner periphery composed of members of exactly two Classes, such as the Solomon Islands, and an outer periphery of entities members in only one Class, such as Belgium.

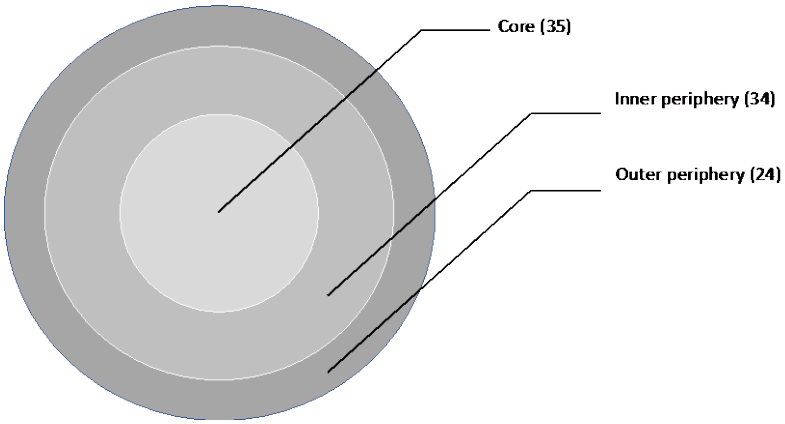

Figure 2: Core-periphery analysis

The thirty-four inner periphery entities are the following:

American Samoa (VII, IX), Bahrain (IV, VIII), Belize (VI, IX), Bhutan (VI, IX), Brunei Darussalam (IV, VIII), Cabo Verde (VII, IX), Comoros (VII, IX), Djibouti (VI, IX), Eswatini (Swaziland) (VII, IX), Fiji (VII, IX), The Gambia (V, IX), Guinea-

Bissau (III, IX), Hong Kong (I, VIII), Kiribati (VII, IX), Kuwait (I, VIII), Lebanon (I, VIII), Lesotho (III, IX), Liberia (III, IX), Luxembourg (IV, VIII), Macao (IV, VIII), Malta (IV, VIII), Mauritius (IV, VIII), Monaco (VII, VIII), Montenegro (VII, IX), Puerto Rico (I, VIII), Qatar (I, VIII), Samoa (VII, IX), Sierra-Leone (III, IX), Singapore (I, VIII), Solomon Islands (VI, IX), Timor-Leste (VII, IX), Trinidad and Tobago (IV, VIII), Vanuatu (VII, IX), West Bank and Gaza (I, VIII).

The twenty-four outer periphery entities are:

The Bahamas (IV), Belgium (VIII), Burundi (III), Cyprus (IV), El Salvador (I), Equatorial Guinea (II), Estonia (II), Greenland (II), Guyana (III), Iceland (II), Israel (VIII), Jamaica (I), Kosovo (VII), Kyrgyz Republic (III), Malawi (III), Mauritania (III), Netherlands (VIII), New Caledonia (IV), Slovenia (I), Somalia (III), Suriname (VI), Switzerland (VIII), Tajikistan (III), Togo (III).

This core-periphery classification is useful for future research on the challenges (and potential opportunities) common to the core entities, and how periphery entities can inform policy making in these core entities (and vice versa). The indexing is particularly helpful in isolating groups of countries that can be studied together. For example, the sub-group with a (VII, IX) classification: American Samoa, Cabo Verde, Comoros, Eswatini (Swaziland), Fiji, Kiribati, Montenegro, Samoa, Timor-Leste and Vanuatu. Comparing and contrasting the socio-economic challenges faced by these entities can provide insights as to how they can learn from their common experiences. Similarly, Belgium, Israel, the Netherlands and Switzerland are all indexed as Class VIII entities. Analysing the smallness of these counties vis-à-vis each other can help explain their economic efficiency in terms of output per square kilometre, as well as allow for optimization. Similarly, pairings of states (and non-states) such as Bahrain (IV, VIII) and Macao (IV, VIII) can provides insights into possible policy changes to address common socio-economic issues.

V CONCLUSION

Notwithstanding a substantial literature on small states, uncertainty remains as to their definition.[24] This paper is a modest attempt to provide a framework for defining small states and non-states based on quantifiable data. The intention is not to close the set of states that can qualify as small, but to provide a time-variant, scale-variant grouping of states into different classes of 'smallness.' The result is a framework for further research into potential policy insights from a comparative analysis of these entities based on their classification.

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24 Matthias Maass "The Elusive Definition of the Small State" (2009) 46(1) International Politics 65.

Given that the framework is time-variant, it is expected that the composition of the nine Classes defined in this paper will change over time, due to changes in all three variables, especially relative population and relative GDP. It is therefore useful to have these classes updated at regular intervals.[25] With the increasing secessional pressures seen today in regions like Catalonia and Kurdistan, it is also reasonable to expect that more states will be born this century. Many non-states are also likely to gain statehood. After all, the number of world states has quadrupled since the 1800s, largely due to technological advances.[26] The *Fourth Industrial Revolution* is likely to contribute to this proliferation. This structural change in terms of territory could have a significant impact on the composition of the analytical Classes. However, even without such breakdown of nation-states, the gradual change in population and GDP could be enough to alter the composition. A periodic update of the nine Classes is hence important to ensure their accuracy.

