WP3: Collaborative innovation networks

Flavia Carvalho
Gustavo Britto
Eduardo Albuquerque

Cape Town
02.09.10

INGINEUS "Impact of Networks, Globalisation, and their INteraction with EU Strategies"
is sponsored by the 7th Framework Programme of the European Commission. www.ingineus.eu

Innovative activities in Brazil: domestic vs. foreign firms

	Domestic R$	Foreign R$	Domestic %	Foreign %
Food & beverages	200,996.0	112,172.0	2.5	1.4
Automotive and auto parts	194,887.0	1,705,164.0	2.4	**21.4**
Informatics equipment	76,750.0	111,694.0	1.0	1.4
Electric devices & machinery	151,225.0	260,944.0	1.9	3.3
Electronic equipment	162,781.0	434,535.0	2.0	5.4
All Other	3,479,003.0	1,080,121.0	43.6	13.5
Total Manufacturing	4,265,642.0	3,713,781.0	53.5	46.5

Innovation in Brazil

- Public sector expenditures on R&D: 53.6%
- Process innovation is more frequent, esp. among domestic firms
- In process innovation, firms resort more to external sources
- Domestic firms spend more on R&D in total, but expenditures per firm are higher on foreign firms (% of revenues)

Innovation rate, according to firm size

Table 11.7. *Innovative behaviour by firm size (percent of firms)*

Employees	Innovation Rate	Product	New Products to firm	Process	Process new to sector (in Brazil)
10 - 49	28.9	17.0	2.1	23.1	0.9
50-99	40.6	22.8	3.7	33.2	1.2
100-249	55.5	31.1	6.5	44.8	3.8
250-499	65.2	35.9	9.4	56.0	6.1
>500	79.2	58.1	33.4	68.4	27.1

Source: IBGE, PINTEC 2005.

Science in Brazil

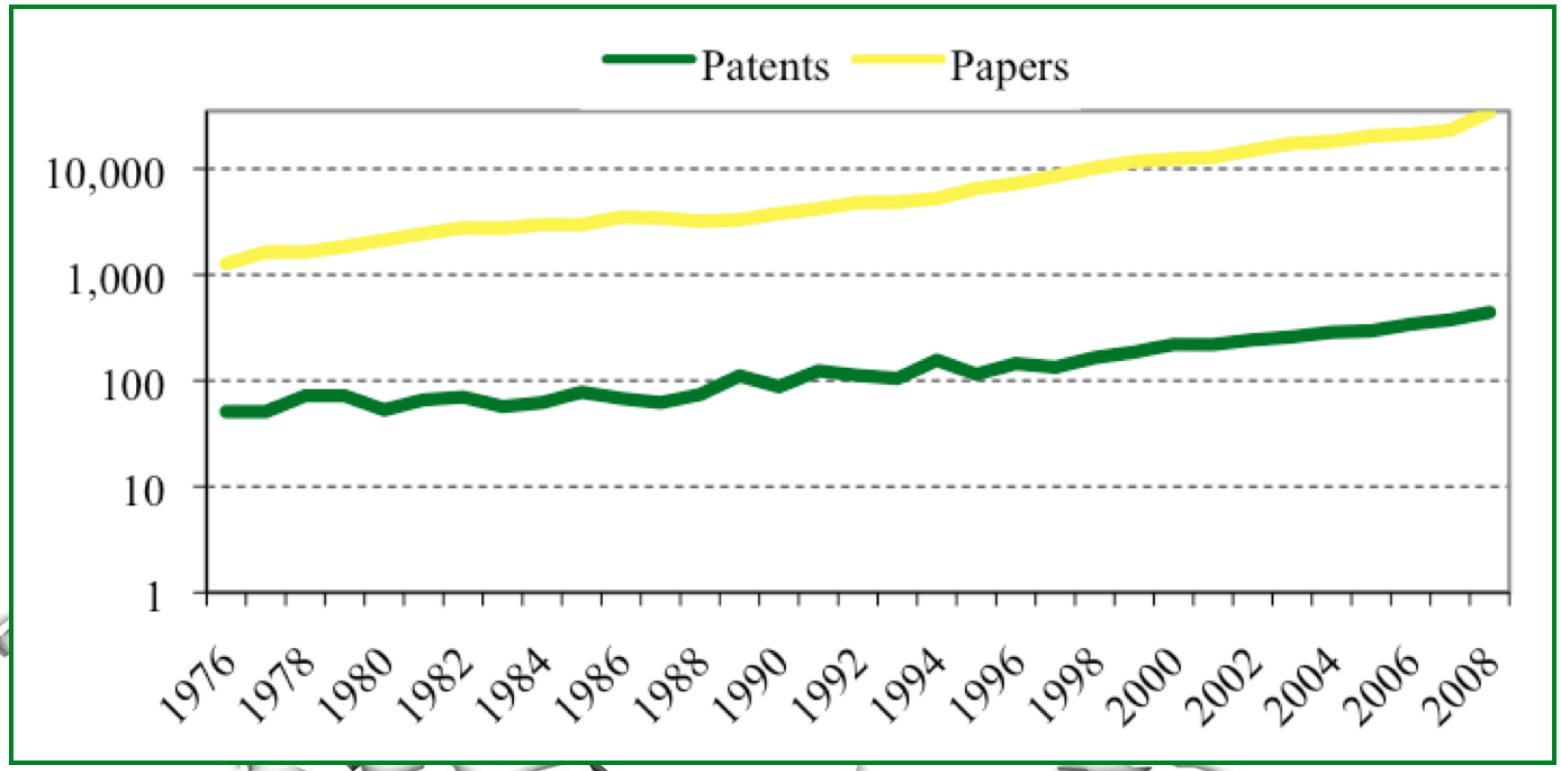
	2000	2007
B. Education		
Illiteracy rate in population > 15 years	20.10%	12.90%
Students in tertiary education (2000=100)	100	142.05
Public expenditure on education (per cent GDP)	4.01	5.06 (2006)
Public expenditure on education - tertiary		0.76 (2005)
C. Science and technology		
Expenditures on R&D (% GDP)	0.94	1.02
Researchers (per 1.000 population) - FTE	0.84	1.33
Exports ICT	2,513.12	3,380.40

