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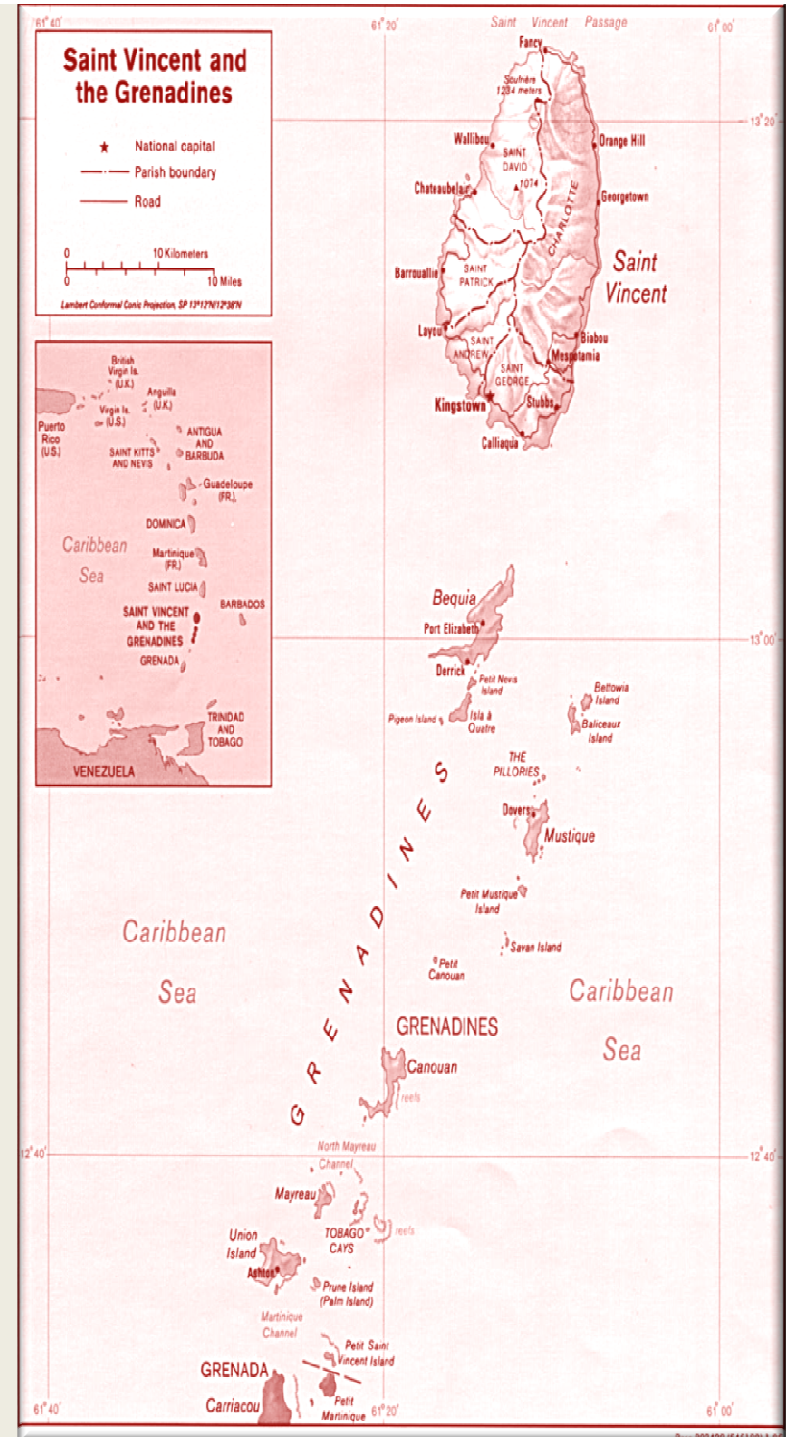
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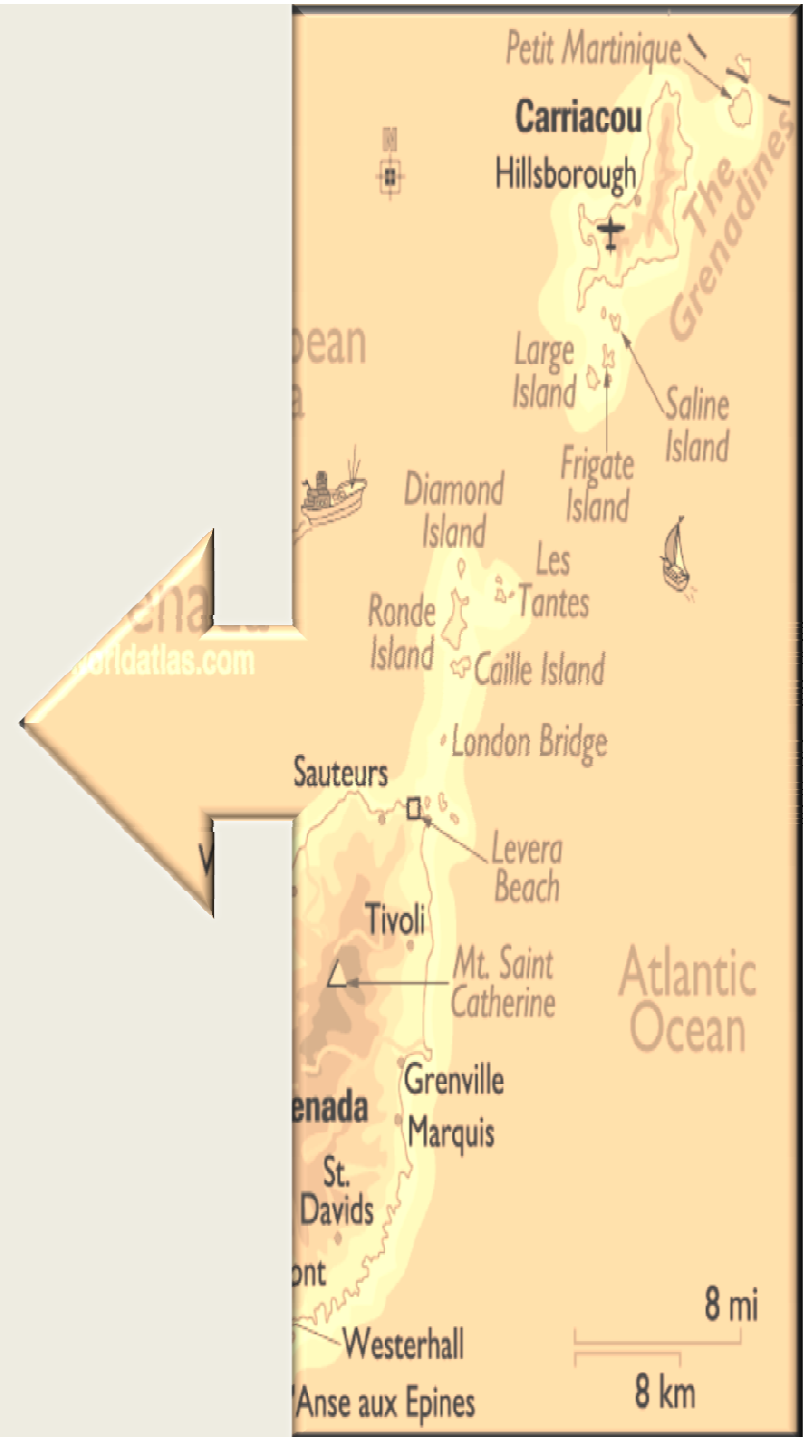
Introduction

