

**ECONOMIC SIZE, OPENNESS AND EXPORT DIVERSIFICATION:
A STATISTICAL ANALYSIS**

by

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INTRODUCTION

Several attempts have been made in the economic literature to determine the extent to which economic size affects various economic events such as output, economic development, growth and the extent of international trade. Since country size is regarded as multi-dimensional, researchers have relied on several measures of country size, namely - Gross domestic product, population and land area. GDP can give an indication of the size of the domestic market. Population can provide a crude indication of market size in addition to an approximation of the human resource base of the economy. Land area, especially accessible or arable land, is the least use of the three measures, but can give an indication of the potential or actual diversity of non-human natural resources.

The purpose of this paper is to determine what implications does the size of a country have on its degree of openness to international transactions and on its degree of export concentration.

SIZE

The size of a country is the key criterion for classifying it as a micro-state or macro-state. It is evident from the theoretical literature, that there is little agreement concerning the precise definition of size (Kuznets, 1960; Khatkhate and

Short, 1980; Dommen and Hein, 1985; Steeten, 1993). Kutznets(1963) considered population to be of significant importance; however he acknowledged the relevance of land area, conceding that most of the countries which are small in population are also small in land size. Demas(1965) also shared this opinion as he described size as "...nothing more than the absolute number of persons living in a national economy and its land area". Researchers have used other indicators of size such as GDP (Lloyd, 1968), Population and GDP together(Khalif, 1976, 1979). The more modern researchers hold the view that any useful measure of a country's size should be based on more than one or two criteria (Armstrong and Read, 1995). A growing number of researchers have incorporated all three of the main indicators - population, land area and GDP into their definition of size. Thus Thomas (1974) suggests an index of population and national output including its distribution between persons, its special concentration and geographical area. This approach have also been used by Downes(1988) in his principal components measure. Although the use of purchasing Power Parity is becoming less popular in economic circles, this paper have included GDP adjusted for purchasing power parity as an addition factor in the definition of size. The use of GDP adjusted for purchasing power parity can give a more realistic indication of the standard of living in a country than GDP denominated in US currency. Thus this

paper utilizes four factors in determining economic size - population, land area, GDP(\$US) and GDP adjusted for purchasing power parity.

In much of the literature on size, countries are described simply as large or small simply in relation to some arbitrary chosen standard (Jainarian, 1976: 37), (Galbis 1984: 36) and (Legarda 1984: 41). But on either side of the dividing line there exist many countries which are similar in profiles so that no realistic separation can be made between them for analytical purposes. Instead of a rigid limit a natural break has been sought between very large(macro)states and the very small(micro)states, concentrating in particular on population and GDP.

DATA SET

First we ranked the economies by population, land area, GDP and GDP adjusted for purchasing power parity. We then pick the highest and lowest quartiles from each ranking concentrating on population and GDP. Finally we designated those countries which are common to each of the highest quartiles as macro-states and those common to each of the lowest quartiles as micro-states. After a further criterion that there should be published social and financial statistics for all the countries for the period 1988 to 1992 we ended up with 17 very small (micro) states and 15 very large (macro)states.

The population, GDP and area of the micro-states chosen for inclusion in our analysis are set out in Table 1. These can be compared with the characteristics of the 15 macro-states set out in Table 2. Each macro-state has a population of at least 20 million with GDP and Land area no less than US\$35 billion and 240,000 square kilometers respectively. Each micro-state has a population of no more than 5.5 million and GDP of no more than US\$7 million with the only exception for US\$49.5 million for Singapore.

Downes' (1988) study which ranked 145 rich and poor countries included fourteen of our macro-states among the largest 31 countries and eleven of the micro-states among the smallest 31 countries.

OPENNESS

As a measure of openness we choose the common concepts of trade-income ratios and the ratio of total current account transactions to income. These two ratios give us a rough notion of the size of the international sectors of the economy. In the traditional literature the trade-income ratio as a measure of openness of an economy comprises of only merchandise exports and imports to GDP. This measure gives a misleading indication of the degree of openness of various economies. It does not take into account the exports and imports of services which constitutes a large

proportion of many economies international transactions. In this paper however, we incorporate the exports and imports of services in determining the degree of openness of an economy. The trade-income ratio tells us something about the interdependence of production and consumption in different countries, and the total current account-income ratios tells us something about a country's total international transaction.

