Intangible Assets and Economic Growth. Contribution to a Regional Database

Matilde Mas & Javier Quesada (Dirs.)
E. Uriel, J. Fernández,
C. Albert, E. Benages, L. Hernández, C. Mínguez, J.C. Robledo

Award-winning project of the Cotec Foundation for Innovation's 2016 PIA Program

BBVA Foundation-Ivie International Workshops
MEASURES TO ENHANCE PRODUCTIVITY GROWTH. NEW DEVELOPMENTS

Faculty of Economics
University of Valencia
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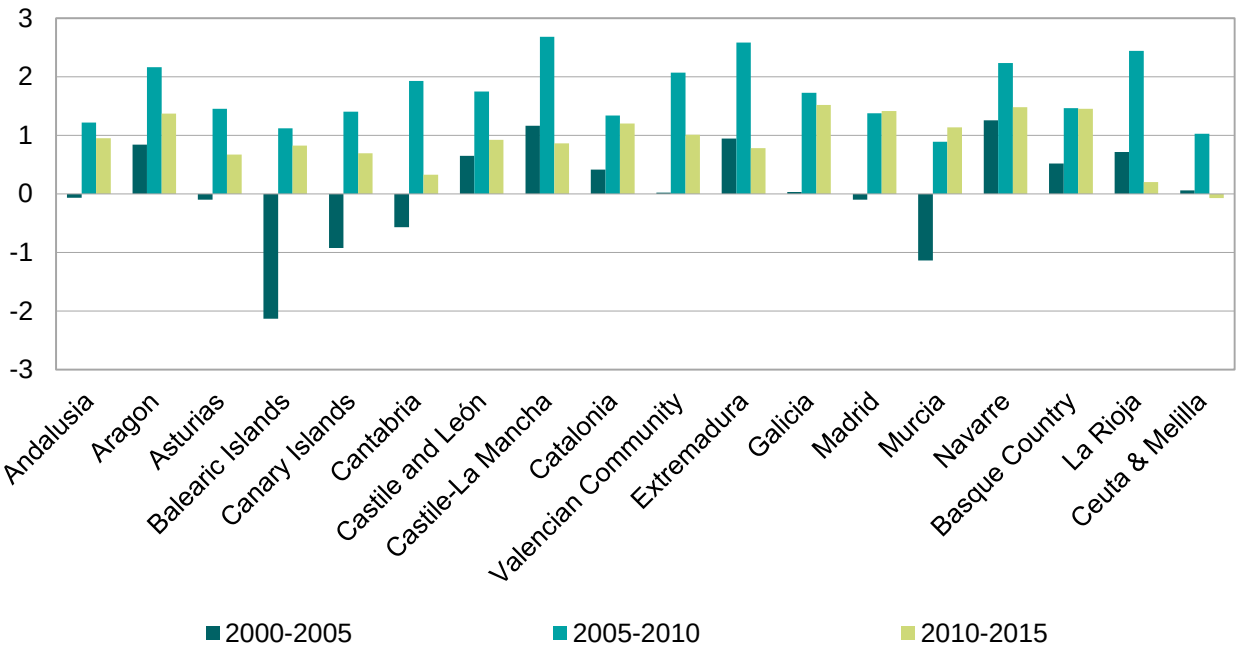
- **In the 17 Spanish regions productivity growth was slower during the expansion (2000-2005) than in the following years.**

Reasons: *Foro de Economía y Empresa*. November 8th, 12:30-14:00

Annual growth rate of productivity per hour worked. Spanish regions. 2000-2005, 2005-2010 and 2010-2015 (percentage)



Source: INE and own elaboration.

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Knowledge economy and intangibles

The New Information and Communication Technologies (ICT):

- Have **transformed the production process** of many existing economic sectors as they promote robotisation and automation.
- Have led to the creation of **new sectors** and **new ways** of doing things.
- Are one of the reasons behind the phenomenon of **globalization.**
- And the fragmentation of production processes in different phases (**global value chains**).

These changes are generally known as **Knowledge Economy.**

Knowledge economy and intangibles

The new ways to produce as a result of ICT ask for:

- **Changes** (often drastic) in the **organisational structure of firms.**
- Increase sophistication with the **design** of new products.
- Create a **brand image** which sets it apart from simple *commodities.*
- **Win the loyalty of clients/customers**.
- Having **skilled** and **on-the-job trained** workers.

In other words, **to invest in intangible assets.**

What are intangibles assets?

Classification of intangible assets

1. Computerised information (software and databases)
2. Innovative property
2a. R&D
2b. Mineral exploration and entertainment and artistic originals
2c. Design and other new products/systems
3. Economic competencies
3a. Advertising
3b. Market research
3c. Firm-specific resources (employer-provided training)
3d. Organizational structure
3d.i. Acquired organizational structure
3d.ii. Own organizational structure
Total intangible assets included in GDP = IAGDP (1+2a+2b)
Total intangible assets "beyond GDP"B = IABGDP (2c+3)
Total intangible assets = IA = IAGDP + IABGDP (1+2+3)

Note: The colour indicates the group it belongs to (grey = IAGDP; blue = IABGDP).
Source: Corrado, Hulten and Sichel (2005, 2009) and own collaboration.

"Any use of resources that reduces current consumption in order to increase it in the future qualifies as an investment"

Corrado, Hulten y Sichel (2005, 2009).