- Prudent fiscal practice requires that countries measure their public expenditure against some benchmark.
- Four out of eight ECCU member countries can be classified as archipelagic
- This paper examines countries with archipelagic geographies and seeks to determine whether they have higher levels of public expenditure than other countries



Outline of Presentation

- Introduction
- Research questions
- Definitional Issues
- Review of the Literature
- Data and Data Properties
- Methodology
- Results
- Conclusion



Definitional Issues

United Nations Convention on law of the sea,
section 4, article 46;

“archipelagic state means a state constituted wholly by one or more archipelagos and may include other islands.”

“archipelago” means a group of islands, including parts of islands, interconnecting waters and other natural features which are so closely interrelated that such islands, waters and other natural features form an intrinsic geographical, economic and political entity, or which historically has been regarded as such.”

Definitional Issues Con't

- Archipelagic countries are diverse in terms of population size, level of development, geographic location and description



Table 3: Geographic Description of Archipelagic Countries

Country	Peninsulas	Islands	Islets/Cays
Antigua & Bar.		2	
Bahamas		29	661
Bermuda		138	
Cape Verde		10	8
Comoros		4	
Denmark	1	443	1,419
Fiji		322	522
Greece	2	1,400	
Grenada		7	
Indonesia		17,508	
Japan		6,852	
Kiribati		33	
Macao	1	2	
Malaysia	2		
Maldives			1,192
Micronesia		607	
Netherlands Ant		5	
New Zealand		2	
Palau		10	
Papua New G.	1	600	
Philippines		7,107	
Puerto Rico		5	2
Samoa		2	8
Sao Tome Pr.		2	
Seychelles		115	
Singapore		63	
Solomon Is.		1000	
St. Kitts Nevis		2	
St. Vincent Gr.		17	6
Tonga		169	
Trinidad & Tob.		2	
Vanuatu		82	



Research Questions

- Do archipelagic countries have higher levels of public expenditure relative to other countries?
- Do countries with more open economies have greater public expenditure outlays?
- Is there any evidence to support the existence of Wagner's Law?
- Is population density a determining factor for government size?