Tables 3 and 4 measures the extent of trade of micro and macro states respectively by their percentage of total exports and imports to Gross Domestic Product. The degree of openness as measured by the trade/income ratio reveals that micro-states degree of openness ranges from a low of 70 per cent for Trinidad and Tobago to a high of 355 per cent for Singapore. The macro-states figures ranged from a low of 15 per cent for Argentina and Brazil to a high of 69 per cent recorded for Egypt. There exist a margin of 255 per cent between the most open of the economies in our sample to the least open. The average ratio of total exports of goods and services to GDP was 108 per cent for the micro-states for the period 1988 to 1992 compared with 36 per cent realized for the macro-states. This average represents more than a simple arithmetic mean, with the micro-states recording the top thirteen ratios and the macro-states recording ten of the lowest ratios during the period (see Tables 3,4). This would seem to indicate that there is a greater significant

difference in the trade orientation of small states when compared with larger states than is conventionally thought to be.

Total current account transactions to GDP (see Tables 5,6) as a measure of international openness also reveals the highly openness of micro-states which is on average 133 per cent of GDP for the micro-states compared with an average of 48 per cent for macro-states.

OPENNESS AND SIZE

Using the data obtained from tables 1 to 6 as an input into the program Econometric Views we obtain the correlation matrix seen in table 8. This matrix demonstrates the correlation between the size of a country (measured by population, area and GDP) and its degree of openness measured by Imports plus Exports to GDP (TRADE) and Total Current Account Transactions to GDP (TRANS). The matrix demonstrates a negative correlation between the size of a country and its degree of openness. As the size of a country decreases it will be found to have a higher degree of openness to international transactions. Hence other things being equal, micro-states tend to depend more heavily on foreign markets than do macro-states. This dependence is due largely to a scarcity of natural resources and the small population that characterize micro-states.

The relatively scarcity of natural resources and the small population prevents micro-states from highly diversifying their economy and hence they must rely to a great extent on imports of goods and services to meet domestic consumption. Since the small population cannot absorb any large portion of the potential output of the economy, micro-states experience diseconomies from the production for only domestic consumption. Hence to ensure growth these economies have to export their surplus production to international markets.

The highly openness of micro-states hence stems from the fact that they manufacture a small range of products and hence must export a large portion of their output in order to import the many goods and services they don't have enough resources to produce.

EXPORT DIVERSIFICATION

The size of a country also have significant implication to its degree of export diversification. A comparative analysis of the percentage sum of the three major components of the micro-states and macro-states exports (see Charts 1, 2) reveals that on average, micro-states are less diversified than macro-states. The three major exports of the micro-states accounts for more than 40 per cent of their total exports with the exceptions of 36.6, 30.4 and 29.7 per cent for Nicaragua, Panama and Singapore respectively. Services form an important sector within the micro-states

economies, with travel or other service exports included in the major three export items for all the micro-states with the only exception for Trinidad and Tobago whose exports were concentrated on petroleum based products (see Table 7) . Macro-states because of their high resource base tend to be highly diversified in their exports, with the three major exports accounting for a relatively small share of total exports, with the only interesting exception for Algeria which was above 60 per cent of total exports. Crude Petroleum and gas accounted for 40.2 and 27.6 per cent respectively of Algeria's total exports. Table 9 represents the correlation matrix between the size of a country and its degree of export concentration (CONCENT). This matrix demonstrates a negative correlation between the size of a country and its degree of export concentration (measured by the ratio of the three major export items to total exports). The smaller the size of a country the more concentrated we can expect its exports to be.

There are three main reasons why we can expect on average that macro-states will be more diversified in its export structure than micro-states. The first lies in the size of the micro-state's land area and its effects on natural, irreproducible resources. The availability of a variety of mineral and other useful natural resources is largely a function of land area, micro-states are relatively small in land area, and hence in general will have a much smaller variety of natural resources than macro-states to utilize in the production of goods and services for export. The second reason

lies in the fact that the international market is highly competitive, exports diversification would call for the reallocation of the micro-states resources which might prove to be extremely costly and risky for many small states. The third reason is, while a micro-states may lack a large variety of natural resources, its supply of a few may give it a comparative advantage over the macro-states. The existence of such a comparative advantage would prove beneficial for the micro-states to concentrate on the productions of those goods and services.