Education and Science

- Shortage of engineers and technicians.
- Scientists/ PhDs working mostly for the public sector (26% in the private sector).
- Gap between advances in science vs. advances in technology

Education and Science

The science & technology gap in Brazil: patents and paper production (1976-2008)



Education and Human Resources

Conclusions in tertiary education, per area (2008)

	1995	2008
Exact sciences	22,703	61,528
Social sciences	146,066	328,239
Engineering	**16,526**	**47,098**
Total	245,887	800,318

Human resources working on R&D in innovative firms, by level of qualification (2008)

Total HR in R&D	Post-grad	Grad	High-school
83,944	11,283	38,071	24,082

Knowledge flows

- Interaction among agents still limited
- Even more so when it involves foreign cooperation for innovation
- Firms in services sectors are more cooperative than manufacture

Sector	Innovative	Cooperative	per cent C/I
Total industry	29,951	2,139	7.1
Total services	2,418	582	24.1

Knowledge flows

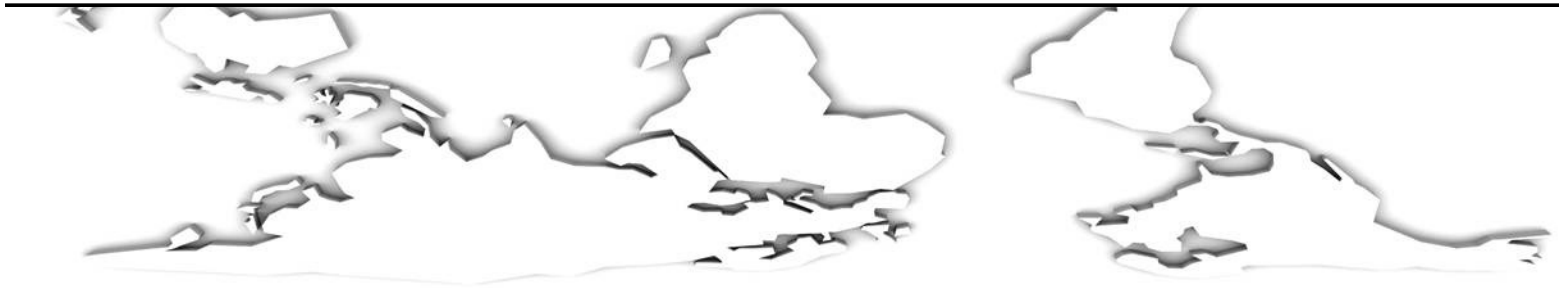
Cooperation for Innovation - by type of partners and R&D partnerships (%)

Partner	R&D Partnership	Other Partnerships
Clients/consumers	24.4	21.4
Suppliers	23.6	**29.3**
Universities/Research institutes	20.9	10.9
Consultancies	10.7	11.7
Other firm group	9.3	7.1
Training Centres	6.5	12.8
Competitors	4.6	6.7