Review of the Literature

Economic/Apolitical Models:

These models tend to explain government size as a function of factors such as income, openness to trade, the price of government services and other economic factors

Authors include; Alesina and Wacziarg (1997), Borcharding et al. (1985, Rodrik (1998) and Shelton (2007).



Institutional/Political Models;

These models evolved out of public choice theory. The essential argument is that public sector institutions impact to a large measure on public sector outcomes. Institutions encompass the people who work within the institutions as well any procedures and practices that are in place.

Authors include; Mueller (1987), Nordhaus (1975), Borcharding (1985/2001) & Easterly and Levine (1997)

A topographic map of the islands of St. Kitts and Nevis in the Caribbean Sea. The map shows the terrain with elevation contours and labels for various locations such as St. Paul's, Sandy Point Town, Brimstone Hill, Old Road Town, Basseterre, and Nevis. The title 'St. Kitts & Nevis' is visible in a box at the bottom left of the map area.

Review of the Literature Con't

Economic/Political models;

- Borchering 1985 – dependent older persons, population size, price of government services and degree of openness of an economy.
- Rodrik (1998)- robust and positive relationship between size of government and trade openness.
- Shelton (2007)- openness, evidence for Wagner's law, population dependency, income and political rights
- Alesina and Wacziarg (1997) – country size, population size, existence of economies of scale.



Review of Literature Con't

Institutional/Political models;

- Nordhaus (1975) – political business cycle model; opportunistic politicians/policymakers will stimulate an economy immediately before an election
- Borchering (1985) demand for government services as an outcome of the demand for public services by the median voter.
- Easterly and Levine (1997) – presence of heterogeneous preferences that are driven by ethnicity may stimulate interest group activity that can result in log rolling which will result in higher demand for public goods.

Data

- Data obtained from version 6.2 Penn World tables and World Development Indicators database.
- Political rights variable obtained from freedom house and ranges from 1 to 7(1 being the best).
- Fractionalization variables obtained from Alesina (2003), ranges from 0 to 1 (0 being a perfectly homogenous country).
- Annual data for period 1995 to 2003 for 188 countries
32 classified archipelagic



Data Properties

Table I: Summary Statistics for full sample

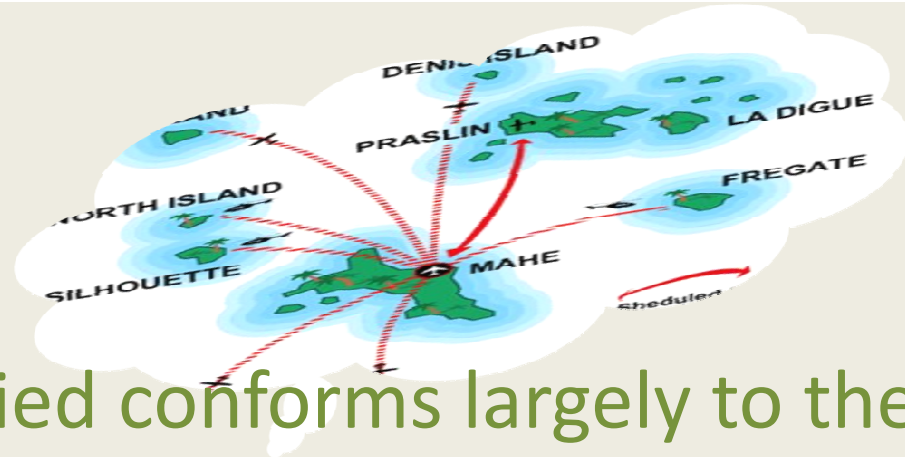
	Obs.	Mean	Std. Dev.	Min	Max
Population (in thousands)	1692	31,766.15	119,630.4	17.04	1,286,976
Land Area (in square kilometers)	1692	707,701.5	1,937,007	25	1.71e+07
GDP per Capita (in U.S\$)	1692	8,665.42	8,860.03	157.48	51,154.67
Government Spending (in % of GDP)	1692	23.83	11.12	2.12	98.27
Openness	1692	87.60	49.95	1.98	392.64
Population Density	1683	271.75	1,285.8	1.45	16,357.8
Age Dependency Ratio	1683	1.50	6.52	0.28	63
% under 15 years old	1692	32.38	10.23	14.08	51.16
% Over 65 years old	1692	6.85	4.51	1.08	19.2
Government Spending per Capita (in U.S\$)	1692	177,665.6	167,471.2	2018.39	1,117,198
Ethnic Fractionalization	1629	0.44	0.26	0.00	0.93
Language Fractionalization	1593	0.39	0.28	0.0021	0.92
Religious Fractionalization	1674	0.44	0.23	0.0023	0.86
Political Rights	1639	3.50	2.21	1	7

