Knowledge and Development: Science, Technology and Higher Education in Cuba

Centro de Estudios de la Economía Cubana
Universidad de la Habana

Talking point

- International trend and debate.
- Cuba: Facts on development and growth.
- Facts on Science and Higher Education.
- Thinking on the future, questions for the present.

World trends

- Greater social and economic importance of knowledge
- Increasing connection between research and innovation
- Polarization of knowledge, science, technology and innovation.
- Growing inequality among nations, groups and societies due to greater role played by knowledge and innovation

International debate?

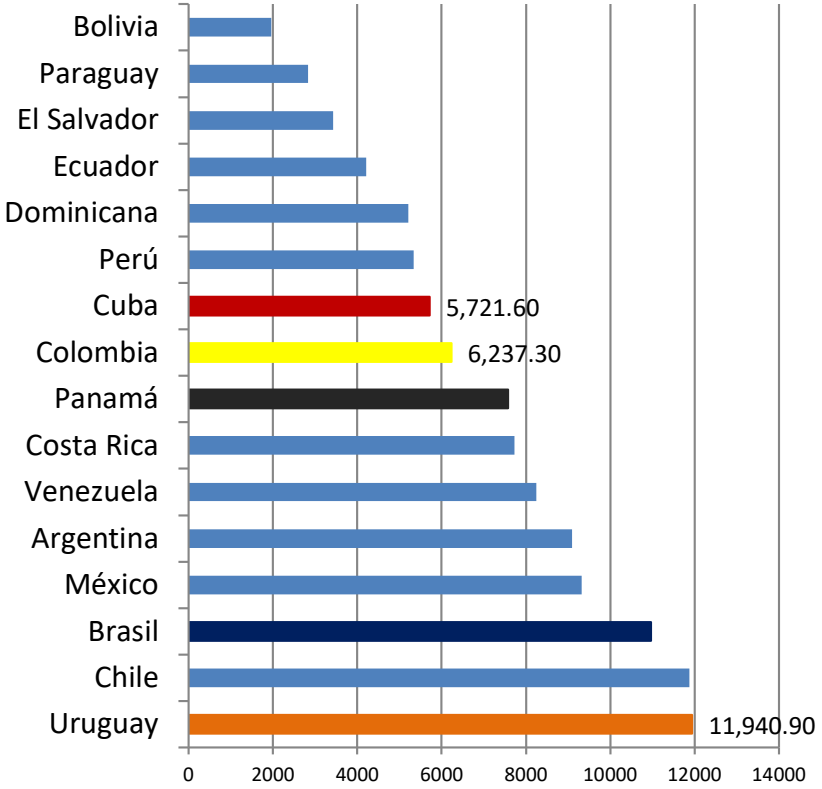
- Can technology and innovation contribute to satisfy the social needs of the majorities and to favour inclusion and sustainable social development?

The country visión

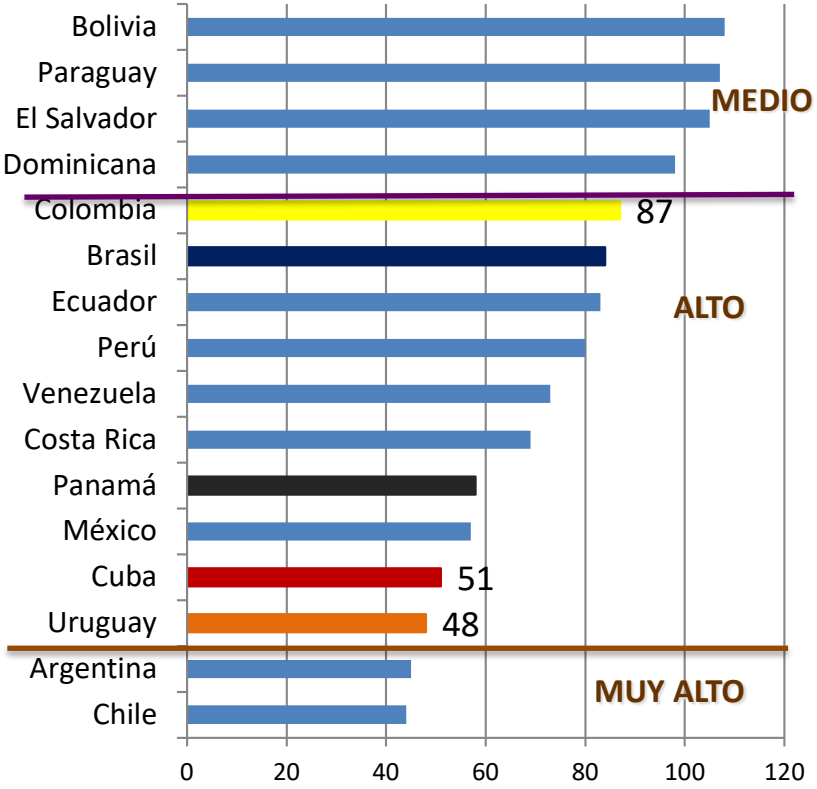
- Development is not an option. It is a condition for a socialist Cuba, prosperous and sustainable