- The largest change is that spending on intangibles has the same status as the purchase of new machinery, equipment, or the construction of factories, now considered **investment goods** instead of **intermediate consumption**.
- **Distinction between IAGDP and IABGDP.**
- **The inclusion of intangibles in the National Accounts would raise Spain's GDP level by 3,5%.**

The Intangibles Dataset

Spain is a rather decentralized country, starting with the creation of the *Autonomous State* with the 1978 Constitution. Thus, regional information is fundamental for the design of economic policies.

Ivie has been providing information disaggregated **by regions** on **tangible** capital (ICT and Non-ICT; **human** capital; **social** capital; and **Inequality** on a regular basis.

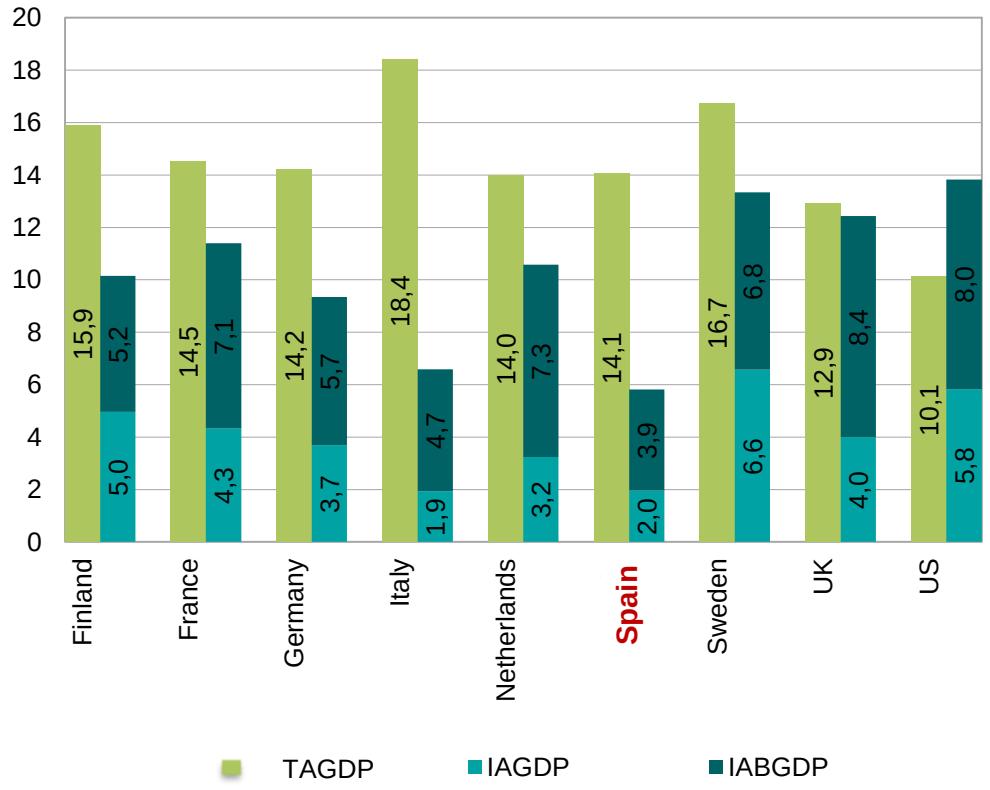
This is the **first study** that offers **information by regions** on **intangible** capital in an **international** context. Additionally, it includes a broad sectoral breakdown (27 sectors)

The **database** included in the study allows:

- **To position** Spain and its region in relation to other **EU countries and the US.**
- To analize the **differences/similarities** in intangible endowments **in Spain's autonomous communities** as well as the **convergence/divergence** among them.
- **To compare the impact** of intangibles on national/regional productivity at the same level as tangible capital, ICT and human capital already available.

Spain in an international context

Tangible and intangible investment overextended GDP: TAGDP, IAGDP and IABGDP. Private sector. Mean 1995-2010 (percentage)



Source: INTAN-Invest, BBVA Foundation-Ivie, Cotec Foundation-Ivie, INE, Telefonica Foundation, and own elaboration.

- Spain is **at the same level** as other advanced countries in **tangible assets.**
- However, it **lags behind,** along with Italy, in **intangible assets.**
- The problem is the **quantity,** not its composition
- **US** investment in intangibles **surpasses** that of tangibles, while **UK** investment in intangibles and tangibles is practically the **same.**

