



“Space in the Emerging Economies of Latin America: An Investigation Through the Lens of a Macro-Environmental Framework”



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Introduction

We investigate the emerging economies of Argentina, Brazil, Colombia, and Mexico and their space industry through the lens of the political/legal, economic, sociocultural, technological, and environmental (PESTEL) macro-environmental framework.

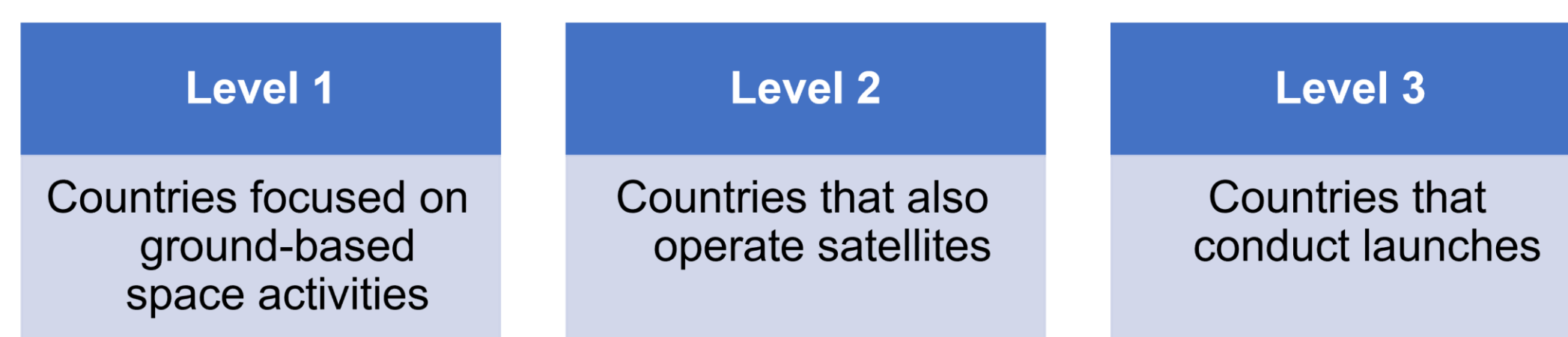


Methodology

Collection of primary and secondary data through interviews and literature review. Examination of the space industry of selected countries through a PESTEL analysis to determine their positioning within one another.

Political/Legal

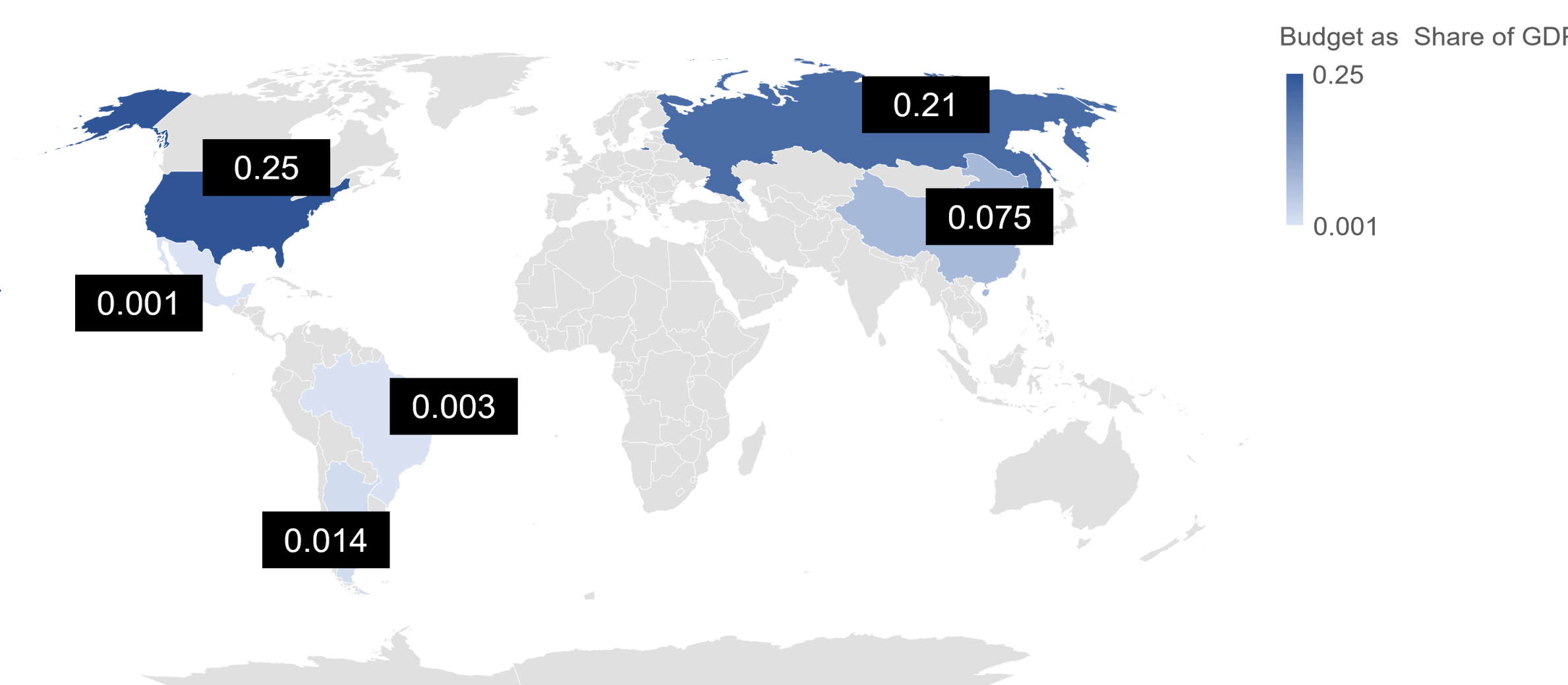
Country	Space Agency	Operational Level	Founded
Argentina	Argentina National Space Activities Commission (CONAE)	Level 2	1991
Brazil	Brazilian Space Agency (AEB)	Level 3	1994
Colombia	Colombian Space Commission (CCE)	Level 2	2006
Mexico	Mexican Space Agency (AEM)	Level 2	2010