There is also the possibility of augmenting the dataset of states and non-states to incorporate entities not included in the World Bank catalogue (such as the Vatican City).

One critique of the framework is the use of GDP as a proxy for government size. An orthodox approach would measure the size of government as its expenditure expressed as a percentage of GDP. Using the latter, however, will introduce new countries into the set of small states – countries that are not normally associated with this class of states. For example, countries such as India, Mexico and the Philippines would then be introduced through the small size of their governments. Future research, however, can isolate the government size variable and study smallness using the usual proxy, but in isolation of the other two variables (territory and population). Under this approach, territory and population could be argued to be represented indirectly in the expenditure of government as a percentage of GDP. This approach could provide useful insights as to smallness, although not necessarily as intuitive as those flowing from a combination of territory, population and GDP.

It is hoped that the core-periphery classification will fill the current gap in the definition of small states, and by doing so, increase the research output on small

25 The proposed update is different from that critiqued earlier in relation to static definitions. The latter is essentially based on tagging of specific states. The proposed update looks at maintaining the relativities between political entities on a global scale. A new dataset needs to be constructed and quartile analysis run *de novo*.

26 Tom Ginsburg "War and Peace in Modern Constitutional Law" (Speech delivered at the first plenary session of the 10th World Congress of Constitutional Law, Seoul, South Korea, 18 June 2018).

political entities (states and non-states) and their *sui generis* political and socio-economic challenges and opportunities.

APPENDIX

Class VIII and Class IX Methodologies

The densities for Class VIII were calculated as follows:

$$Density\ for\ country\ i = \left(\frac{Population_i}{Territory_i}\right)\left(\frac{GDP_i}{Population_i}\right) = \frac{GDP_i}{Territory_i} \quad \text{(A1)}$$

This Class VIII criterion is population-free, in the sense that, while it accounts for population in terms of the population density and per capita ratios (used to compute the overall density for each country), the product of these densities cancels out the population variable. This category, hence, is based on a loose expression of economic efficiency in relation to a given territory. Of course, efficiency is dependent on a number of variables, including human capital and natural endowments, but for the purpose of defining small 'states', these are aggregated under the GDP figure for each entity.

The second set of densities, is a generalized set. This approach builds on the idea of the economy as an energy transformation.[27] The energy input into economic systems is modeled as the real energy stored in systems of generalized momenta and generalized displacement. The energy can be expressed as quadratic functions in analytical variables (in this paper: territory, population and GDP):[28]

$$E_i = \frac{1}{2}\, a(x_i)^2\,,\ i \in [1,2], \quad \text{(A2)}$$

where x_i is the effort (or flow) variable associated with energy source E_i . The constant a represents the storage element. Given that this element represents the total (real) energy used by the world-economy, we take the storage capacity for all inputs to be identical. This 'quadratic degree of freedom' form suggests that territory, population and GDP are quadratic and independent degrees of freedom.

A *per-unit* (normalized) system is introduced to express the energies. This *per-unit* system normalizes quantities to a common base and allows the elimination of (measurement) units associated with efforts and flows, and hence enables the comparison between inputs from different energies (namely territory, population and GDP). By using normalized variables, we can compare the energy from territory (measured in length-squared, in particular square kilometres), the energy from people (measure in headcount), with the energy from GDP (measured in currency,

27 For a full treatment of this approach see Benjamen Franklen Gussen *Ranking Economic Performance and Efficiency in the Global Market: Emerging Research and Opportunities* (IGI Global, 2018).

28 Note the similarity between this expression and those for the energy stored in electrical inductance and capacitance. The same expression can be seen, *inter alia*, in kinetic energy. See Gussen, above n 28.

in particular current USD). In *per-unit*, the world receives one unit of area energy, and one unit of people energy, and one unit of GDP energy.

A *per-unit* variable $(\tilde{x}_{ij})$ is one that is expressed as a fraction of a base quantity. These *per-unit* variables represent a percentage of the total existing in the world. The energy input to each of n countries can hence be represented as:

$$\widetilde{E}_{ij} = \frac{a(x_{ij})^2}{\sum_{j=1}^{n} a(x_{ij})^2} = \left(\frac{x_{ij}}{\sqrt{\sum_{i=1}^{n} (x_{ij})^2}} \right)^2 = (\tilde{x}_{ij})^2 \,, \forall\, i \in [Territory, Population, GDP] \quad \text{(A3)}$$

Where n represents the number of countries used in the 2017 World Bank dataset $(n = 217)$.[29]

Based on the above, the sum of all the energy from input i would be equal to one:

$$\tilde{E}_i = \sum_{j=1}^{n} \widetilde{E}_{ij} = \sum_{j=1}^{n} (\tilde{x}_{ij})^2 \equiv (\tilde{x}_i)^2 = 1, \qquad \forall\, i \in [Territory, Population, GDP] \quad \text{(A4)}$$

In other words, the total energy to the world-economy from m different degrees of freedom is equal to one *per-unit* for each variable. The total energy stored in each of the input degrees of freedom is therefore the same for all inputs.