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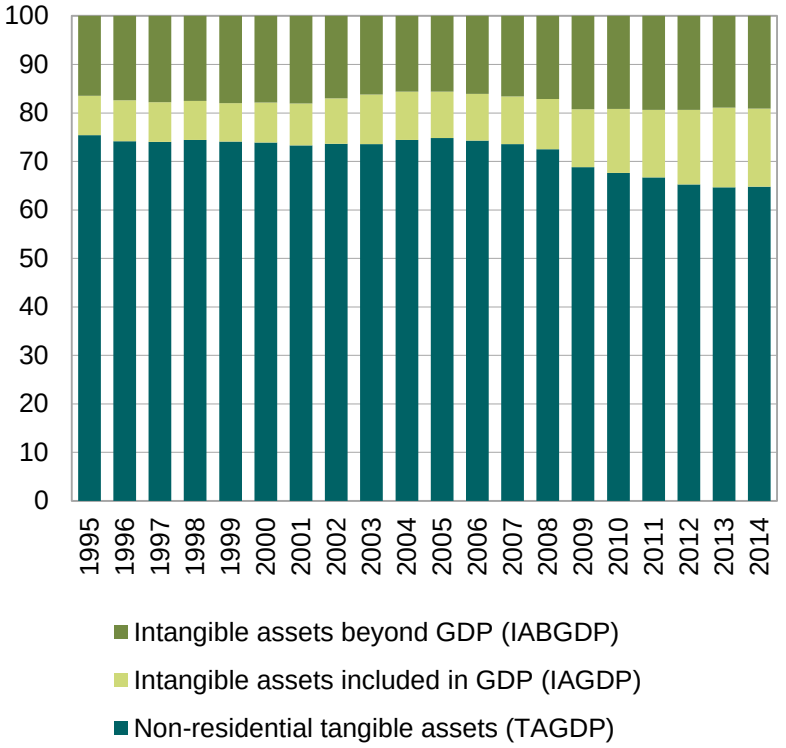
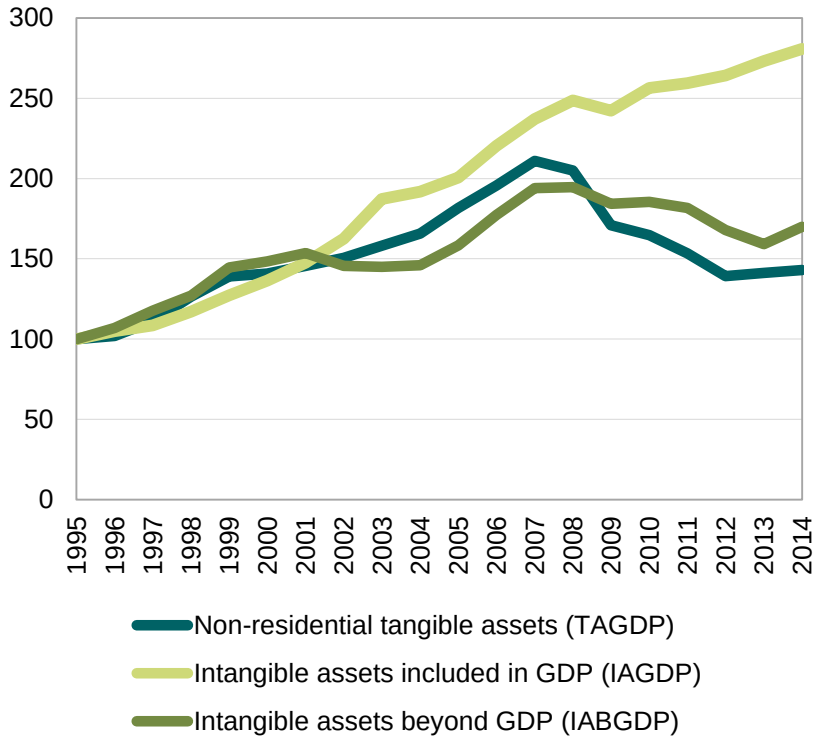
The impact of the crisis

- The economic crisis has affected more severely investments in tangible assets than in intangible.

Investment included in GDP and "beyond GDP": TAGDP, IAGDP and IABGDP, 1995-2014 (percentage)



Real investment: TAGDP, IAGDP and IABGDP, 1995-2014 (1995 = 100)



Source: BBVA Foundation-Ivie, Cotec Foundation-Ivie, INE and own elaboration.

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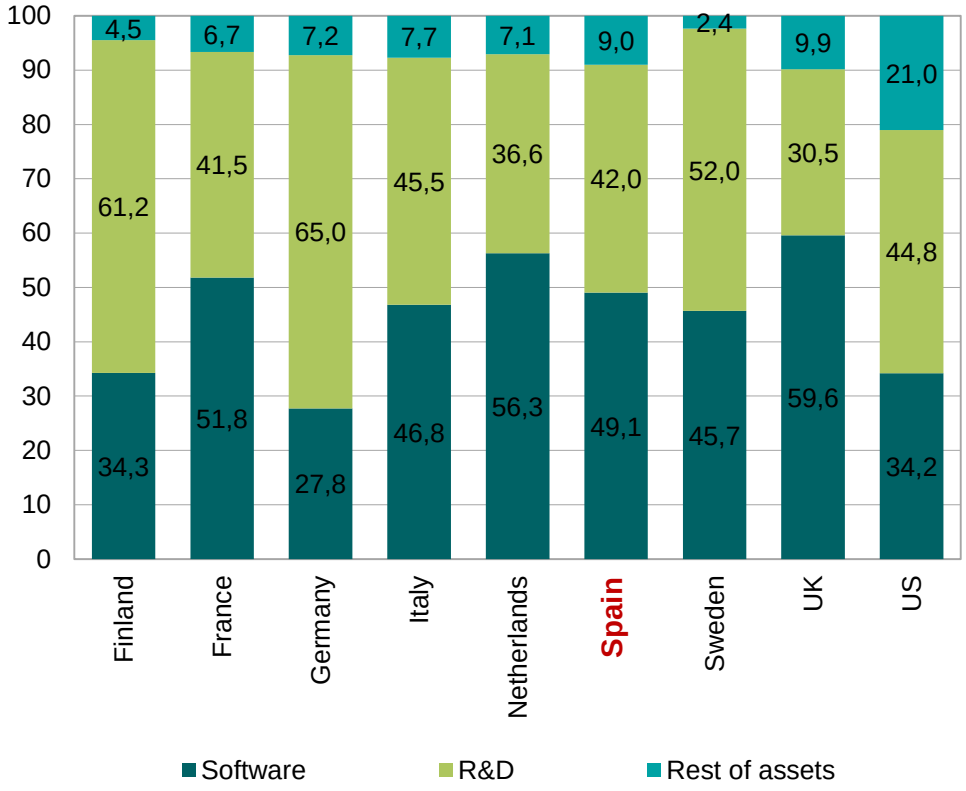
Composition of intangible assets. IAGDP