Cuba: Facts in DEVELOPMENT AND GROWTH

GDP/PC



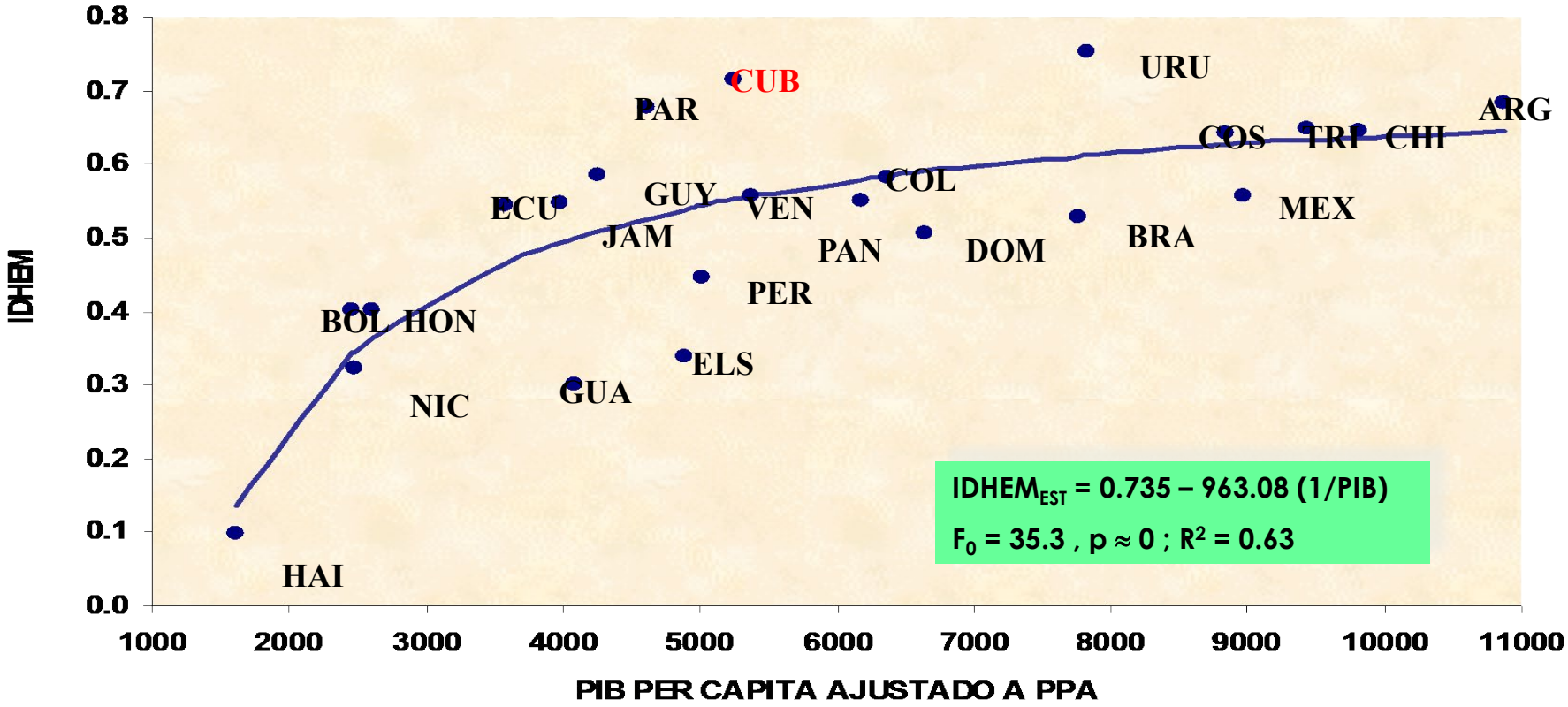
POSITION HDI



Source: Odriozola S. Updating the model…

Cuba: Facts in DEVELOPMENT AND GROWTH.
THE PARADOX OF CANDIDO LÓPEZ

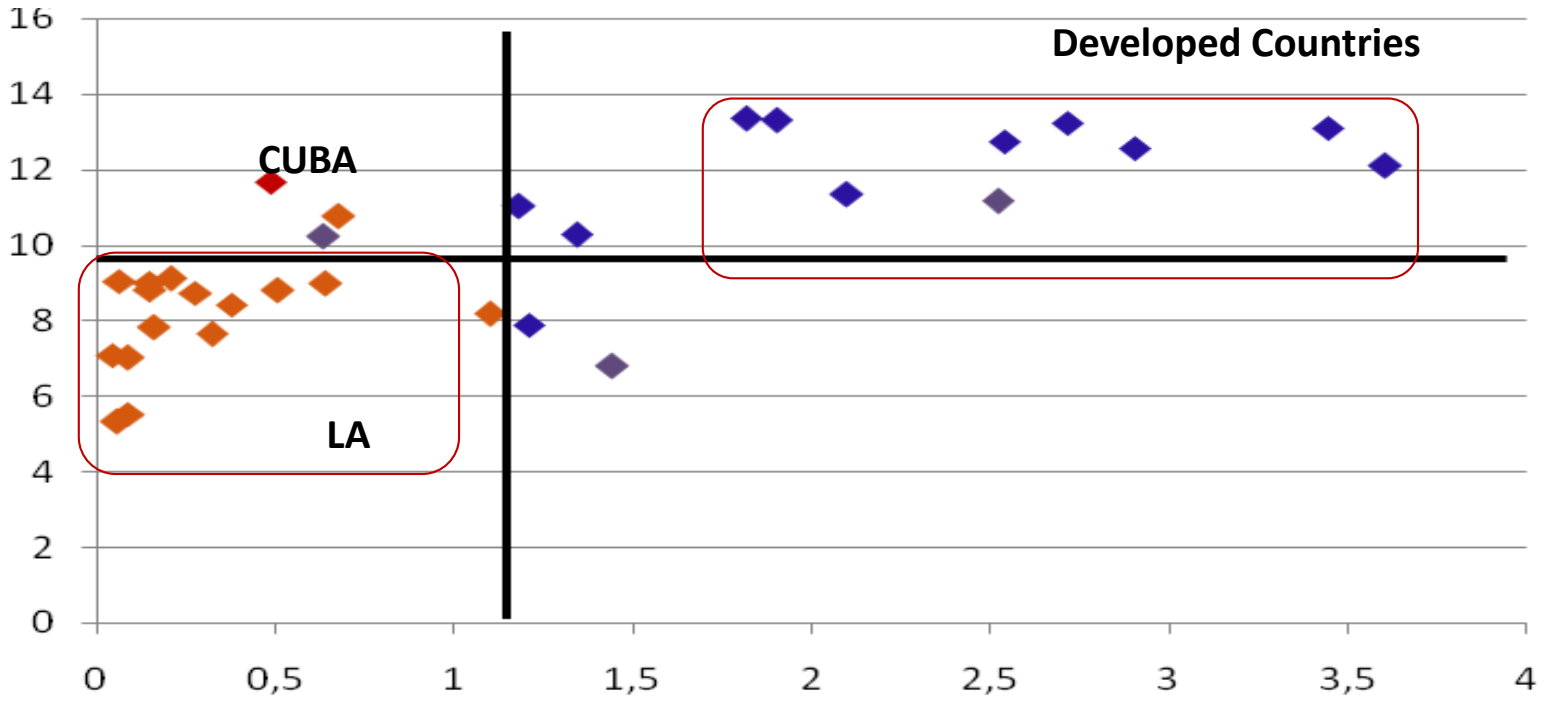
HDIM actual and estimated on the basis of GDP per capita adjusted for PPP / countries of Latin America and the Caribbean; 2002



López C, Márquez M, Rojas F. Desarrollo humano y equidad en América Latina y el Caribe. Prepared for delivery at the 2004 Meeting of the Latin American Studies Association, Las Vegas, Nevada, October 7-9, 2004.

Cuba: Facts in DEVELOPMENT AND GROWTH. UPDATING THE THE PARADOX OF CANDIDO LÓPEZ

Asymmetries between the level of education and R & D spending

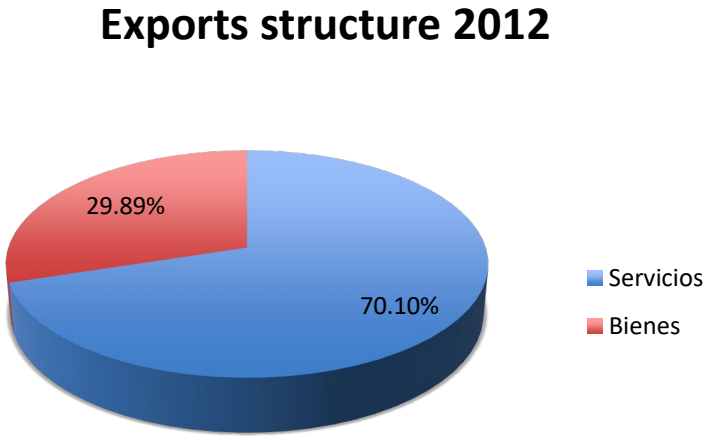


Fte: Cribeiro Y: Contribución de la fuerza de trabajo calificada al crecimiento económico en Cuba. Principales determinantes. Facultad. de Economía

What these facts are telling us?

