

# Scientific Output and Citation in Economics and Business Schools in Portugal, 1990-2009

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# Object of analysis - Portuguese E&BS

- ISEG ---- Technical Univ of Lisbon E&BS
- FEUNL ---- “Nova”, New Univ of Lisbon E&BS
- FEP ---- Porto Univ E&BS
- UCP ---- “Católica” Lisbon + Porto
- Coimbra
- Minho
- Aveiro
- Évora
- Algarve

# Data

- Web of Science / ISI publications
- Papers, notes, letters, reviews, and proceedings when published in journals
- All scientific areas in the 9 E&BSs
- Searches by institution name, research centres, addresses, names of individuals
- No co-authorship weighting (Van Raan 2003)
- Self-citation excluded
- Academic staff: Rebides (MS&T)

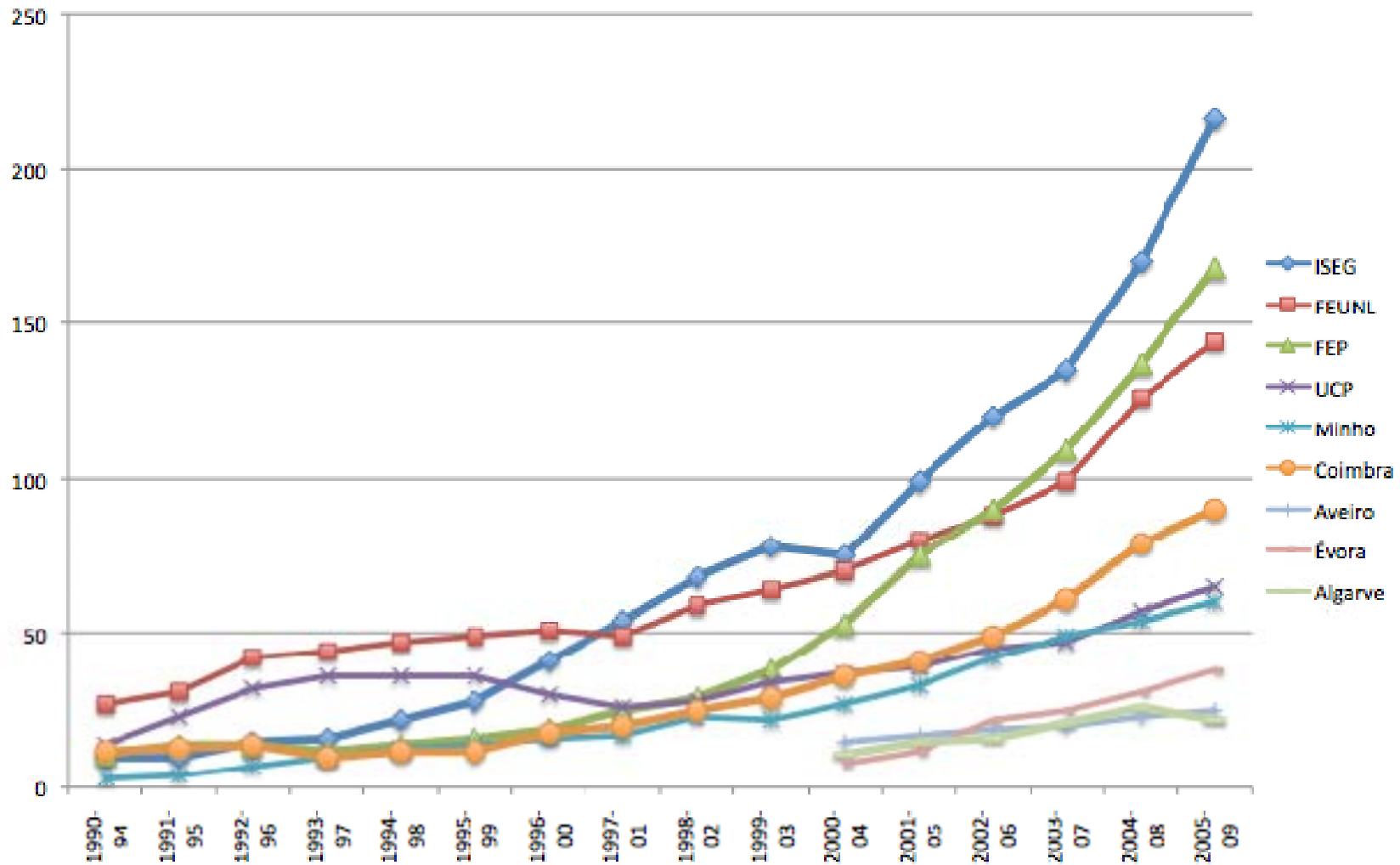
## **Period of Analysis**

- Two decades 1990-2009
- 5-year periods (Van Raan 2003)
- 16 periods, 1990-94 to 2005-09