Composition of investment in IAGDP by assets, 2010 (percentage)



Source: INTAN-Invest, BBVA Foundation-Ivie and own elaboration.

- The problem with IAGDP is the quantity (less invested) and not so much the composition (the structure is similar to that of other countries).

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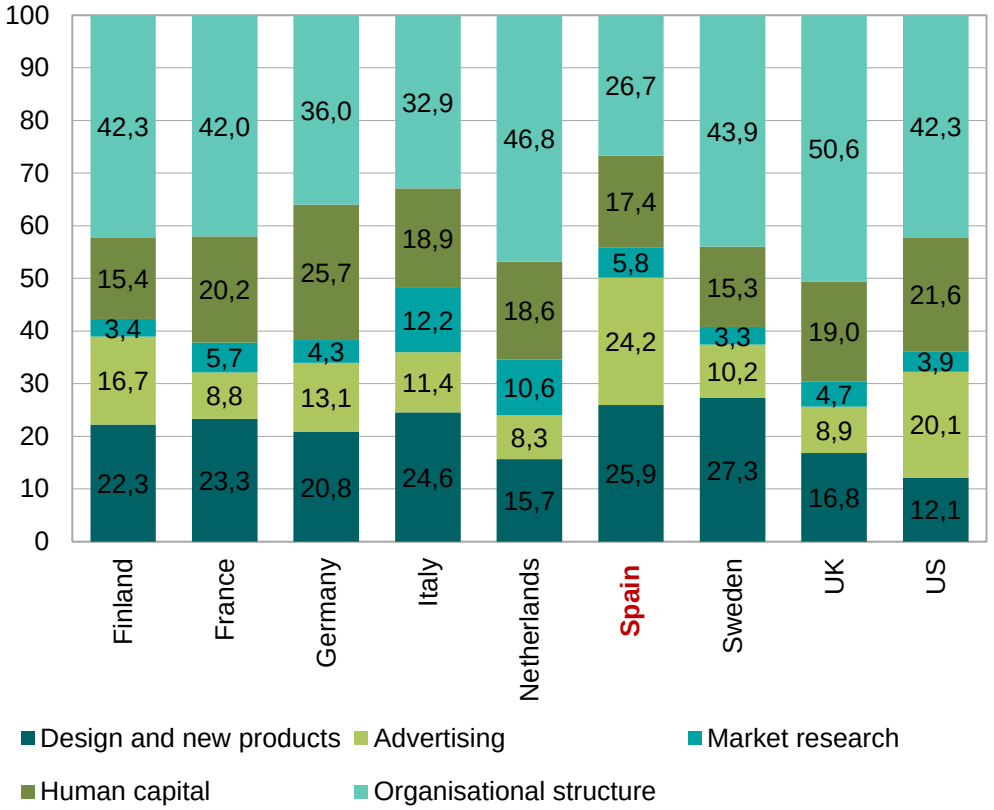
Composition of intangible assets. IABGDP

Composition of investment in IABGDP by assets, 2010 (percentage)



- However, regarding IABGDP, the problem is both with quantity and composition.
- Spain invests 50% in advertising and design, while the other countries invest up to 50% only in improving firms' organizational structure.

Source: INTAN-Invest, Cotec Foundation-Ivie, Telefónica Foundation and own elaboration.

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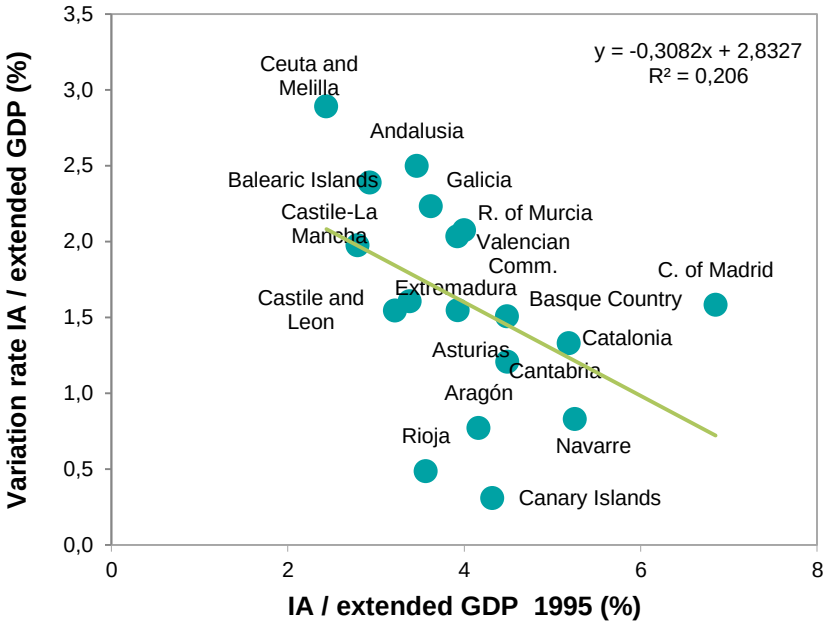
Inequality and β-convergence. IA

- Madrid is in the lead, followed by Catalonia and Navarre. More intensive investment in intangible assets in the periphery.
- Tendency to convergence among regions (those with less intangible endowments in 1995 have experienced higher growth rates).