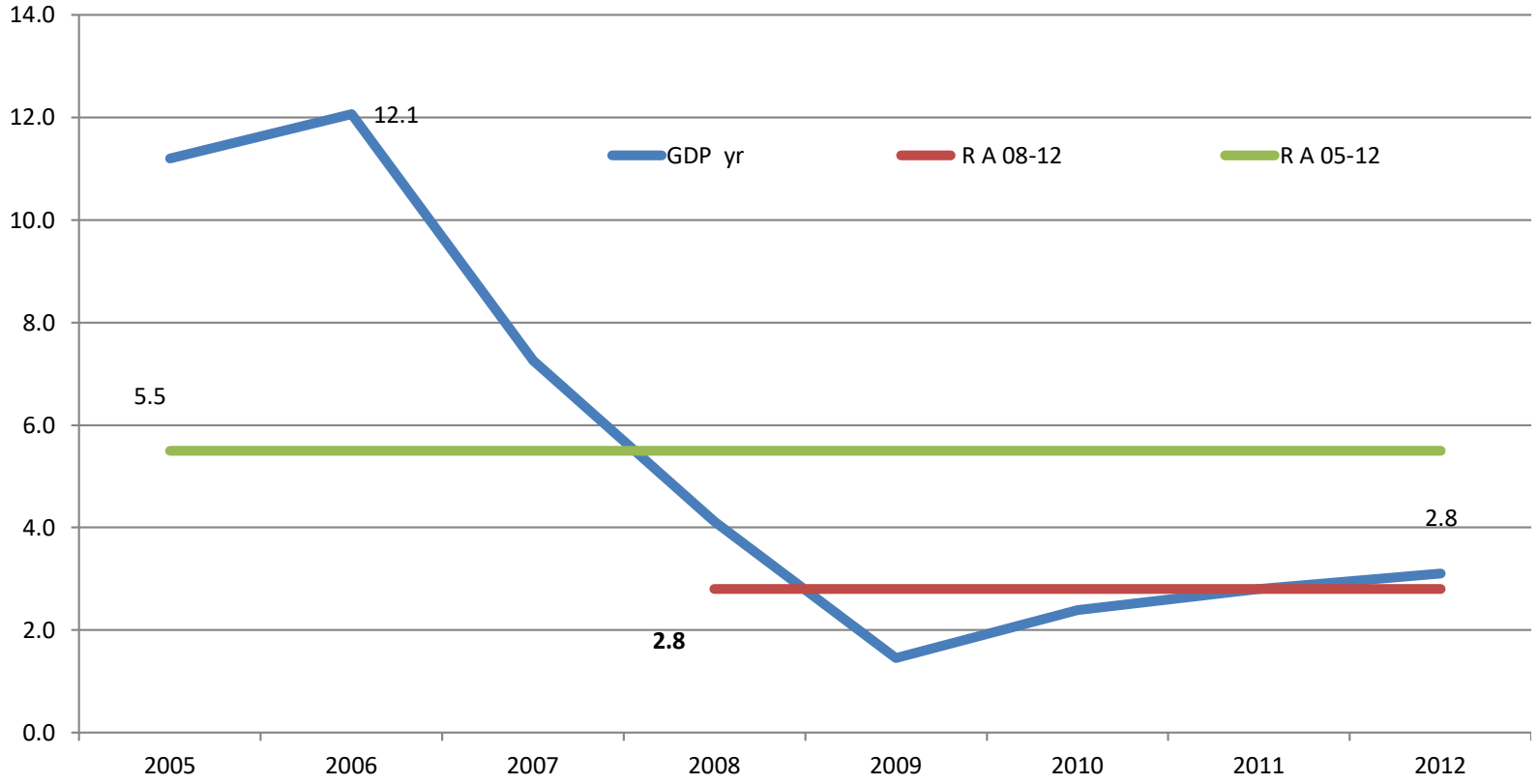
- Cuba has reached a good position in some goals of development.
- One undisputed Cuba's strengths of the development achieved by Cuba is the scientific capabilities developed in the decades before 1990.
- There is a real asymmetry between the achieved position in the index of human development and the volume of per capita gross product.
- The productive sector has not responded dynamically to the high skilled labour force.
- There is also a gap between the level of qualification of the work force and spending on research and development

Cuba: Facts in DEVELOPMENT AND GROWTH
External Sector



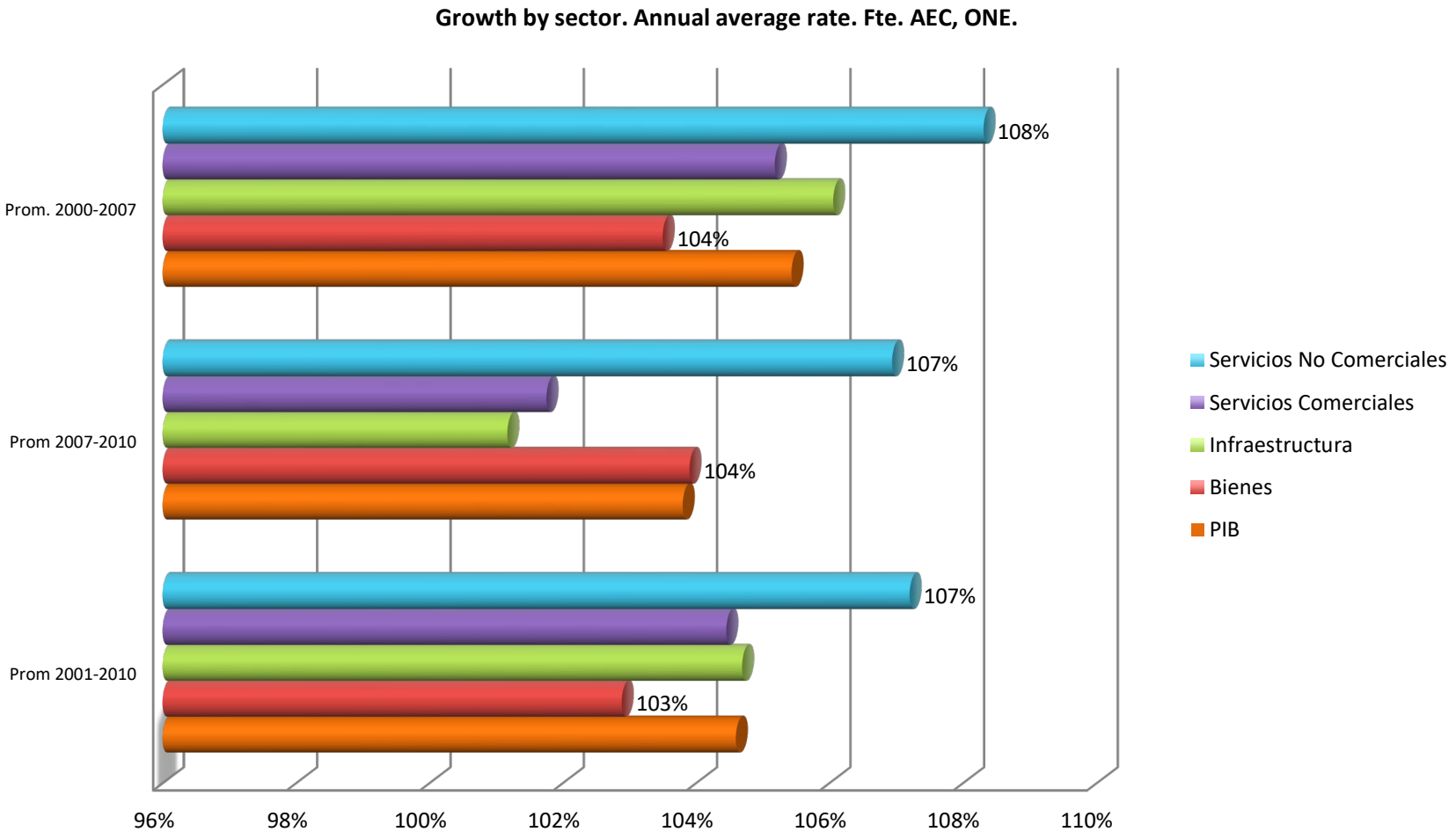
Total exports 2012	
	2012
Total exports	**18.659,2**
SERVICES	**13.081,0**
Non tuoristics	10.467,7
Tuoristic	2.613,3
GOODS	**5.577,2**
Sugar	471,40
Minining	1.060
Tabaco	224,30
Biotec and generics	808,20
Oil by products	2.697,30
Sources: ONE, AEC 2012.	