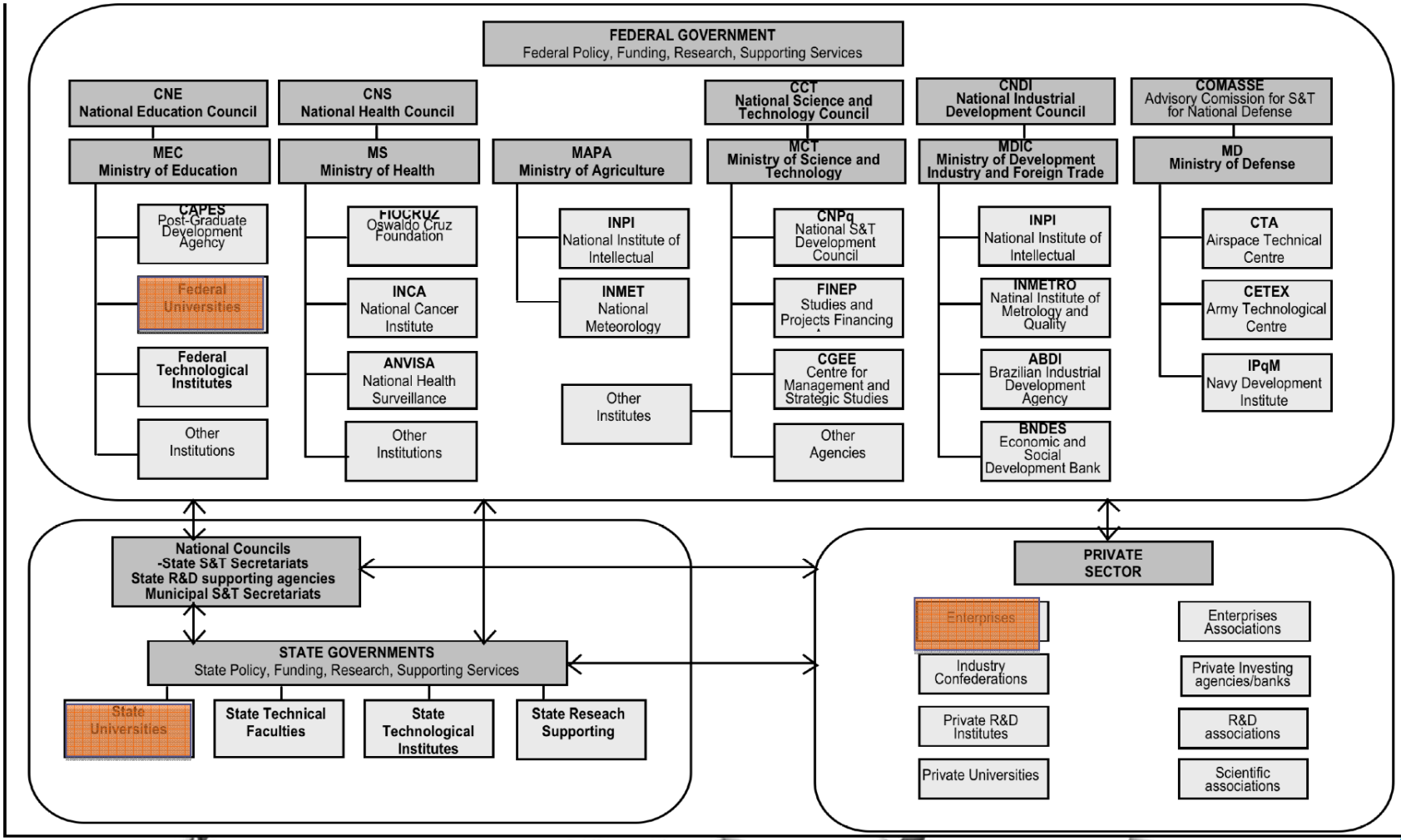
Knowledge flows

Types of cooperation by capital ownership and location of partner

Partner	***Domestic***		***Foreign***	
	Local	**Abroad**	**Local**	**Abroad**
Customers	27.6	21.8	26.0	9.5
Suppliers	26.5	**40.8**	25.0	15.6
Competitors	7.7	8.8	4.2	3.1
Another firm of the group	1.9	14.9	4.2	**67.3**
Consultancies	10.4	8.4	9.6	3.4
Universities	**14.6**	**5.3**	**20.5**	-
Training Centers	11.2	-	10.5	1.2



Institutions in the National Innovation System in Brazil



SEVENTH FRAMEWORK PROGRAMME

Recent Policies to foster Innovation and Development

- PDP : focus on innovation and internationalization
  - Increase investment rates
  - Rise private R&D expenditures
  - Increase exports
  - More dynamism to SMEs
  - Sectoral Focus
  - Strategic (health, IT, nano/biotechnology)
  - Fostering competitiveness (automotive, capital goods,..)
  - Consolidate leadership (oil, bioethanol, aerospace, metallurgy, pulp & paper, meat)