Investment in intangible assets (IA) over extended GDP. Spain's autonomous communities. 2013 (Spain = 100)

β-Convergence among Spain's autonomous communities. IA



Source: BBVA Foundation-Ivie, Cotec Foundation-Ivie and INE.

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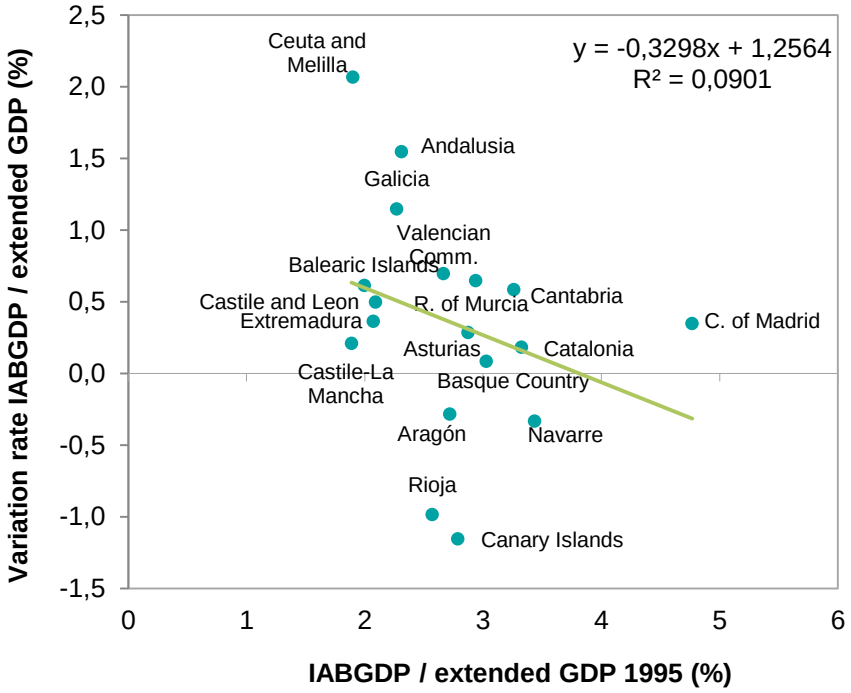
Inequality and β-convergence. IAGDP

- Madrid is in a prominent position. Greater gap between the “two Spains” (less intensive ring in the centre).
- Not very clear tendency to converge.

Investment in IABGDP overextended GDP. Spain’s autonomous communities. 2014 (Spain = 100, percentage)

β-convergence among Spain’s autonomous communities. IABGDP



Source: BBVA Foundation-Ivie, Cotec Foundation-Ivie and INE.

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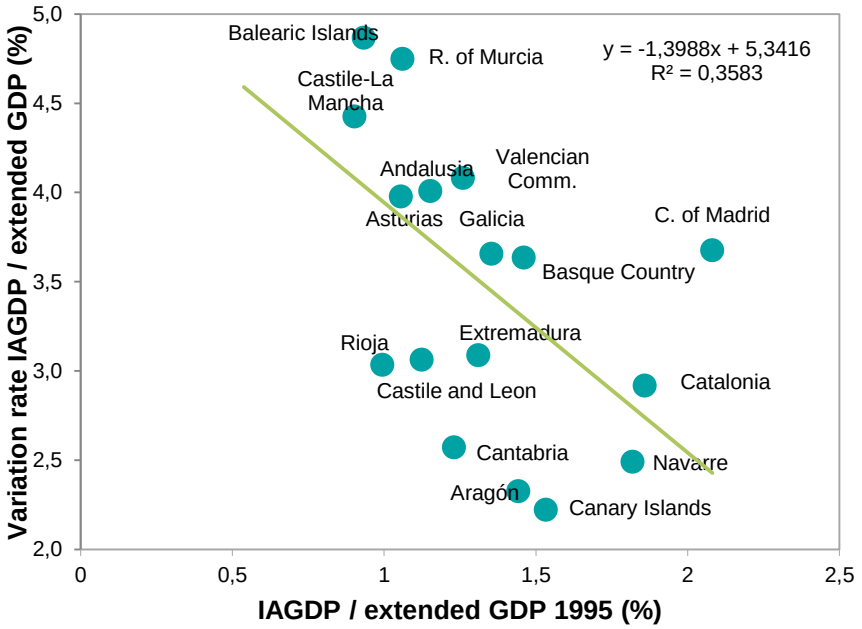
Inequality and β-convergence. IAGDP

- Madrid stays in the lead. Fewer differences in IAGDP than in IABGDP.
- The tendency to converge is more intense.