Cuba: Facts in DEVELOPMENT AND GROWTH
GDP BEHAVIOR

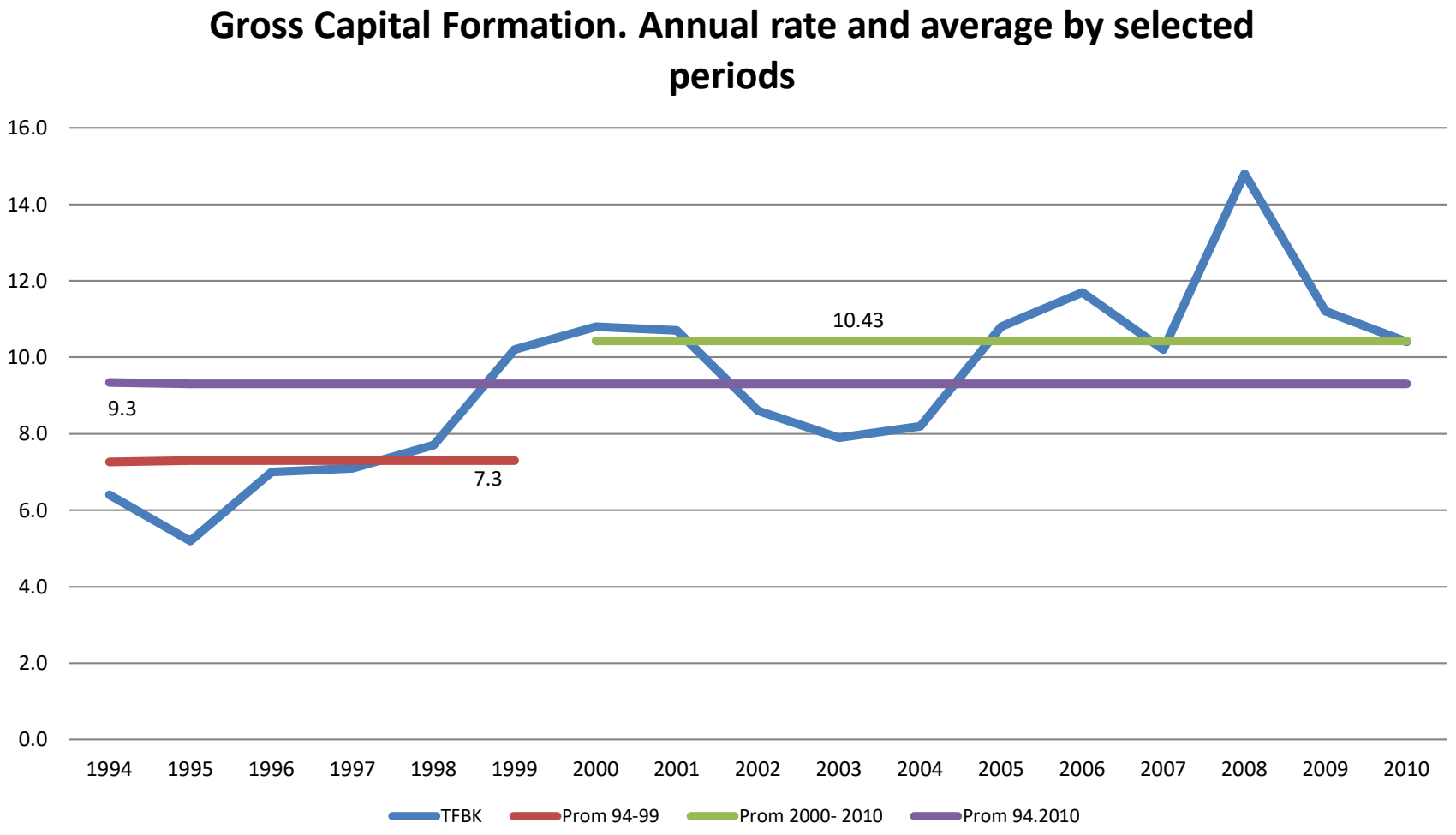


Cuba: Facts in DEVELOPMENT AND GROWTH

THE QUALITY OF GROWTH

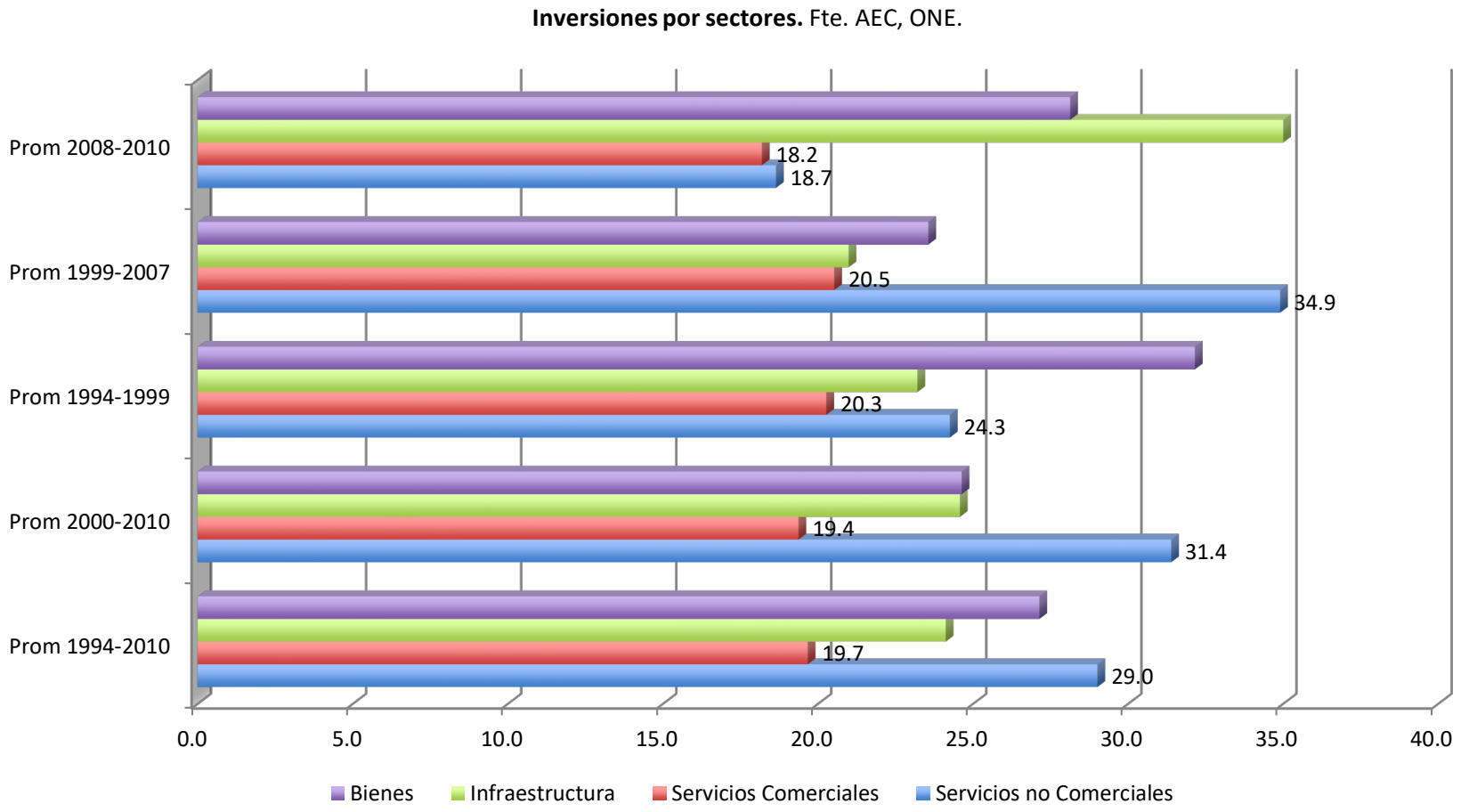


Cuba: Facts in DEVELOPMENT AND GROWTH

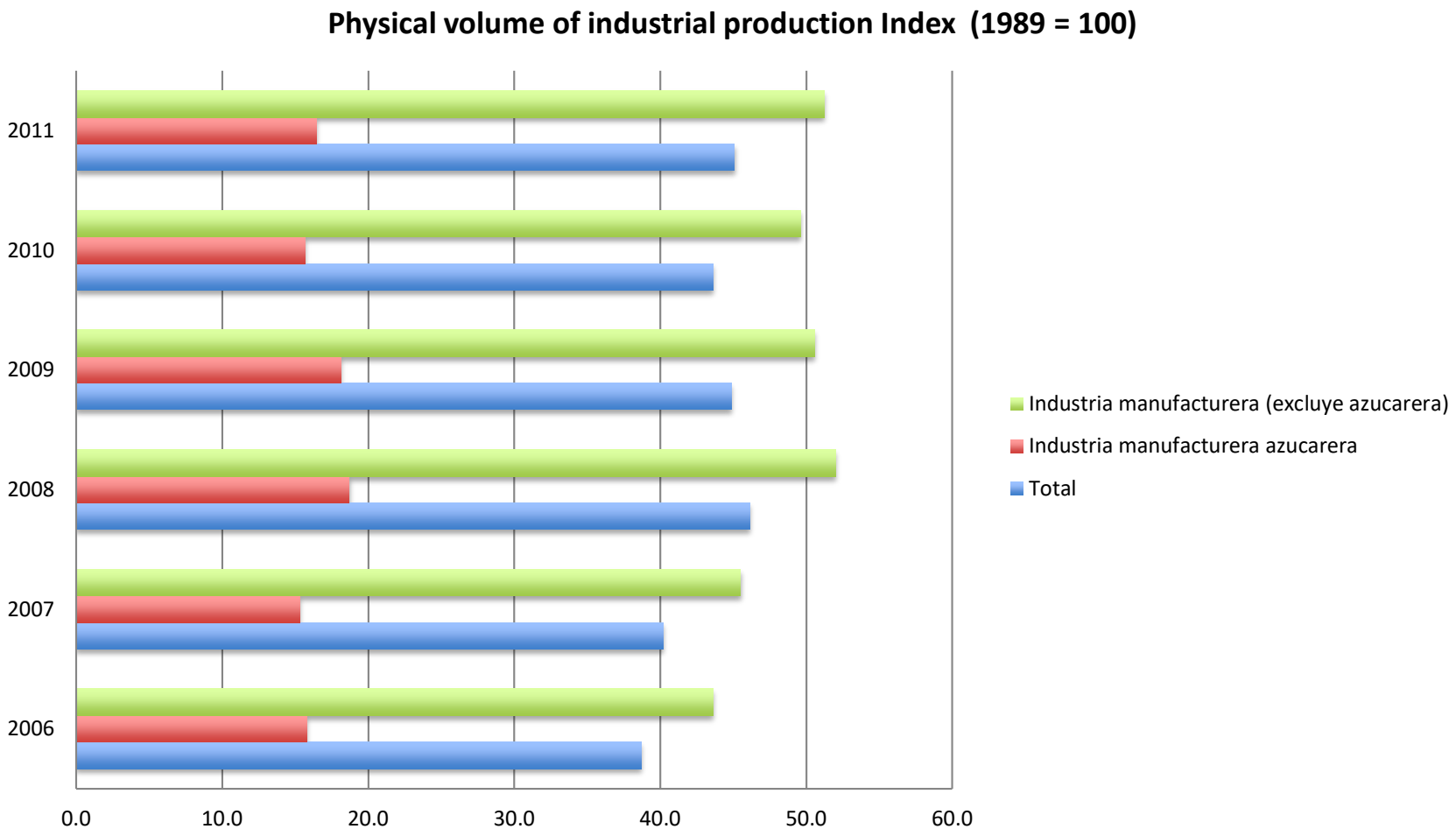


Cuba: Facts in DEVELOPMENT AND GROWTH

Investiments: sectoral structure.



Cuba: Facts in DEVELOPMENT AND GROWTH



Lessons from Cuba´s growth path

- Low rate of growth for 20 years
- Weak in gross capital formation capabilities.
- High skilled workforce vs low paricipation of hi-tech goods in exports.
- Weak industrial recovery comparing with 1989.
- Negative quality balance in creation- destruction jobs process.
- Gap in technolgy vis a vis with world trends

Facts in Science and High Education. ¿Is Cuba well endowed in scientists?