Data Properties

Table 2: Summary Statistics for Archipelagic States

	Obs.	Mean	Std. Dev.	Min	Max
Population (in thousands)	288	14,372.05	44,941.79	17.04	234,893.5
Land Area (in square kilometers)	288	112,996.3	348,387.1	25	1,933,658
GDP per Capita (in U.S\$)	288	9,976.93	9,229.04	1,177.75	38,149.13
Government Spending (in % of GDP)	288	26.30	14.51	6.61	75.04
Openness	288	104.46	61.59	16.8	392.64
Population Density	288	846.87	2,818.95	10.4	16,357.8
Age Dependency Ratio	288	3.69	12.05	0.35	63
% under 15 years old	288	29.50	11.83	17.36	46.42
% Over 65 years old	288	6.31	4.26	2.15	18.73
Government Spending per Capita (in U.S\$)	288	239,461	216,458.8	26,652.48	1,117,198
Ethnic Fractionalization	234	0.27	0.21	0.00	0.74
Language Fractionalization	243	0.26	0.25	0.01	0.84
Religious Fractionalization	279	0.48	0.26	0.01	0.81
Political Rights	252	2.21	1.72	1	7

Methodology



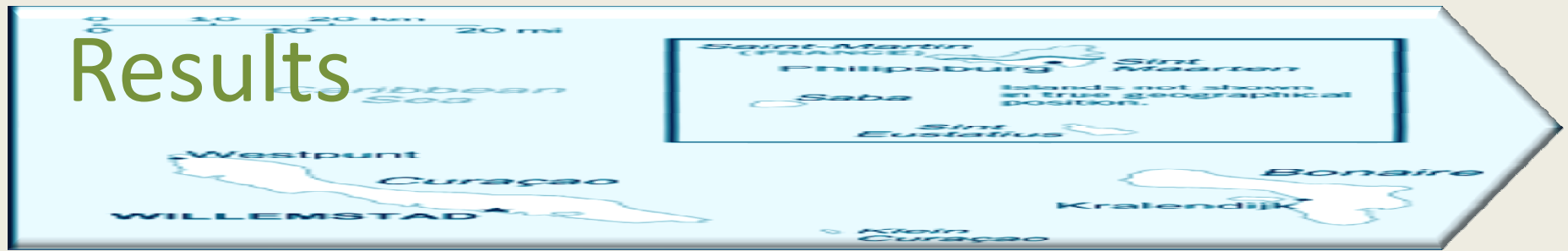
- The model specified conforms largely to the economic/apolitical class of models which aim to explain the size of government.
- We employ an OLS estimator with robust standard errors to the following empirical model;

$$\begin{aligned} \xi_{it} = & \alpha + \beta_1 POP_{it} + \beta_2 GDPPC_{it} + \delta POPDENSE_{it} + \phi OPEN_{it} + \chi FRAC15_{it} \\ & + \psi FRAC65_{it} + \theta ARCHIPELAGIC_i + \gamma ETHNICFRAC_{it} + \varepsilon_{it} \end{aligned}$$