Investment in IAGDP over extended GDP. Spain's autonomous communities. 2013 (Spain = 100, percentage)

β-Convergence among Spain's autonomous communities. IAGDP



Source: BBVA Foundation-Ivie, Cotec Foundation-Ivie and INE.

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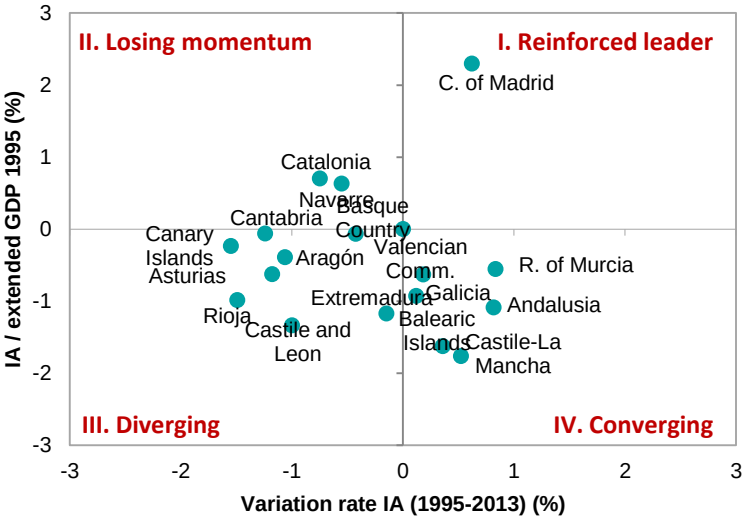
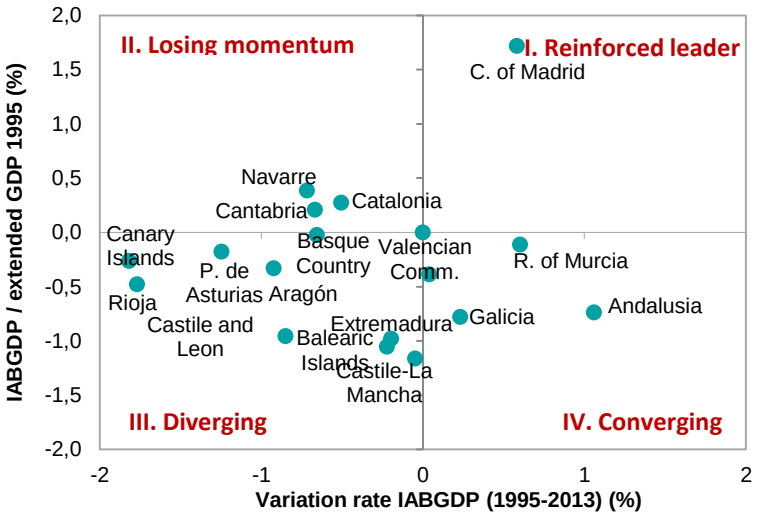
Taxonomy by regions according to their investment activity

Investment /extended GDP deviation (1995) and variation rate (mean 1995-2013) in relation to the national average. Spain's autonomous communities (percentage)

***a)* IA**



***b)* IABGDP**



Source: BBVA Foundation-Ivie, Cotec Foundation-Ivie and INE.

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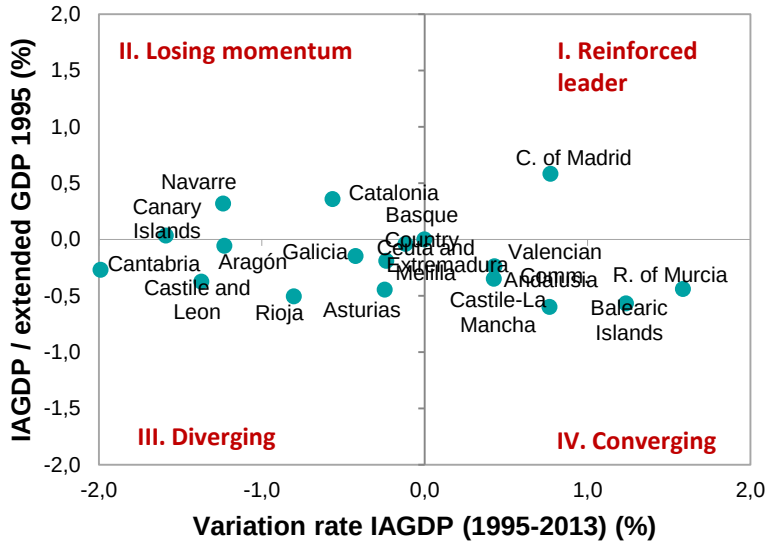
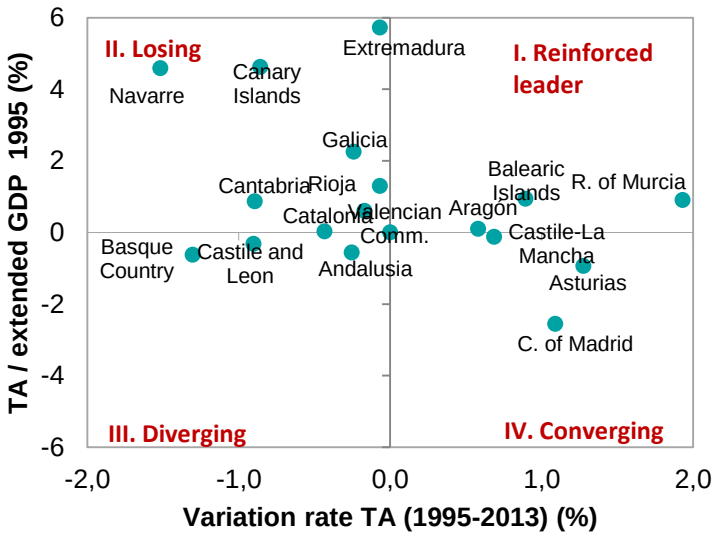
Investment /extended GDP deviation (1995) and variation rate (mean 1995-2013) in relation to the national average. Spain's autonomous communities (percentage)