- 67 HE institutions
- More than 200 Research Center
- A higher education network with HEIs in all provinces and municipalities
- 11,1% of the population has a university degree
- 19% of the workers are university graduates

Facts in Science and High Education.
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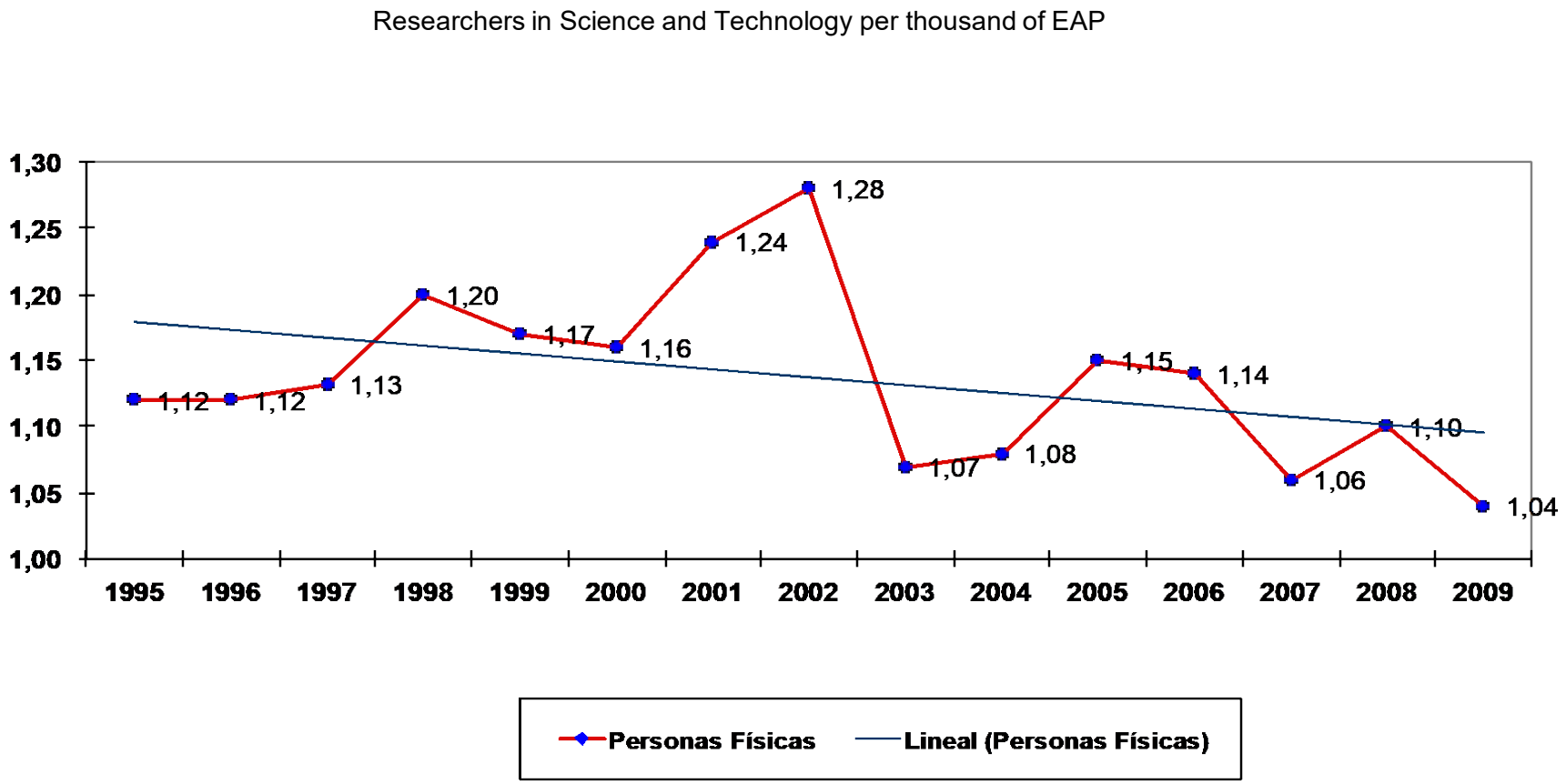

Tomado de Nuñez J. Y Montalvo F. Catedra CTS-I, UH

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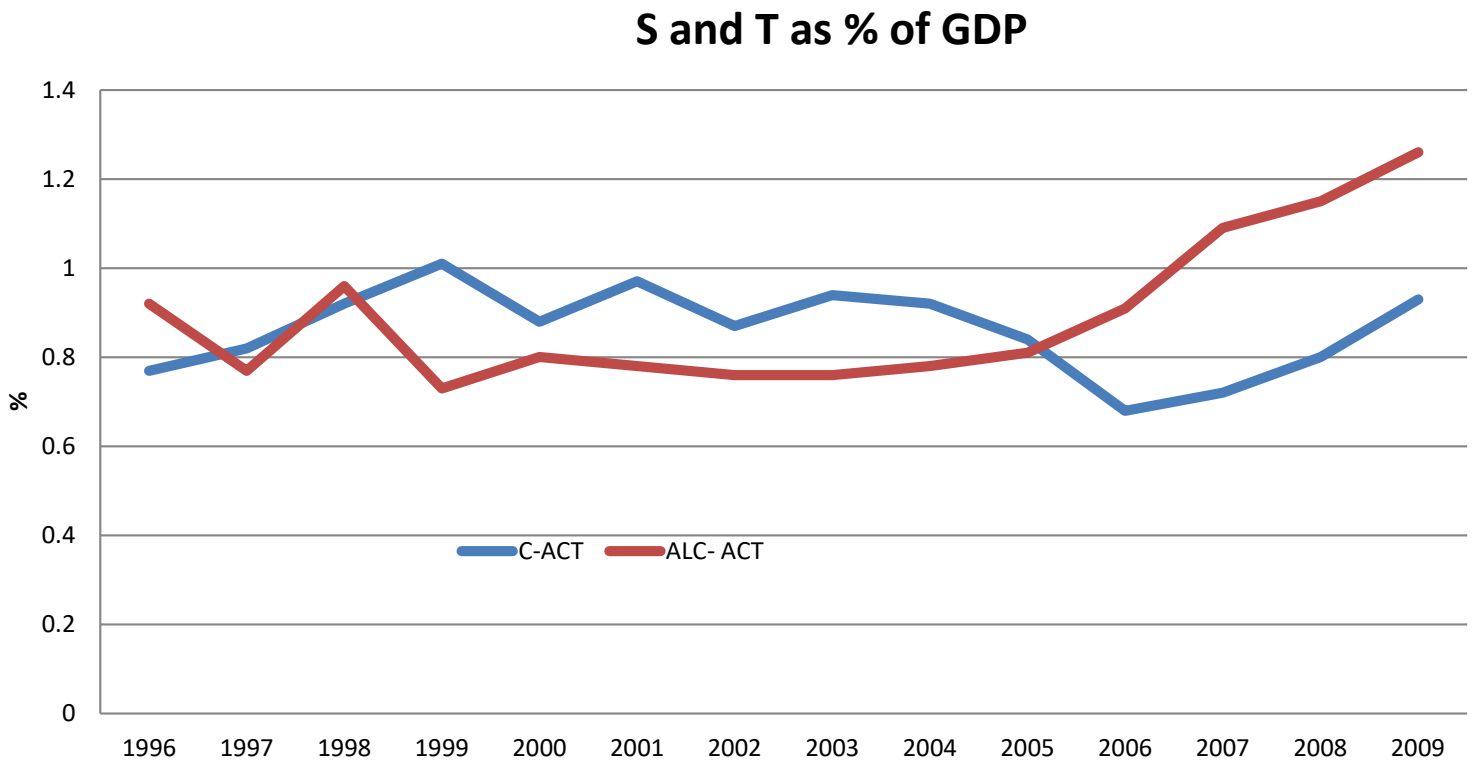

