

Space Talks '18  
Space Economy: Urgent Need for New Global Regulation  
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# The influence of customers on the construction of the space industry

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# Context

- Since 1960s, there is a debate to know if institutional customers, such as ministries of defense and space agencies, should reduce their influence on space activities to foster the development of space industry
  - Reduce influence
    - Private initiative is more efficient than public initiative
    - Private initiative is hindered by institutional customers (e.g. protectionism)
  - Maintain influence
    - Space technologies and activities are not sufficiently mature
    - Many space programs would be impossible if there was a commercial pressure
- Illustrations
  - Pressure on NASA to give up programs with commercial potential
    - Telecom programs
      - » ATS program (Applications Technology Satellite)(1966-1974)
    - Earth observation programs
      - » Land Remote-Sensing Commercialization Act (1984)
      - » Canceled by the Land Remote Sensing Policy Act (1992)
  - Related trends
    - “Alt Space” in the 1980s
    - « *faster, better, cheaper* » (NASA administrator, 1990s)
- This discussion has been recently regenerated by the emergence of the “New Space”

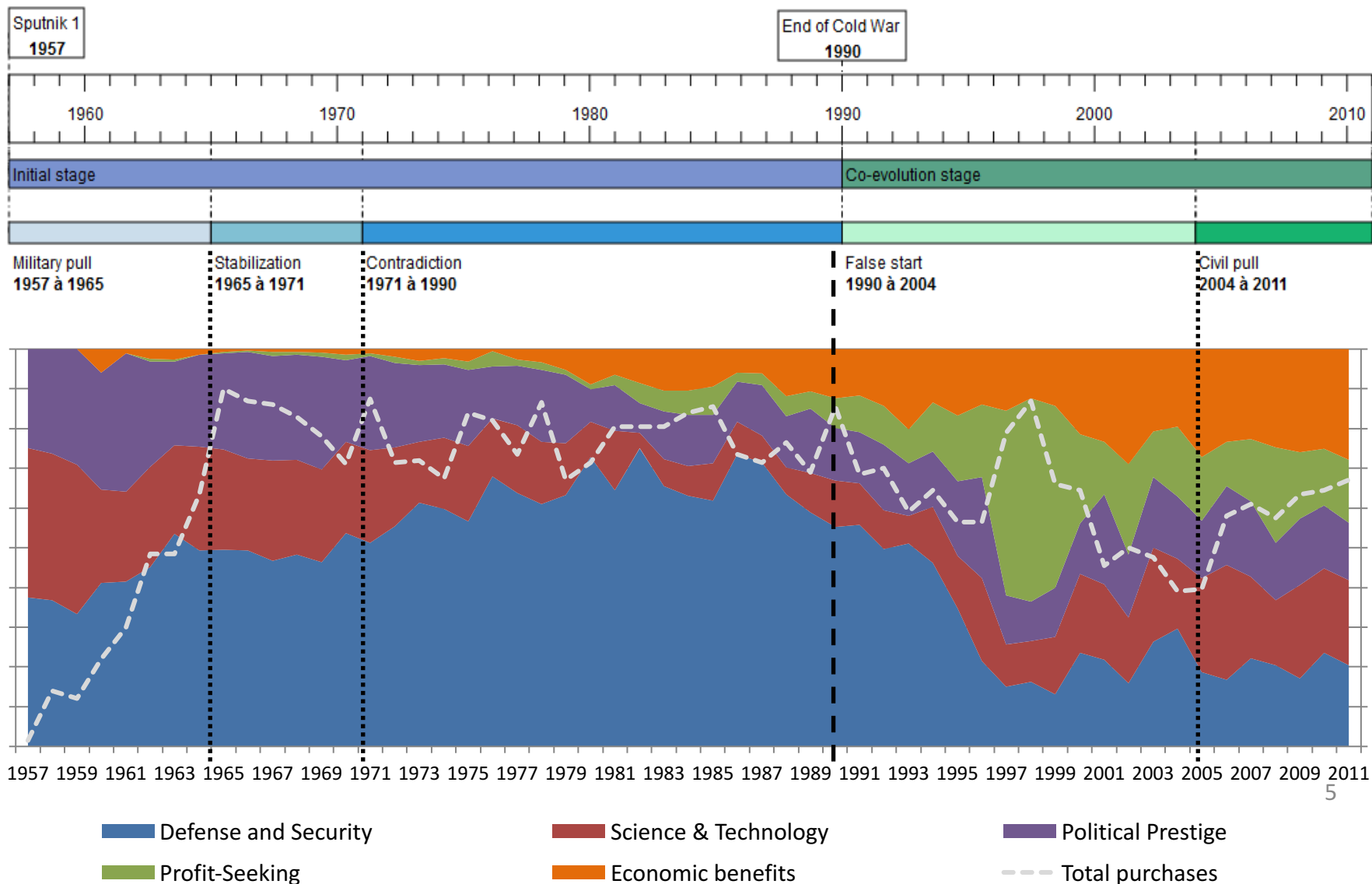
# Purpose and methodology

- Study the influence of customers on the construction of the space industry
  - positive or negative influence?
- Methodologie
  - Period: 1957-2011
  - Units of analysis
    - Customers objectives
    - Spacecraft launches by
      - Customer
      - Application

# Customers objectives

- In the “Webb-McNamara Memo”, NASA Administrator (James Webb) and the Secretary of Defense (Robert McNamara) stated in 1961 the 4 objectives of institutional customers
  - defense and security
  - political prestige
  - science and technology
  - economic benefits
- Entry of commercial customers leads to add a 5<sup>th</sup> objective
  - Profit seeking
- Measurement
  - We attributed 1 to 5 objectives to each spacecraft by looking at its customer and its application

# Evolution of objectives and purchases



# Preliminary conclusions

- The configuration of customers objectives influences the construction of the industry
- Political prestige and defense and security objectives
  - favor the industry emergence
    - e.g. military pull, Space Race, technological firsts, operational technologies, protectionism
  - hinder the industry take-off
    - e.g. non-proliferation of space technologies, technologies not designed for commercial uses