c) IAGDP



d) TA



Source: BBVA Foundation-Ivie, Cotec Foundation-Ivie and INE.

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Taxonomy by regions according to their investment activity

Classification of Spain's autonomous communities according to their position in relation to national average

	IA	IABGDP	IAGDP	TA
Andalusia	converging	converging	converging	diverging
Aragón	diverging	diverging	diverging	reinforced leader
Asturias	diverging	diverging	diverging	converging
Balearic Islands	converging	diverging	converging	reinforced leader
Canary Islands	diverging	diverging	losing momentum	losing momentum
Cantabria	diverging	losing momentum	diverging	losing momentum
Catalonia	losing momentum	losing momentum	losing momentum	losing momentum
Castile-La Mancha	converging	diverging	converging	converging
Castile and Leon	diverging	diverging	diverging	diverging
Valencian Community	converging	converging	converging	losing momentum
Extremadura	diverging	diverging	diverging	losing momentum
Galicia	converging	converging	diverging	losing momentum
Madrid	reinforced leader	reinforced leader	reinforced leader	converging
Murcia	converging	converging	converging	reinforced leader
Navarre	losing momentum	losing momentum	losing momentum	losing momentum
Basque Country	diverging	diverging	diverging	diverging
La Rioja	diverging	diverging	diverging	losing momentum
Ceuta and Melilla	converging	converging	converging	diverging

Intangible assets:

- Only Madrid displays leadership
- Initial leadership by Catalonia and Navarre stagnates

Converging autonomous communities:

- Andalusia, Valencian Community, Murcia and Ceuta & Melilla

Diverging autonomous communities:

- Aragón, Asturias, Castile and Leon, Extremadura, Basque Country and La Rioja

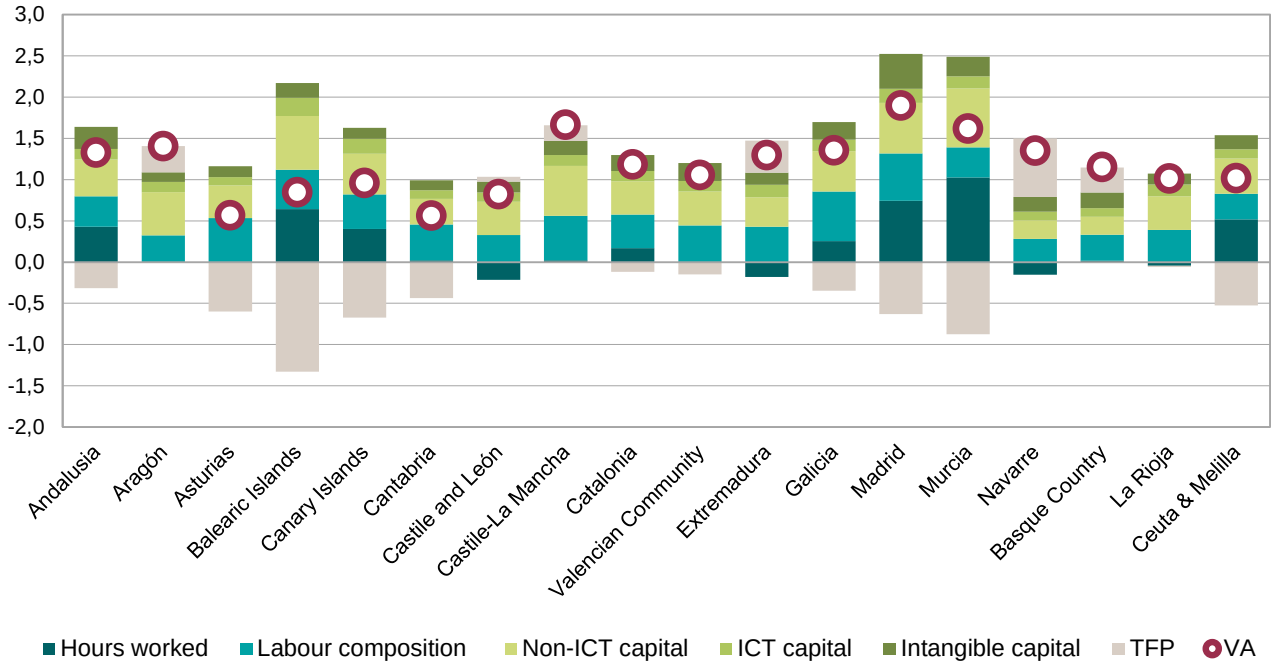
Tangible assets:

- More balanced distribution among regions in the 4 categories
- No clear leadership

Source: BBVA Foundation-Ivie, Cotec Foundation-Ivie, INE and own elaboration.