RICYT, 2012

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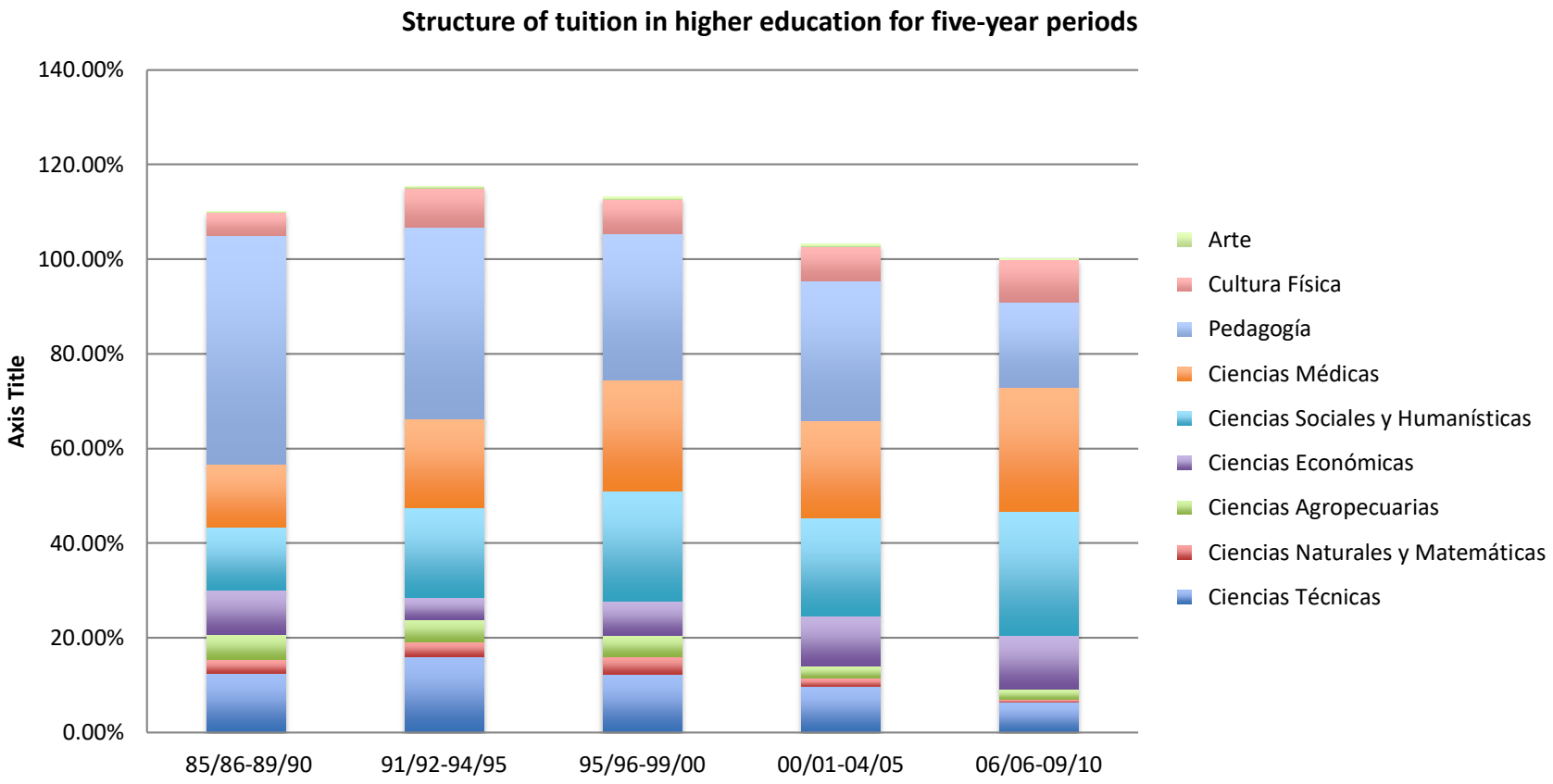

Fte: ONE, AEC varios números

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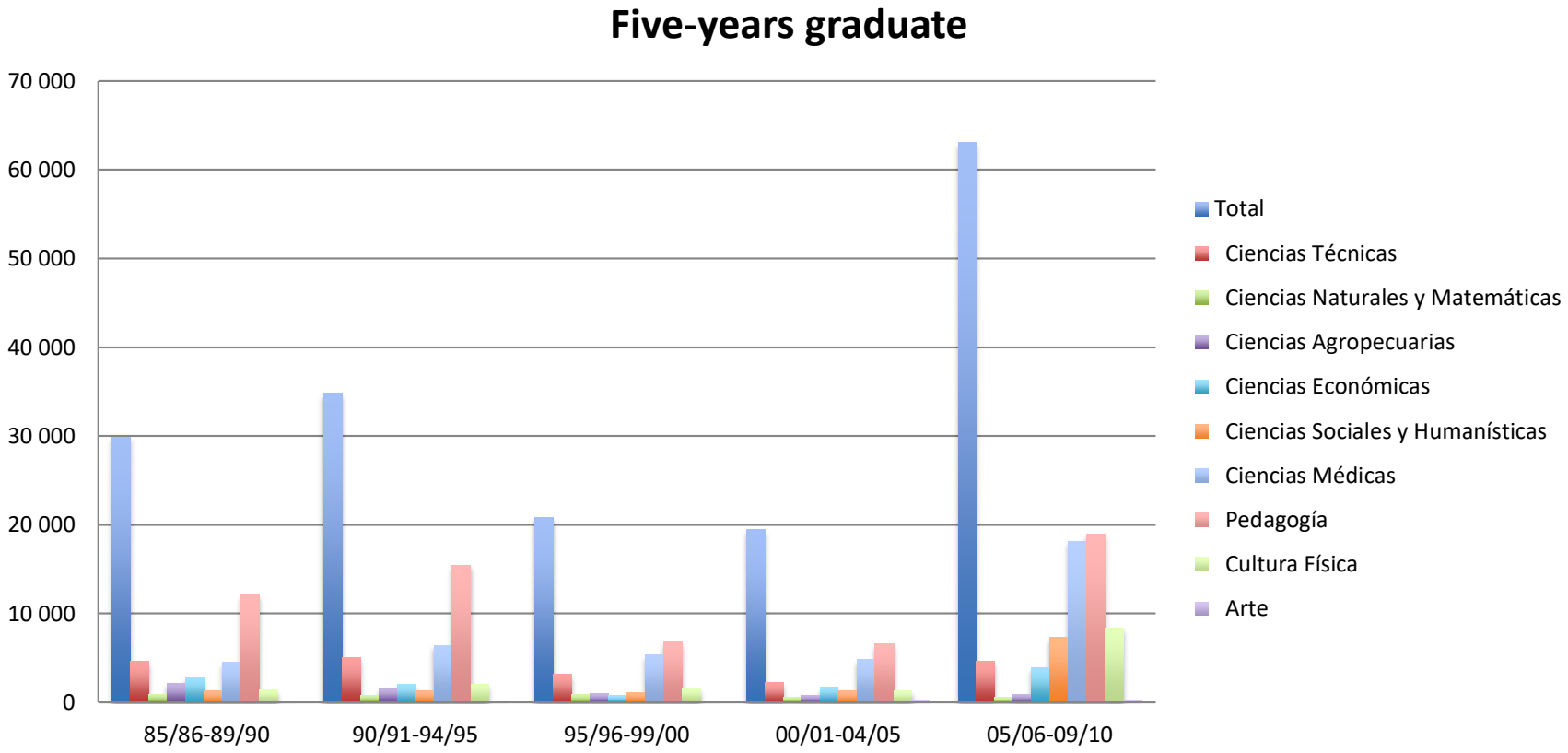