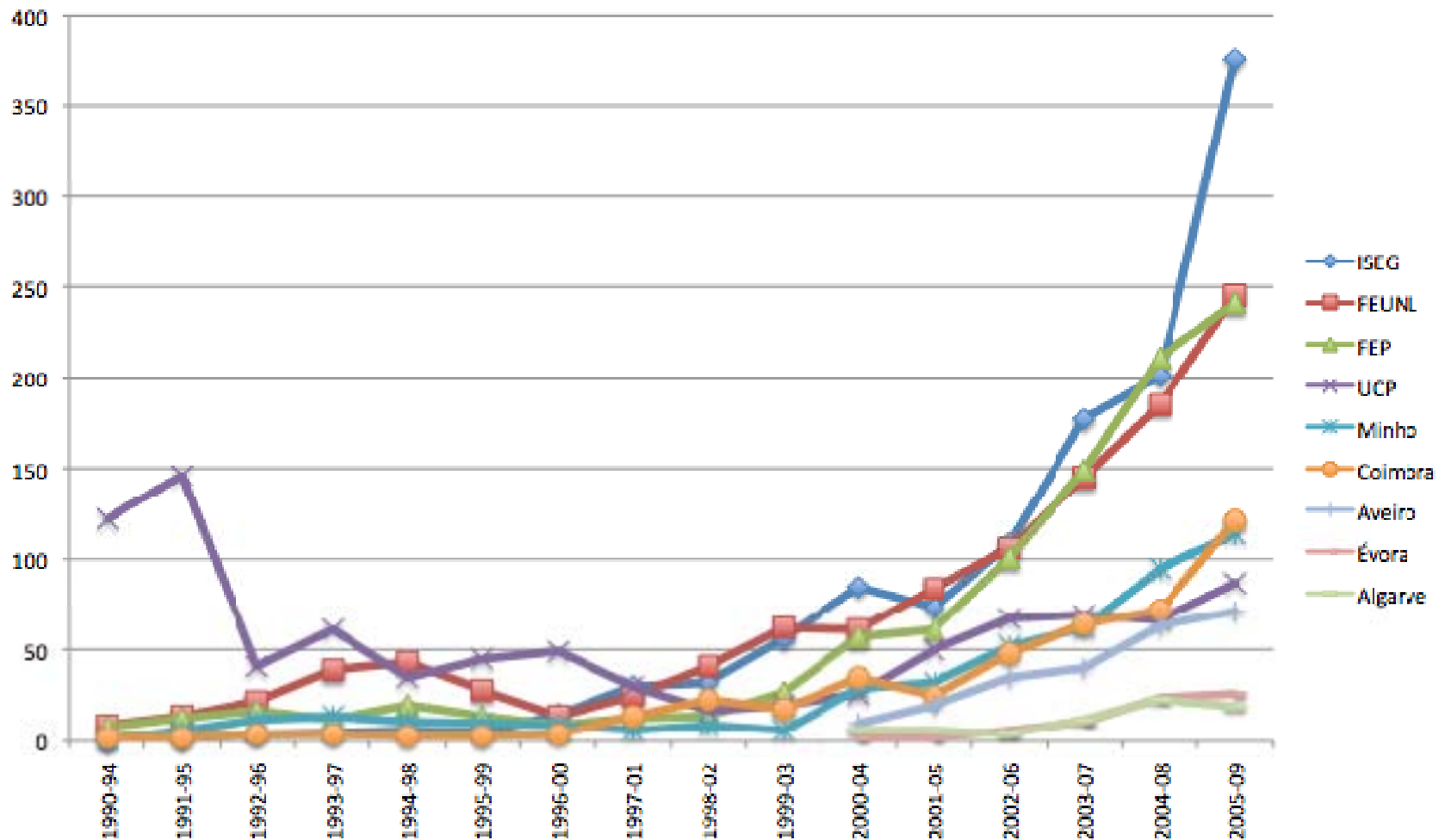
# Questions

- How much?
- Impact?
- Efficiency?
- Trends?
- How do E&BS compare with all scientific fields in Portugal?
  