- The majority of regions have a TFP(efficiency) problem.
- Labor and non-ICT capital main source of VA growth (transpiration growth model).
- Basque Country, Navarre and Aragon have opted for an inspiration growth model based on ICT, intangibles and TFP.
- Madrid is the region with the largest contribution of intangible assets.

Growth accounting Spanish regions. 2000-2014 (percentage)



Source: BBVA Foundation-Ivie, Cotec Foundation-Ivie, INE and own elaboration.

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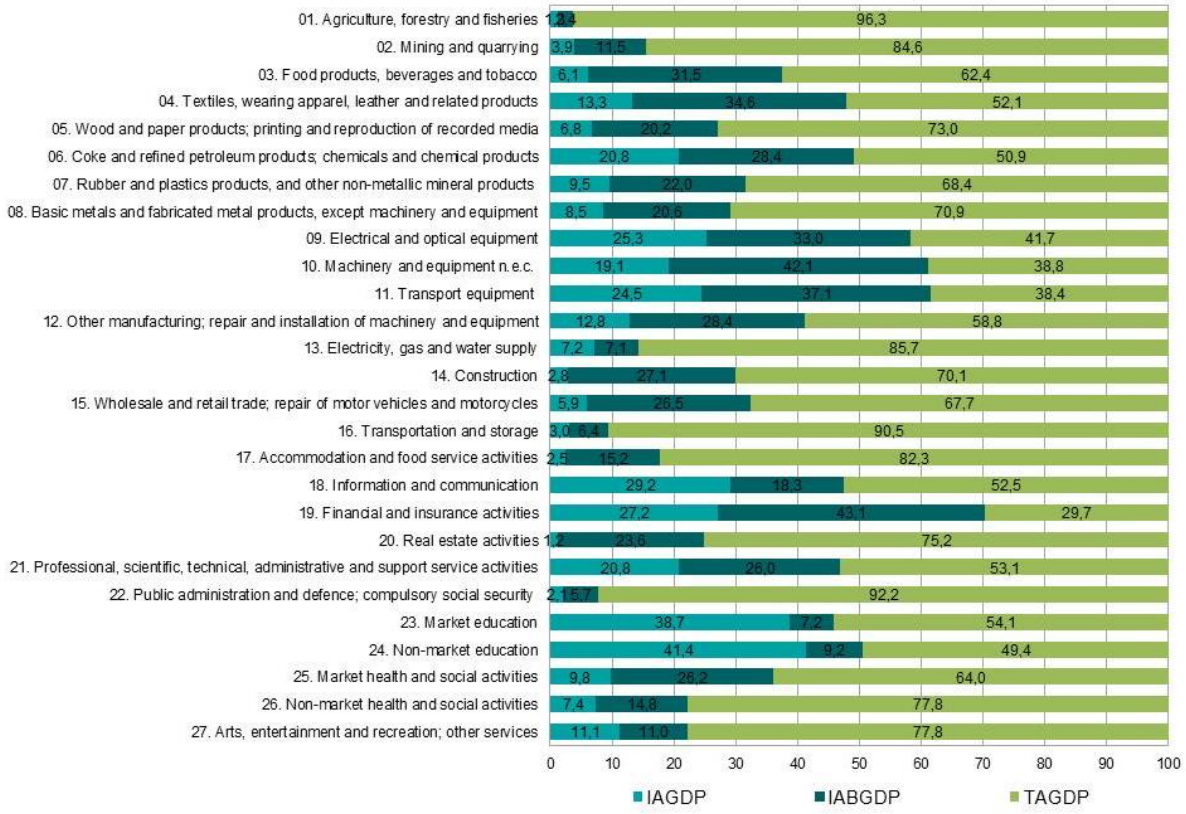
Intangible assets by sectors

Tangible and intangible investment by sectors: TAGDP, IAGDP and IABGDP. Average 1995-2014 (percentage)



Source: BBVA Foundation-Ivie, Cotec Foundation-Ivie, INE and own elaboration.

Sectoral differences in intangible assets:

- Highly intensive sectors: *Financial and insurance activities, Transport equipment, Machinery and equipment n. e. c.* and *Electrical and optical equipment.*
- Less intensive sectors: *Agriculture, forestry and fisheries, Transportation* and *Public administration and defense.*
- Very different weights of investment in each of the 5 IABGDP components by sectors.

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Final comments

- A **policy, either private or public**, that aims to improve the efficiency of the economic system as well as the welfare of its citizens **needs quantitative information** to establish and follow up its goals.
- The **Cotec Foundation-Ivie database** provides experts, institutions, the government and firms with an **immediate tool** to diagnose and design strategies to change, innovate and improve society's living standards.
- The **wealth of information** at regional and sectoral level that it contains **is internationally unique**. This enables the detailed analysis of **key issues regarding growth strategies** of regions and industries in Spain.
- As said by the British Mathematician Lord Kelvin "what is not defined, cannot be measured" and, along that line, according to P. Drucker "if you can't measure it, you can't improve it".
- Certainly, the information provided will help **narrow the gap** that still separates Spain from other developed countries regarding investment in assets that play a crucial role in the long-term growth of economies.

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