29 As stated in the paper, while this set is more comprehensive than the number of countries members of the United Nations (currently at 193), some entities are not represented in the data, most notably the Vatican City.

CLASSIFICATION CLASSES:	I	II	III	IV	V	VI	VII
POLITICAL ENTITY	(T)	(P)	(G)	(T, P)	(T, G)	(P, G)	(T, P, G)
American Samoa							•
Andorra							•
Antigua and Barbuda							•
Aruba							•
Bahamas, The				•			
Bahrain				•			
Barbados							•
Belize						•	
Bermuda							•
Bhutan						•	
British Virgin Islands							•
Brunei Darussalam				•			
Burundi			•				
Cabo Verde							•
Cayman Islands							•
Central African Republic			•				
Channel Islands							•
Comoros							•
Curacao							•
Cyprus				•			
Djibouti						•	
Dominica							•
El Salvador	•						
Equatorial Guinea		•					
Estonia		•					
Eswatini (Swaziland)							•
Faroe Islands							•
Fiji							•
French Polynesia							•
Gambia, The					•		
Gibraltar							•
Greenland		•					
Grenada							•
Guam							•
Guinea-Bissau			•				
Guyana						•	
Hong Kong SAR, China	•						
Iceland		•					
Isle of Man							•
Jamaica	•						
Kiribati							•
Kosovo							•
Kuwait	•						
Kyrgyz Republic			•				
Lebanon	•						

Table A1: Classes I to VII - Non-Density Classes (American Samoa to Lebanon)

CLASSIFICATION CLASSES:	I	II	III	IV	V	VI	VII
POLITICAL ENTITY	(T)	(P)	(G)	(T, P)	(T, G)	(P, G)	(T, P, G)
Lesotho			•				
Liberia			•				
Liechtenstein							•
Luxembourg				•			
Macao SAR, China				•			
Malawi			•				
Maldives							•
Malta				•			
Marshall Islands							•
Mauritania			•				
Mauritius				•			
Micronesia, Fed. Sts.							•
Monaco							•
Montenegro							•
Nauru							•
New Caledonia				•			
Northern Mariana Islands							•
Palau							•
Puerto Rico	•						
Qatar	•						
Samoa							•
San Marino							•
Sao Tome and Principe							•
Seychelles							•
Singapore	•						
Sierra Leone			•				
Sint Maarten (Dutch part)							•
Slovenia	•						
Solomon Islands						•	
Somalia			•				
St. Kitts and Nevis							•
St. Lucia							•
St. Martin (French part)							•
St. Vincent and the Grenadines							•
Suriname						•	
Tajikistan			•				
Timor-Leste							•
Togo			•				
Tonga							•
Trinidad and Tobago				•			
Turks and Caicos Islands							•
Tuvalu							•
Vanuatu							•
Virgin Islands (U.S.)							•
West Bank and Gaza	•						

Table A1: Classes I to VII - Non-Density Classes (Lesotho to West Bank and Gaza)

Andorra	Hong Kong SAR, China	Puerto Rico
Antigua and Barbuda	Isle of Man	Qatar
Aruba	Israel	San Marino
Bahrain	Kuwait	Sao Tome and Principe
Barbados	Lebanon	Seychelles
Belgium	Liechtenstein	Singapore
Bermuda	Luxembourg	Sint Maarten (Dutch part)
British Virgin Islands	Macao SAR, China	St. Kitts and Nevis
Brunei Darussalam	Maldives	St. Lucia
Cayman Islands	Malta	St. Martin (French part)
Channel Islands	Marshall Islands	St. Vincent and the Grenadines
Curacao	Mauritius	Switzerland
Dominica	Micronesia, Fed. Sts.	Tonga
Faroe Islands	Monaco	Trinidad and Tobago
French Polynesia	Nauru	Turks and Caicos Islands
Gibraltar	Netherlands	Tuvalu
Grenada	Northern Mariana Islands	Virgin Islands (U.S.)
Guam	Palau	West Bank and Gaza

Table A2: Class VIII - High Density Class

American Samoa	Fiji	Palau
Andorra	French Polynesia	Samoa
Antigua and Barbuda	Gambia, The	San Marino
Aruba	Gibraltar	Sao Tome and Principe
Barbados	Grenada	Seychelles
Belize	Guam	Sierra Leone
Bermuda	Guinea-Bissau	Sint Maarten (Dutch part)
Bhutan	Isle of Man	Solomon Islands
British Virgin Islands	Kiribati	St. Kitts and Nevis
Cabo Verde	Lesotho	St. Lucia
Cayman Islands	Liberia	St. Martin (French part)
Channel Islands	Liechtenstein	St. Vincent and the Grenadines
Comoros	Maldives	Timor-Leste
Curacao	Marshall Islands	Tonga
Djibouti	Micronesia, Fed. Sts.	Turks and Caicos Islands
Dominica	Montenegro	Tuvalu
Eswatini (Swaziland)	Nauru	Vanuatu
Faroe Islands	Northern Mariana Islands	Virgin Islands (U.S.)

Table A3: Class IX - Generalized High Density Class