- WIP

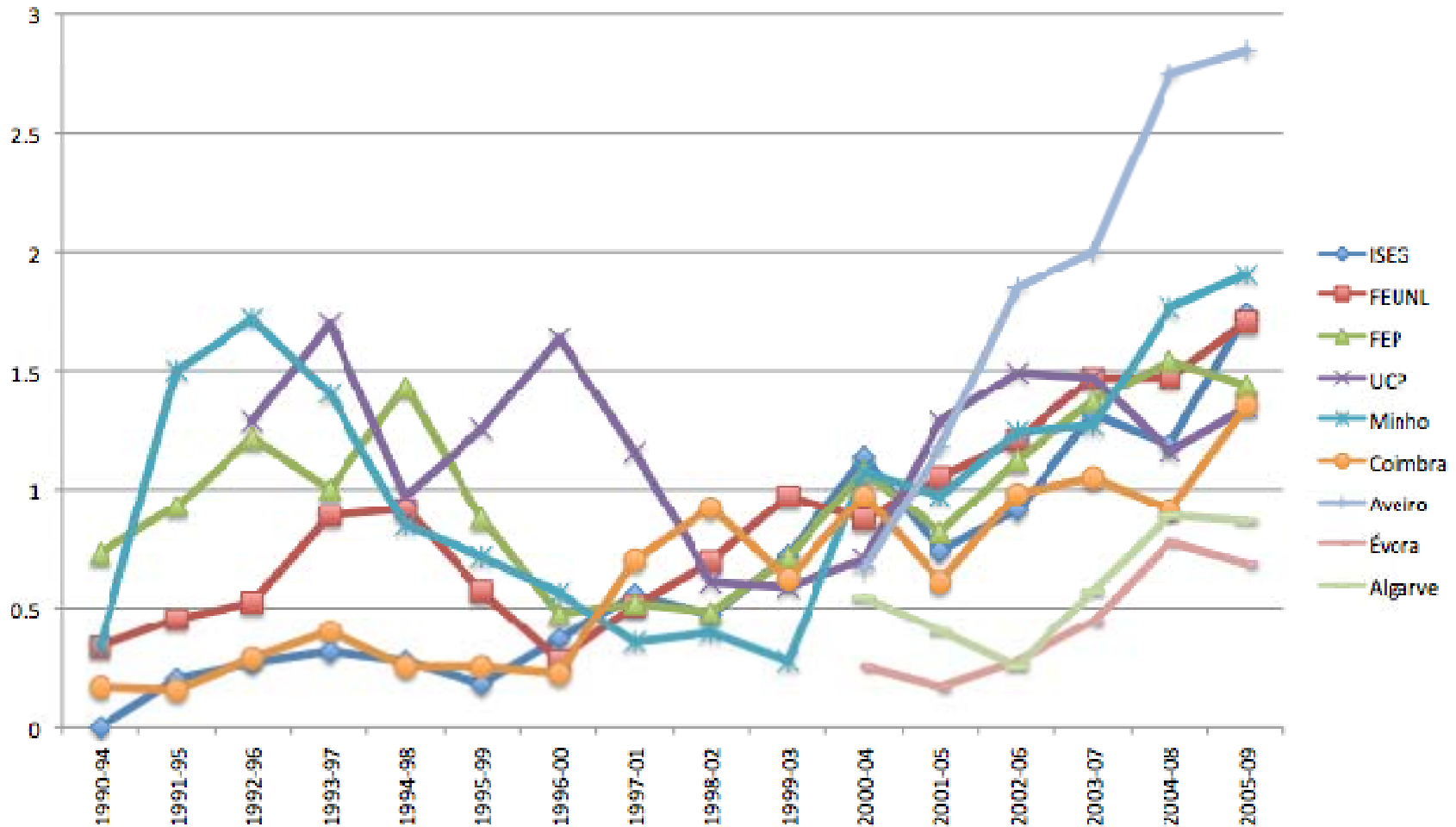
# Total Publications ISI



# Total Citations



# Citation Index Without Outliers



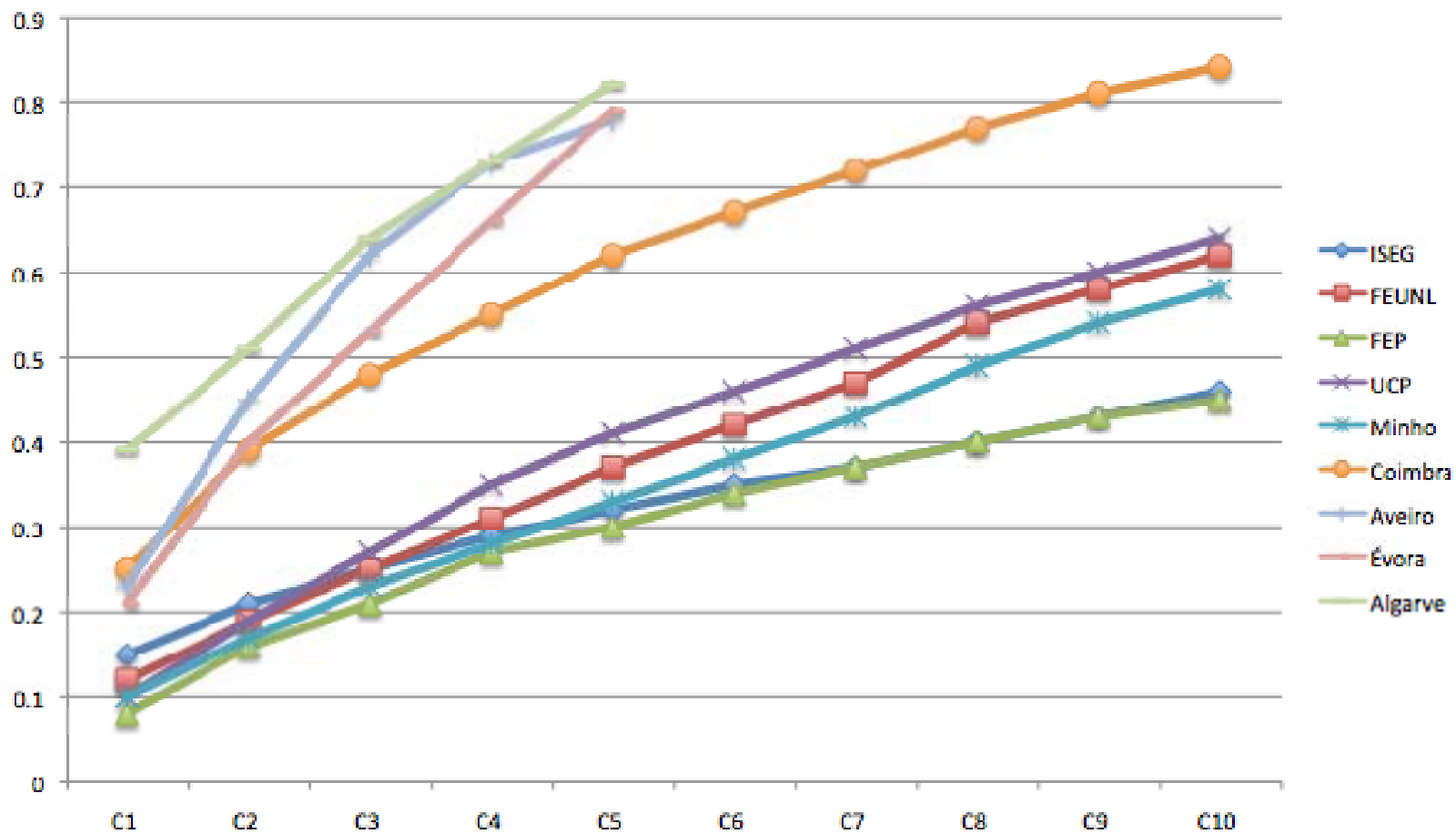


# Number of publications 2000-2009

## Concentration Ratios

	ISEG	FEUNL	FEP	UCP	Minho	Coimbra	Aveiro	Évora	Algarve
<b>C1</b>	<b>0,15</b>	<b>0,12</b>	<b>0,08</b>	<b>0,10</b>	<b>0,10</b>	<b>0,25</b>	<b>0,23</b>	<b>0,21</b>	<b>0,39</b>
<b>C2</b>	<b>0,21</b>	<b>0,19</b>	<b>0,16</b>	<b>0,19</b>	<b>0,17</b>	<b>0,39</b>	<b>0,45</b>	<b>0,40</b>	<b>0,51</b>
<b>C5</b>	<b>0,32</b>	<b>0,37</b>	<b>0,30</b>	<b>0,41</b>	<b>0,33</b>	<b>0,62</b>	<b>0,78</b>	<b>0,79</b>	<b>0,82</b>
<b>C10</b>	<b>0,46</b>	<b>0,62</b>	<b>0,45</b>	<b>0,64</b>	<b>0,58</b>	<b>0,84</b>			
	<b>291</b>	<b>214</b>	<b>221</b>	<b>102</b>	<b>115</b>	<b>126</b>	<b>40</b>	<b>47</b>	<b>33</b>

# Publications Concentration Ratios, 2000-2009



# DEA – Data Envelopment Analysis

- 1 input --- academic staff in FTE (full time equivalents)
- 1 output --- Publications weighted by citations  
(number of publications x citation index)
- 4 periods --- 1990-94; 1995-99; 2000-04; 2004-09

## Note

Input for periods 1, 2 and 3 --- staff number in 2000

Input period 4 --- average of staff number in 2000 and 2008

# Constant Returns to Scale DEA

- One input and one output case: equivalent to compute productivity as production per input.
- The most efficient E&BS has the highest productivity.
- Efficiency coefficients are ratios between each E&BS productivity and the E&BS with highest productivity in the group.

Most efficient E&BS: efficiency coefficient = 1  
Remaining: efficiency coefficients < 1