Table 4: Estimation Results

	I	II	III	IV
	GOVGDP	GOVGDP	LGOVPC	LGOVPC
Population	-1.411** (0.166)	-1.075** (0.163)	-0.051** (0.007)	-0.042** (0.008)
Density	-0.004** (0.0003)	-0.005** (0.0004)	-0.0003** (0.00001)	-0.0003** (0.00002)
FRAC15	-0.243** (0.060)	-0.12* (0.060)	-0.014** (0.003)	-0.01** (0.003)
FRAC65	0.075 (-0.094)	0.335** (0.107)	-0.002 (-0.004)	0.006 (-0.005)
GDP per Capita	-4.47** (0.393)	-3.982** (0.389)	0.806** (0.016)	0.82** (0.017)
Openness	0.048** (0.007)	0.054** (0.007)	0.002** (0.0003)	0.002** (0.0003)
ARCHIPELAGIC	2.613** (0.704)	3.073** (0.718)	0.116** (0.026)	0.123** (0.028)
ETHNICFRAC	-3.382** (1.015)	-1.521 (-1.309)	-0.233** (0.049)	-0.15** (0.054)
RELFRAC		4.616** (1.034)		0.114* (0.049)
LANGFRAC		-4.321** (1.352)		-0.172** (0.055)
POLRIGHT		0.698** (0.155)		0.022** (0.007)
Constant	78.984** (5.727)	61.839** (5.568)	5.597** (0.243)	5.082** (0.253)
Observations	1620	1530	1620	1530
R-squared	0.24	0.24	0.88	0.88

Results



- Logged Population variable is significant and negatively related to gov't expenditure in all specifications
- The dependency variable (under 15) significant and carries a negative coefficient.
- The dependency variable (over 65) significant and carries a positive coefficient in equation II
- These results together imply some non linear effects on public expenditure across age cohorts.

Results



- Degree of trade openness is significant & positive in all four specifications
- Logged GDP per capita variable is positive and significant for equations III and IV; providing some support to the existence of Wagner's law. (dependent variable gov. exp. per capita).
- However, In specifications I & II where the dependent variable is Gov. exp/ GDP, the elasticity coefficient associated with GDP per capita is large, negative and significant.

Results

- Dummy variable for religious fractionalization is positive and significant.
- Political rights variable is positive and significantly related to the size of government.
- Language and ethnic fractionalization variables are negatively related to both measures of government size.



Results



- The coefficient associated with the dummy variable for archipelagic states is positive and highly significant in all specifications.
- The results suggest that taking into account changes in all control variables, countries with archipelagic geographies have public spending in the order of about 3 percent of GDP larger than comparative contiguous countries.
- The raw difference in means between archipelagic countries and the full sample shown earlier (tables 1 & 2) is roughly 2.5 percent.

Limitations of the Study

- Definition of archipelagic states can be somewhat subjective; the selection of an archipelagic state is therefore difficult on the margin
- Use of aggregated public expenditure data. There might be significant inferences we can obtain using more disaggregated data.



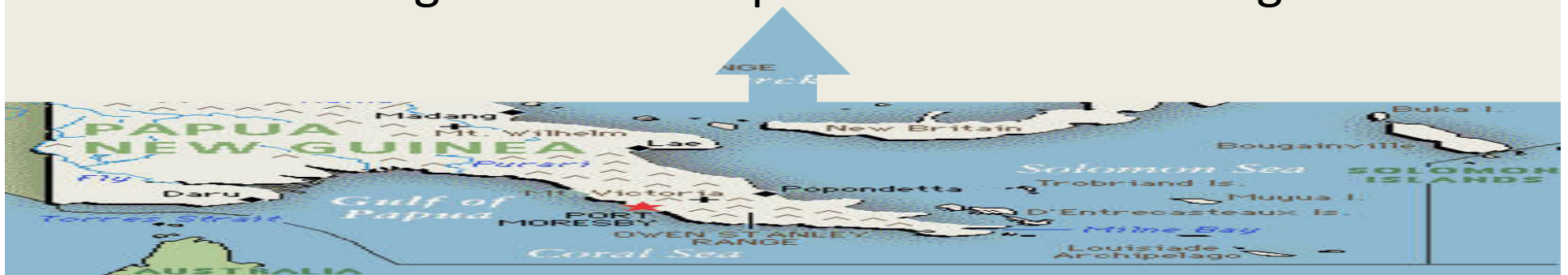
Conclusions

- We find that countries with archipelagic morphologies have higher levels of government spending. This result is indicative of a diminished capacity to realize economies of scale in spending on public service provision/delivery across intervening bodies of water.
- Public expenditure also varies directly with the level of trade openness and dependent population (+65).
- We find some evidence to support Wagner's Law
- We conclude that difficulties in building consensus in highly fragmented societies results in lower public expenditure.



Thoughts on Further Research

- The paper provides an exploratory analysis on the relationship between certain geographic characteristics on public finance outcomes and established an important stylized fact ; geographically fragmented countries incur higher public expenditure relative to comparative contiguous countries.
- Further research would entail determining what particular categories of spending are most affected and constructing models that provide additional insight.



The Caribbean



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Questions ?