COMPETITIVENESS

Since micro-states are highly dependent on their export sector for development and are highly export concentrated. Micro-states have little choice but to ensure that their tradable sectors are competitive at world prices and have a greater efficiency and flexibility than their macro-states competitors.

To ensure this competitiveness, micro-states should consider, firstly the removal of taxes on all direct and indirect inputs for the exports of goods and services. Exporter should have a relatively free access to the world market, where they can purchase their inputs at a cheaper rate than in the domestic market. If the authorities attempt to limit exporters' access to cheaper inputs from the world market by the imposition of high taxes on direct and indirect inputs, the countries' international competitiveness will suffer.

Secondly micro-states should focus heavily on education, and on the improving the quality of their labour force. Since micro-states are found to concentrate their exports in the area of services, they should invest in the continued improvement of their tourism product and the training of their labour force in internationally traded services.

Thirdly a relatively low fiscal deficit should be maintained to ensure that the inflation in domestic prices does not increase any faster than for foreign prices. Interest rates in the domestic market can then be kept to a level which are comparable with international interest rates. Thus exporters may obtain capital at a price comparable to those available to their larger competitors. Also exchange rates should be competitive and relatively stable.

Fourthly government should ensure that there is adequate physical infrastructure - including telecommunication services, ports, power provisions and transportation services in their country.

CONCLUSION

The economic size of a nation have implications to the degree of its openness to international trade and to its degree of export concentration. On average small economies are likely to be more open and hence more dependent on foreign trade than larger economies, this is due largely to its limited irreproducible natural

resources and its small population. These factors also contribute to the high concentration of the small countries exports of goods and services. Since it is more likely for small countries to become more highly open in the future, trade will become one of the major ingredients to growth. Thus it is necessary that micro-states put the necessary mechanism in place to ensure their can be competitive on the world market.

Due to these structural characteristics that small countries have been found to have, we can include openness and the degree of export concentration as two additional factors to help determine the economic size of a country.

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Table 1. Characteristics Of Micro-States

	Population (000s)	Area (Kilometers ²)	GDP 1992 (US\$ Millions)	GDP 1992 (PPPS Millions)
Barbados	259	430	1579	2503
Belize	199	22800	480	1118
Costa Rica	3160	51060	6737	17316
Cyprus	707	940	6862	10640
El Salvador	5245	20720	5933	11801
Fiji	750	18270	1558	4057
Honduras	5417	111890	3419	10834
Iceland	261	100250	6913	4609
Jamaica	2448	10830	3355	7833
Jordan	3733	88930	5138	15939
Malta	361	320	2734	2989
Nicaragua	3995	121400	1846	11146
Panama	2515	74430	6015	14084
Paraguay	4444	397300	6446	15065
Singapore	2818	610	49500	51653
Togo	3742	54390	1638	4565
Trinidad & Tobago	1254	5130	5939	12239

Source: UNPD Human Development Report; World Bank, World Development Indicators.

Table 2. Characteristics Of Macro-States

	Population (000s)	Area (Kilometers ²)	GDP 1992 (US\$ Millions)	GDP 1992 (PPPS Millions)
Algeria	26254	2381740	49115	127856
Argentina	33389	273690	228779	295826
Brazil	152668	845610	376949	799980
Canada	28542	9220970	565131	585681
China	1164951	9326410	418180	2271654
Chile	13599	748800	42748	114367
Colombia	34870	1038700	4869	191087
Egypt	54689	995450	35556	193599
France	57374	550100	1324287	46666
Germany	80624	349330	1939455	1119366
India	882300	2973190	243636	1085229
Mexico	86882	1908690	334333	634238
Peru	22407	1280000	41763	73943
United kingdom	38006	241600	1044866	652182
United states	255414	9159120	5937300	6068636

Source: See Table 1.