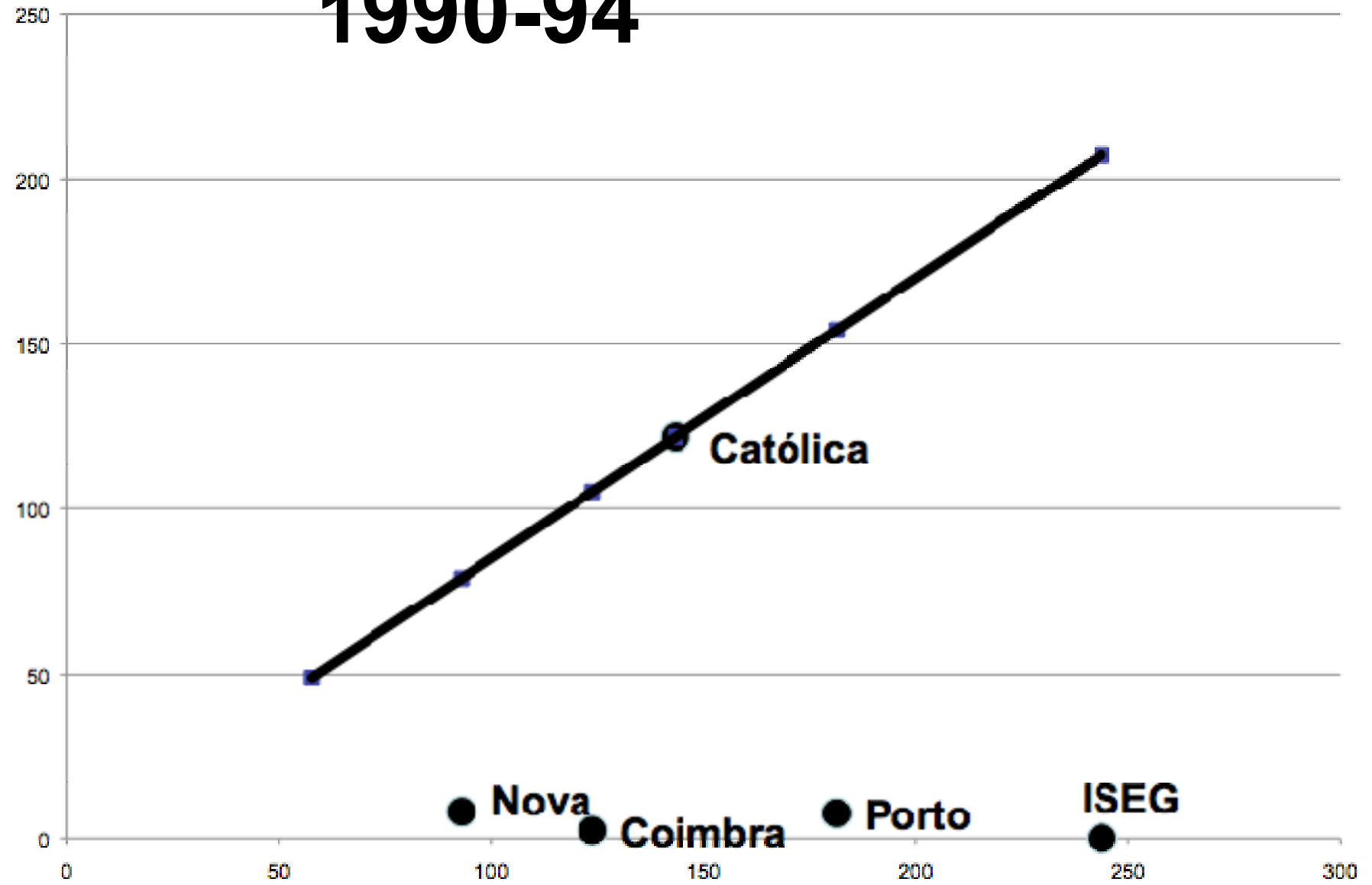
# Input

	<b>FTE staff 2000</b>	<b>FTE staff 2008</b>
<b>Algarve</b>	<b>57,6</b>	<b>42,4</b>
<b>UCP- Catolica</b>	<b>143,2</b>	<b>147,7</b>
<b>Coimbra</b>	<b>123,8</b>	<b>115</b>
<b>ISEG</b>	<b>243,7</b>	<b>202,2</b>
<b>FEUNL - Nova</b>	<b>92,7</b>	<b>111,15</b>
<b>Porto</b>	<b>181,3</b>	<b>146,4</b>