- Economic benefits and profit seeking objectives
  - Hinder industry emergence
    - e.g. technologies should be sufficiently mature
  - Favor industry take-off
    - e.g. entry of new customers, diffusion of space technologies
- Struggle between contradictory objectives

# Preliminary conclusions (2)

- Institutional customers have an ambivalent influence on industry construction
  - Favor the industry emergence
  - Hinder the industry take-off
- There is a struggle between customers to control the industry
  - Military customers want to keep space technologies for them
    - keep strategic advantage provided by space technologies (non-proliferation, protectionism)
  - Commercial customers want to diffuse space technologies
    - increase their profits by providing services based on space technologies
  - Civil institutional customers have an intermediate position
    - sponsor technologies that could serve contradictory objectives: defense and security, political prestige VS economic benefits, profit seeking

Thank you !



# Measurement (1)

- Used a pool of 113 references mentioning the objectives of space activities and covering the period between 1957 and 2011
  - 5 databases: Business Source Complete, Elsevier, Emerald, Science Direct and Taylor & Francis
- In this pool we found references mentioning the objectives expressed by customers and with space applications

**Table 1.** Motives expressed by customers

	Military	Civil institutional	Commercial	Mixed
Defence and security	X	n/a	n/a	X
Science and technology	X	X	X	X
Profit seeking	n/a	n/a	X	n/a
Political prestige	X	X	n/a	X
Economic benefits	n/a	S	n/a	S

**Table 2.** Spacecraft application supported by motives

	Earth observation	Communication	Piloted	Navigation	Science	R&D
Defence and security	X	X	X	X	X	X
Science and technology	n/a	n/a	n/a	n/a	X	X
Profit seeking	X	X	n/a	n/a	n/a	X
Political prestige	n/a	n/a	X	n/a	X	n/a
Economic benefits	S	S	S	S	n/a	S

# Measurement (2)

Sample dataset								
Collected dataset (dataset 1)				Objectives (dataset 2)				
Spacecraft	Launch Date	Customer	Application	Defense and Security	Science and Technology	Profit seeking	Political prestige	Economic benefits
<u>Amos 3</u>	<u>Apr-2008</u>	<u>commercial</u>	<u>communications</u>	<u>0</u>	<u>0</u>	<u>1</u>	<u>0</u>	<u>0</u>
AMSAT-Echo	Jun-2004	civil institutional	communications	0	0	0	0	1
Apple (Insat 1)	Jun-1981	civil institutional	communications	0	0	0	0	1
Ariel 1 / UK 1	Apr-1962	civil institutional	science	0	1	0	1	0
AsiaSat 1	Jul-1990	commercial	communications	0	0	1	0	0
AsiaSat 1	Jul-1990	commercial	communications	0	0	1	0	0
Canadarm2	Apr-2001	civil institutional	piloted	0	0	0	1	1