Economic

Budgets as a share of GDP compared to power space nations (US, China, Russia).

Government Space Budgets for G20 Countries (2020)
As a share of GDP



Sociocultural

Communication satellites used by each country for societal benefit

Communication Satellites				
Argentina	Brazil	Colombia	Mexico	
~6	~13	~0	~10	
AARSAT 1 AARSAT 2 NAHUEL 1A LATINSAT A LATINSAT B CUBEBUG 2	PION BR1 STARONE D2 Al Yah 3 SES 14 AMAZONAS (1,2,3,4A,5) SGDC SKY BRASIL -1 Star One D1, C4 STARONE (C1,C2,C3) TELSTAR 14R BRAZILSAT (B2,B3,B4) MICROSAT 2 (Oscar17)		MORELOS (1,2,3) SOLIDARIDAD 2 SATMEX (6,8,9) QUETZAT 1 BICENTENARIO SKY MEXICO 1	

Technological

Presence in space by number of satellites.

Presence in Space (Satellites)				
	Argentina	Brazil	Colombia	Mexico
Total	~15	~21	~1	~13
Communication	~6	~13	~0	~10
Earth Observation	~5	~2	~1	~2
Scientific/Research	~7	~6	~0	~3

Environmental

Satellites used for Earth Observation applications by country.

Earth Observation Satellites			
Argentina	Brazil	Colombia	Mexico
~5	~2	~1	~2
SAC C SAC D AQUARIUS SAOCOM 1A SAOCOM 1B MDQSAT 1	AMAZONIA 1 CBERS 4A	FACSAT-1	MORELOS 3 PAINANI 1

PESTEL Comparison Chart

Comparison of Argentina, Brazil, Colombia, and Mexico in terms of weighted PESTEL components.

Category	Topic	Weight	Argentina	W/A	Brazil	W/A	Colombia	W/A	Mexico	W/A	
Political/Legal	National Space Agency	10%	10	1	10	1	10	1	10	1	
	Space Policy	25%	8	10	0.8	10	0.8	2	0.16	4	0.32
	Commercial activity	4%	8	0.32	6	0.24	2	0.08	6	0.24	
	Artemis accords and other international treaties	3%	6	0.18	8	0.24	6	0.18	10	0.3	
Economic	Budget	15%	10	1	8	0.8	1	0.1	6	0.6	
	Economic growth (GDP growth per capita)	5%	8	0.4	4	0.2	10	0.5	5	0.25	
Socio-cultural	Communication (satellites)	10%	6	0.6	10	1	0	0	8	0.8	
	University support	20%	6	10	0.6	10	0.6	3	0.18	7	0.42
	Community attitude over space	4%	4	0	0	0	0	0	0	0	
Technology	Presence in Space (Satellites)	10%	8	0.8	10	1	1	0.1	6	0.6	
	R&D of Space Development	25%	9	8	0.72	10	0.9	4	0.36	6	0.54
	Spaceport infrastructure	6%	0	0	10	0.6	0	0	0	0	
Environment	Earth observation (satellites)	15%	10	1	6	0.6	2	0.2	6	0.6	
	Earth applications from satellite data	5%	10	0.5	8	0.4	2	0.1	4	0.2	
Total Score		100%	104	7.92	110	8.38	43	2.96	78	5.87	



Next Steps

Finalize paper deliverable.

References

See authors for references.