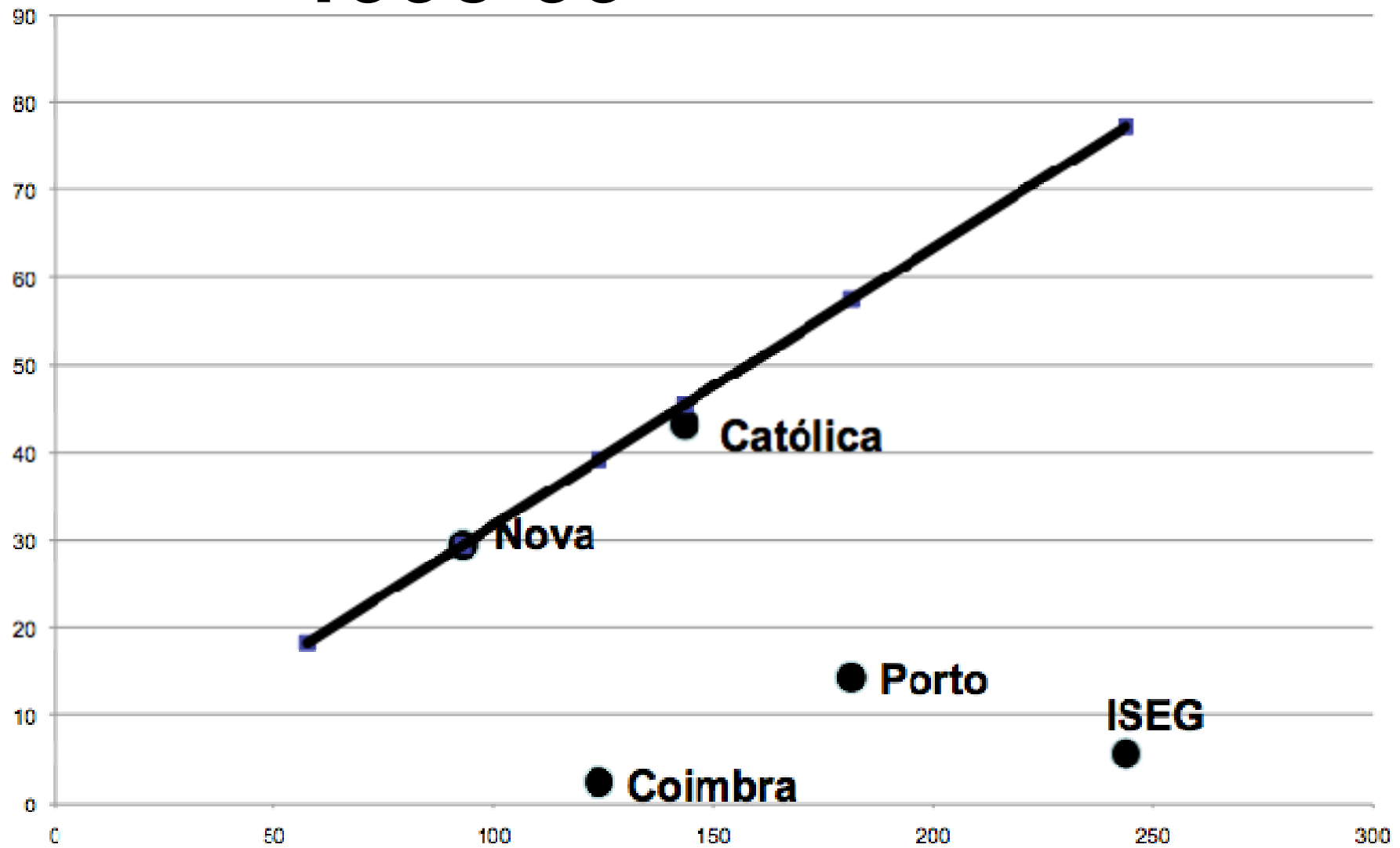
# Productivity

	<b>Productivity 1990-1994</b>	<b>Productivity 1995-1999</b>	<b>Productivity 2000-2004</b>	<b>Productivity 2005-2009</b>
<b>Algarve</b>	n.a.	n.a.	0,10	0,40
<b>UCP-Catolica</b>	0,85	0,30	0,18	0,58
<b>Coimbra</b>	0,02	0,02	0,29	0,98
<b>ISEG</b>	0,00	0,02	0,34	1,65
<b>FEUNL-Nova</b>	0,09	0,32	0,68	2,40
<b>Porto</b>	0,04	0,08	0,32	1,44