Micro-States

Table 3. Exports & Imports as a share of Gross Domestic Product

Country	Exports/GDP	Imports/GDP	Imports & Exports/GDP
Barbados	0.49	0.48	0.97
Belize	0.60	0.66	1.26
Costa Rica	0.36	0.39	0.75
Cyprus	0.49	0.57	1.06
El Salvador	0.16	0.28	0.44
Fiji	0.58	0.57	1.15
Honduras	0.30	0.35	0.65
Iceland	0.32	0.32	0.64
Jamaica	0.55	0.58	1.13
Jordan	0.55	0.79	1.34
Malta	0.84	0.95	1.79
Nicaragua	0.22	0.53	0.75
Panama	0.40	0.33	0.73
Paraguay	0.32	0.37	0.69
Singapore	1.82	1.73	3.55
Togo	0.35	0.45	0.80
Trinidad & Tobago	0.40	0.30	0.70

Source: See Table 1

Macro-States

Table 4. Exports & Imports as a share of Gross Domestic Product

Country	Exports/GDP	Imports/GDP	Imports & Exports/GDP
Algeria	0.21	0.20	0.41
Argentina	0.09	0.06	0.15
Brazil	0.09	0.06	0.15
Canada	0.25	0.26	0.51
China	0.14	0.13	0.27
Chile	0.33	0.29	0.62
Colombia	0.18	0.14	0.32
Egypt	0.29	0.40	0.69
France	0.22	0.22	0.44
Germany	0.23	0.23	0.46
India	0.08	0.10	0.18
Mexico	0.14	0.16	0.30
Peru	0.11	0.13	0.24
United kingdom	0.23	0.26	0.49
United states	0.09	0.11	0.20

Source: See Table 1.

Micro-States

Table 5. Total Current Acc. Debits & Credits as a share of Gross Domestic Product, 1988-1992

Country	Debits/GDP	Credits/GDP	Debits & Credits/GDP
Barbados	0.53	0.51	1.05
Belize	0.69	0.73	1.43
Costa Rica	0.40	0.47	0.87
Cyprus	0.56	0.61	1.18
El Salvador	0.31	0.36	0.67
Fiji	0.67	0.64	1.31
Honduras	0.35	0.43	0.78
Iceland	0.34	0.37	0.71
Jamaica	0.67	0.71	1.38
Jordan	0.82	0.87	1.69
Malta	0.99	0.99	1.98
Nicaragua	0.37	0.64	1.01
Panama	1.15	1.13	2.28
Paraguay	0.36	0.39	0.75
Singapore	1.95	1.85	3.81
Togo	0.49	0.56	1.05
Trinidad & Tobago	0.40	0.40	0.82

Source: IMF Balance of Payment Statistics Yearbook, 1996.

Macro-States

Table 6. Total Current Acc. Debits & Credits as a share of Gross Domestic Product, 1988-1992

Country	Debits/GDP	Credits/GDP	Debits & Credits/GDP
Algeria	0.23	0.22	0.45
Argentina	0.10	0.11	0.21
Brazil	0.10	0.09	0.19
Canada	0.27	0.31	0.58
China	0.15	0.14	0.29
Chile	0.34	0.35	0.69
Colombia	0.24	0.22	0.46
Egypt	0.29	0.27	0.58
France	0.30	0.30	0.60
Germany	0.66	0.33	0.99
India	0.09	0.10	0.19
Mexico	0.21	0.25	0.47
Peru	0.16	0.20	0.36
United kingdom	0.37	0.39	0.78
United states	0.22	0.13	0.36

Source: See Table 5.

Table 7

Major Exports of Micro & Macro States as a percentage of their Total Exports Of Goods and Services