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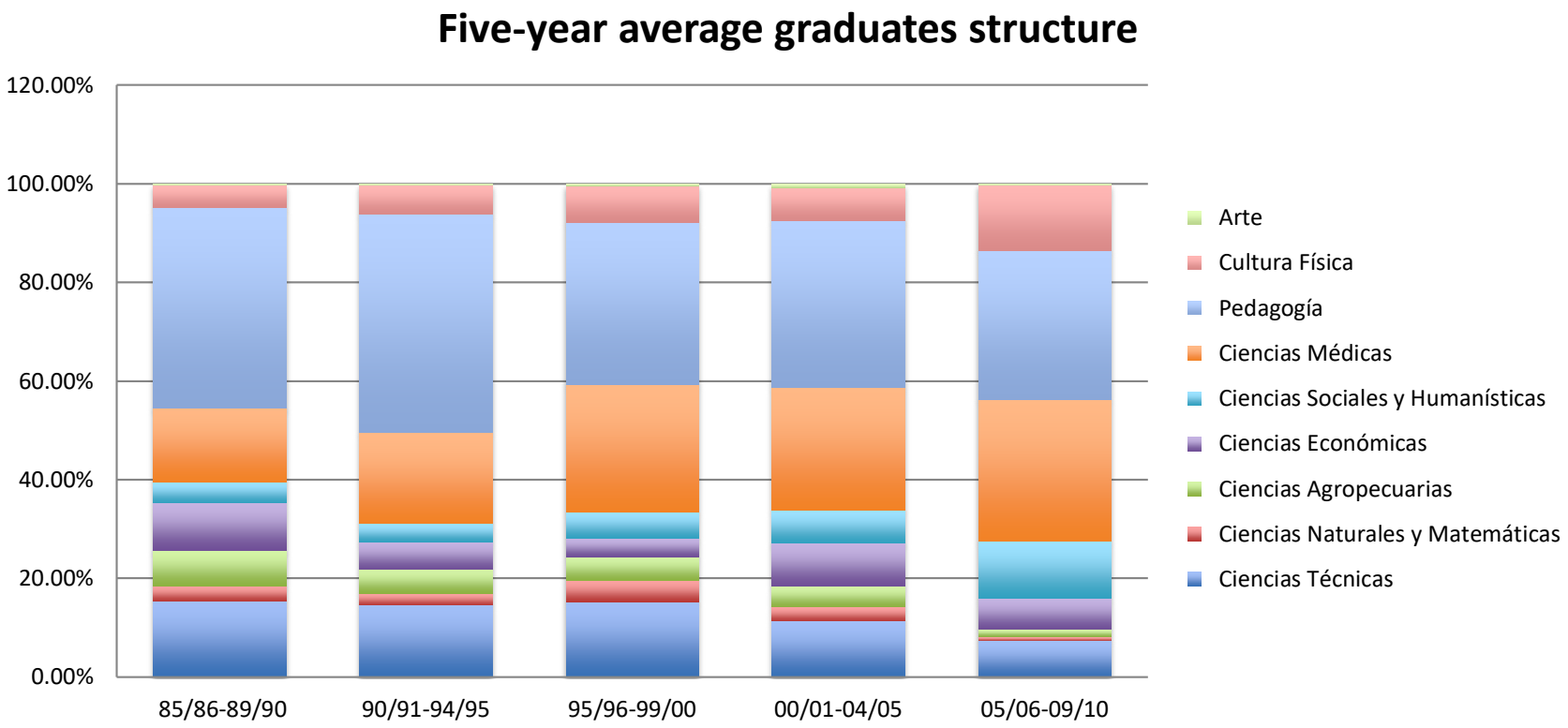
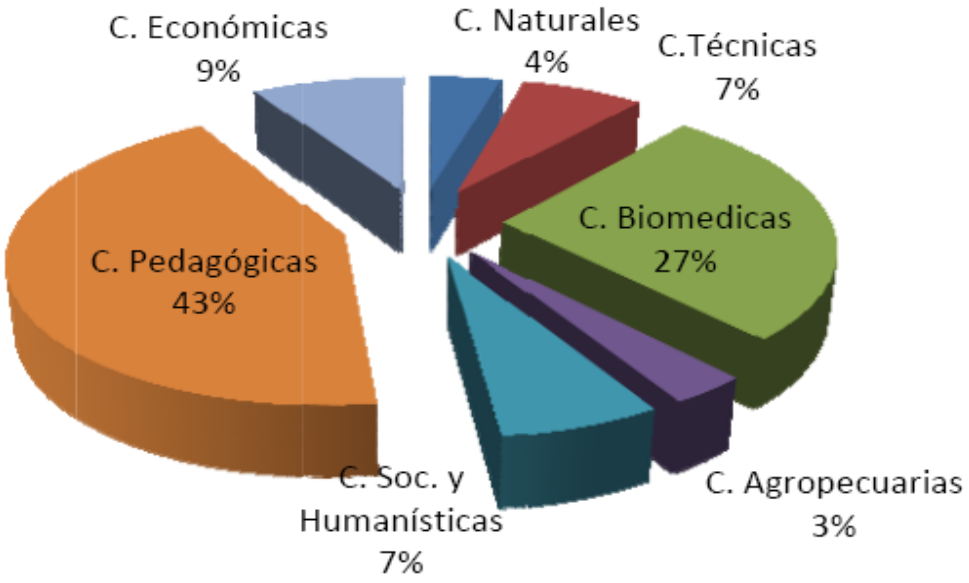


Fte: ONE, AEC varios números

Facts in Science and High Education.
¿Is Cuba well endowed in scientists?

PHD graduates 1996- 2009: 5 992



Verficar fuente.

LESSONS FROM Facts in Science and High Education

- Cuba has lost positions in absolute and relative terms in science and higher education compared with previous decades, and with Latin America.
- In higher education, the structure of the tuition and graduate does not correspond with the needs of development.
- According to the development trends, the structure of PHD graduates is deformed.

A few others facts

- Blockade (embargo) and financial restrictions
- New trends in products and services are leading the economy and are decisive in the competitiveness of nations.
- Aging industry and lack in technology and infrastructure of the Cuban economy.
- Absence of competition and weak cooperation between productive sector and S and T institution (except Biotec).
- Weak incentives for science and technology.
- The aging of the population could mean aging scientists and the lose of highly qualified workforce: replacement is not secured.
- Knowledge mobility and brain drain

THINKING ON THE FUTURE, QUESTIONS FOR THE PRESENT.

- Does Cuba has a effective skilled workforce?
- Is it possible to advance towards development with a positive but decreasing contribution from the qualified work force?
- Is it possible to be prosperous without moving towards development?
- Is it possible to move toward development decreasing in scientists and in scientist capabilities formation and high skilled workforce?

Closing the the gap

- Guidelness: ¿new policy on S+T+I? And
  - What about the other relative policies .
- HEIs paticipation in current solution ¿and strategic too?.
  - To go toward “research university”
- Building the “translater” (interfase) institutions between.
- To increase the financing and investment of ST+I.
- More institutional and legal support and attractive incentives

Muchas gracias