# 1990-94

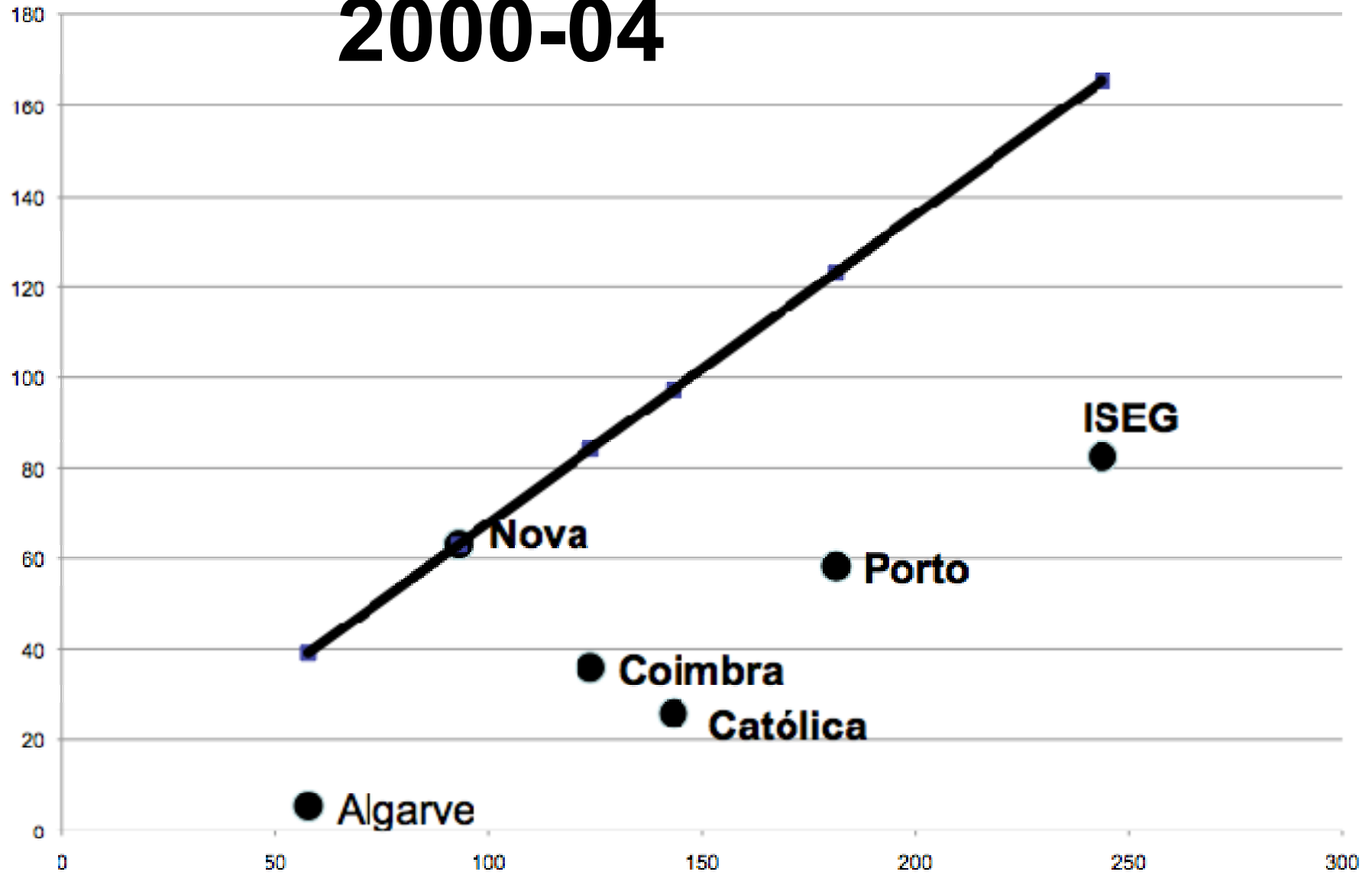


# 1995-99