BARBADOS		JAMAICA		TRINIDAD & TOBAGO		EGYPT	
Travel	59.8	Travel	33.9	Petroleum Products	29.1	Other Services	21.7
Sugar & Honey	3.7	Base Metal	28.6	Crude Petroleum	27.6	Travel	13.5
Other Services	12.5	Other Services	19.5	Inorganic Elements	8.4	Crude Petroleum	9.1
BELIZE		JORDAN		ALGERIA		FRANCE	
Other Services	24.1	Other Services	21.5	Crude Petroleum	40.2	Travel	15.1
Sugar & Honey	17.6	Travel	19.0	Gas	27.4	Other Services	7.7
Travel	16.2	Crude Fertilizer	13.4	Petroleum Products	18.2	Motor Vehicles	4.9
COSTA RICA		MALTA		ARGENTINA		GERMANY	
Fruits & Nuts	20.2	Travel	25.2	Animal Feeds	9.7	Motor Vehicles	8.9
Travel	14.5	Transistors	23.1	Vegetable Oil	7.0	Other Services	8.2
Coffee	13.0	Women's Outerwear	3.9	Travel	5.6	Motor Vehicles Parts	3.8
CYPRUS		NICARAGUA		BRAZIL		INDIA	
Travel	42.6	Coffee	15.4	Travel	18.6	Pearls & precious Stones	13.2
Other Services	18.7	Meat	12.3	Iron Ore	6.3	Other Services	8.5
Women's Outerwear	3.0	Other Services	8.8	Animal Feeds	5.2	Travel	7.9
EL SALVADOR		PANAMA		CANADA		MEXICO	
Coffee	25.5	Other Services	15.8	Motor Vehicles	10.3	Crude Petroleum	22.0
Other Services	23.7	Travel	8.7	Other Services	5.5	Motor Vehicles	7.8
Travel	8.3	Fruits & Nuts	5.9	Paper	5.3	Other Services	5.0
FIJI		PARAGUAY		CHILE		PERU	
Travel	23.2	Cotton	17.5	Copper	28.6	Copper	17.0
Sugar & honey	20.9	Other Services	16.1	Base Metals	8.2	Base Metals	16.4
Other Services	9.8	Travel	16	Fruits & Nuts	6.2	Animal Feeds	11.9
HONDURAS		SINGAPORE		COLOMBIA		UNITED KINGDOM	
Fruits & Nuts	23.6	Petroleum Products	11.5	Coffee	19.8	Other Services	12.8
Coffee	15.7	Data Processing Equipment	9.8	Crude Petroleum	14.8	Travel	5.8
Other Services	8.4	Other Services	8.4	Other Services	7.7	Crude Petroleum	3.5
ICELAND		TONGO		UNITED STATES			
Fish	36.2	Fertilizers	22.9	Other Services	13.2		
Fish Salted	12.3	Other Services	8.9	Travel	8.7		
Other Services	10.5	Cotton	8.8	Aircraft	5.6		

Correlation Matrix

Table 8

	TRADE	TRANS
AREA	-0.317532	-0.352254
GDPPI	-0.292037	-0.283571
GDPUS	-0.244090	-0.205931
POP	-0.284000	-0.319499

Table 9

	CONCENT
AREA	-0.233846
GDPPI	-0.162670
GDPUS	-0.188568
POP	-0.160177

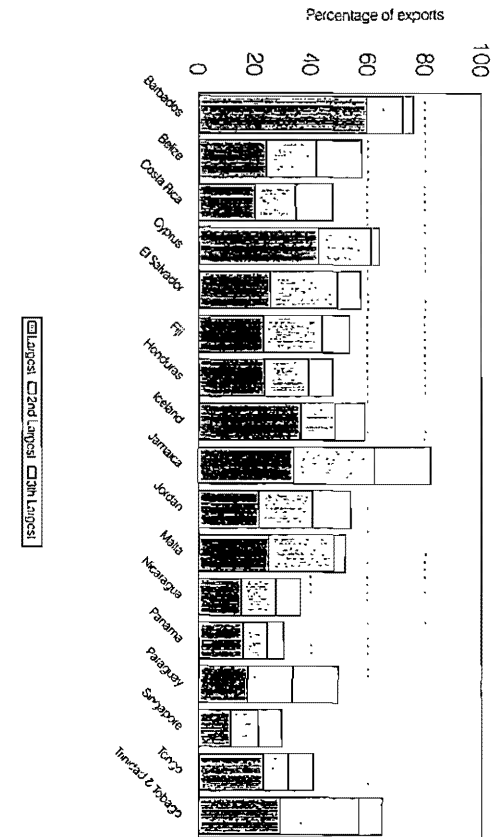


Chart 1
Micro-States

Chart 2

Macro-States