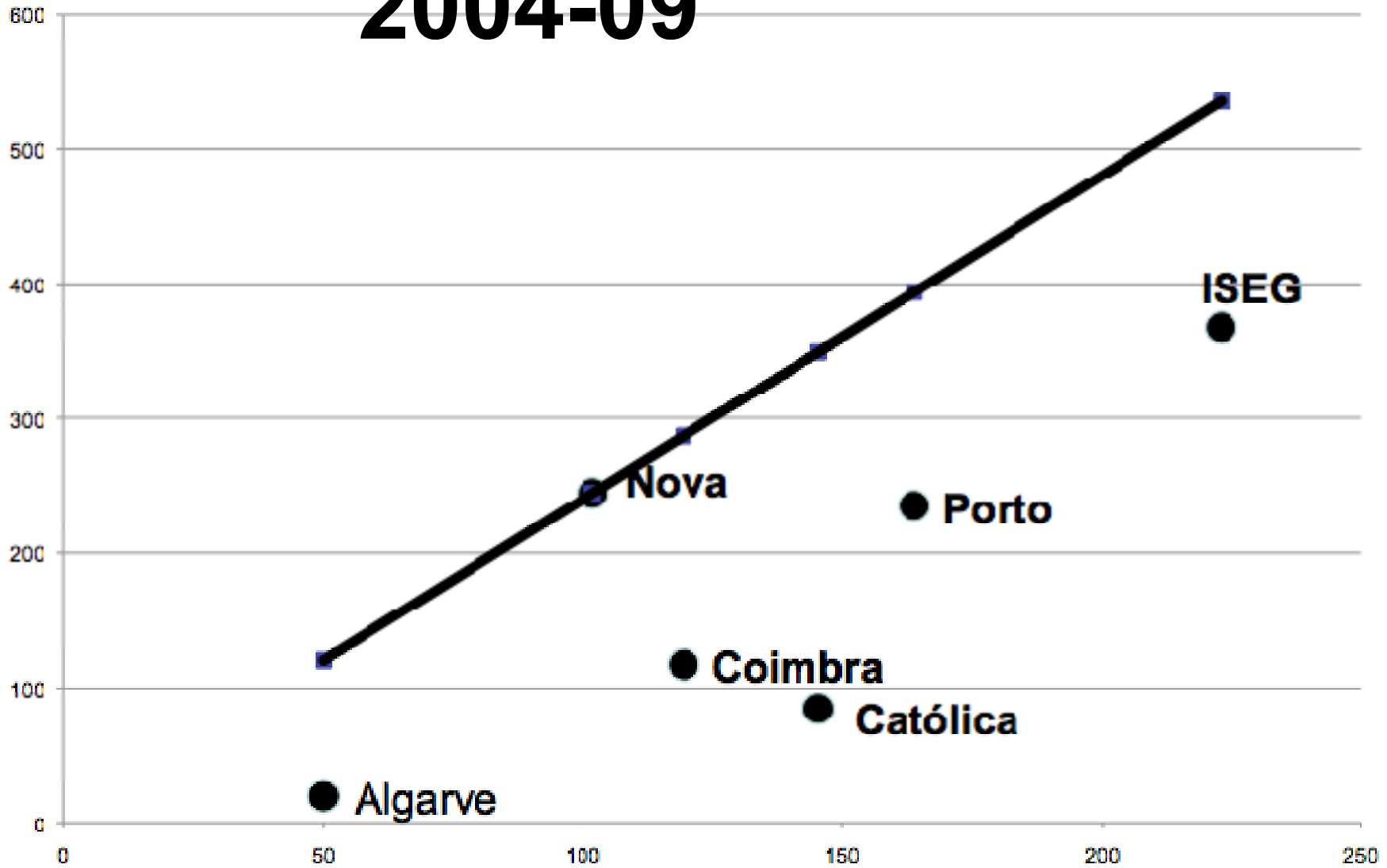




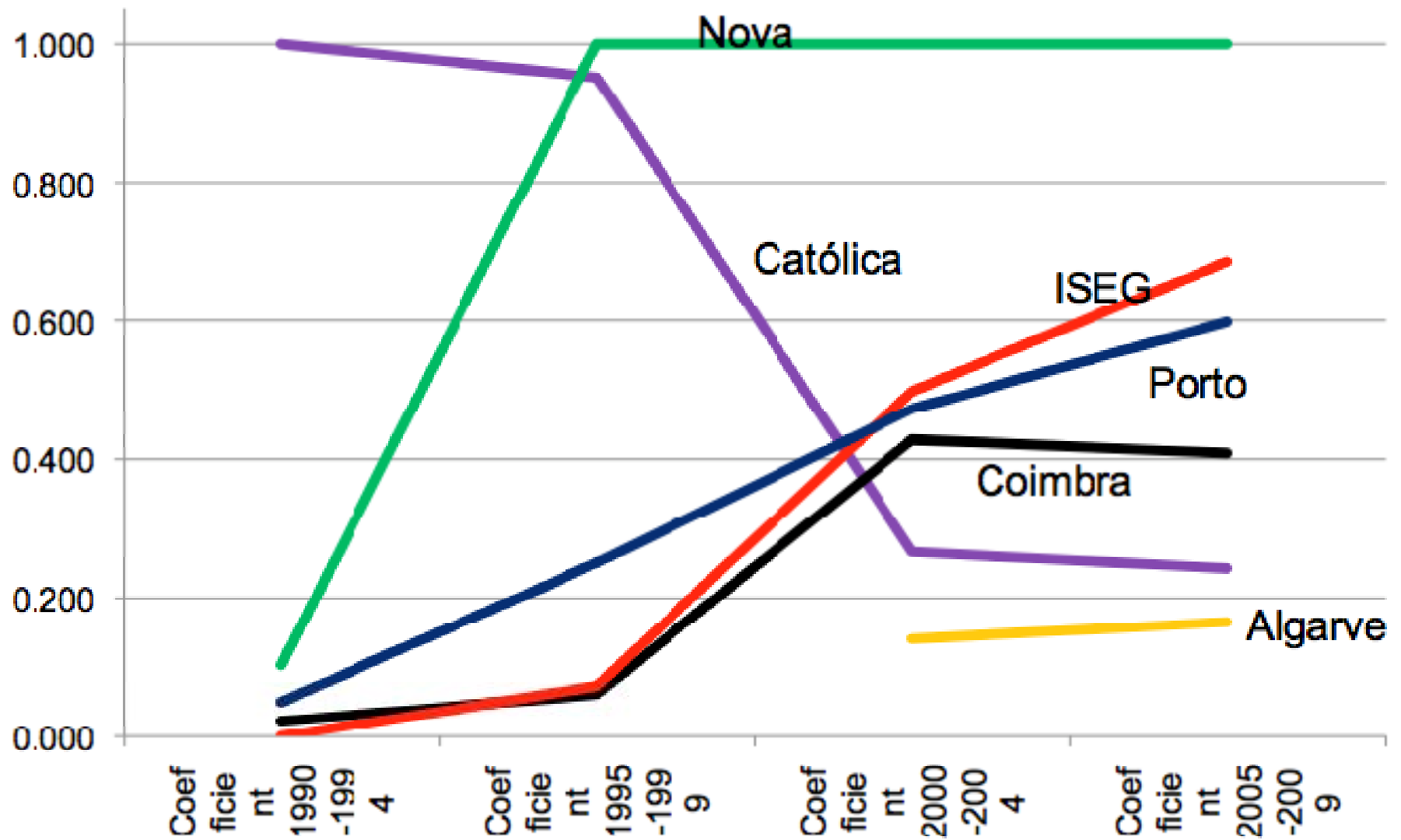
# 2000-04



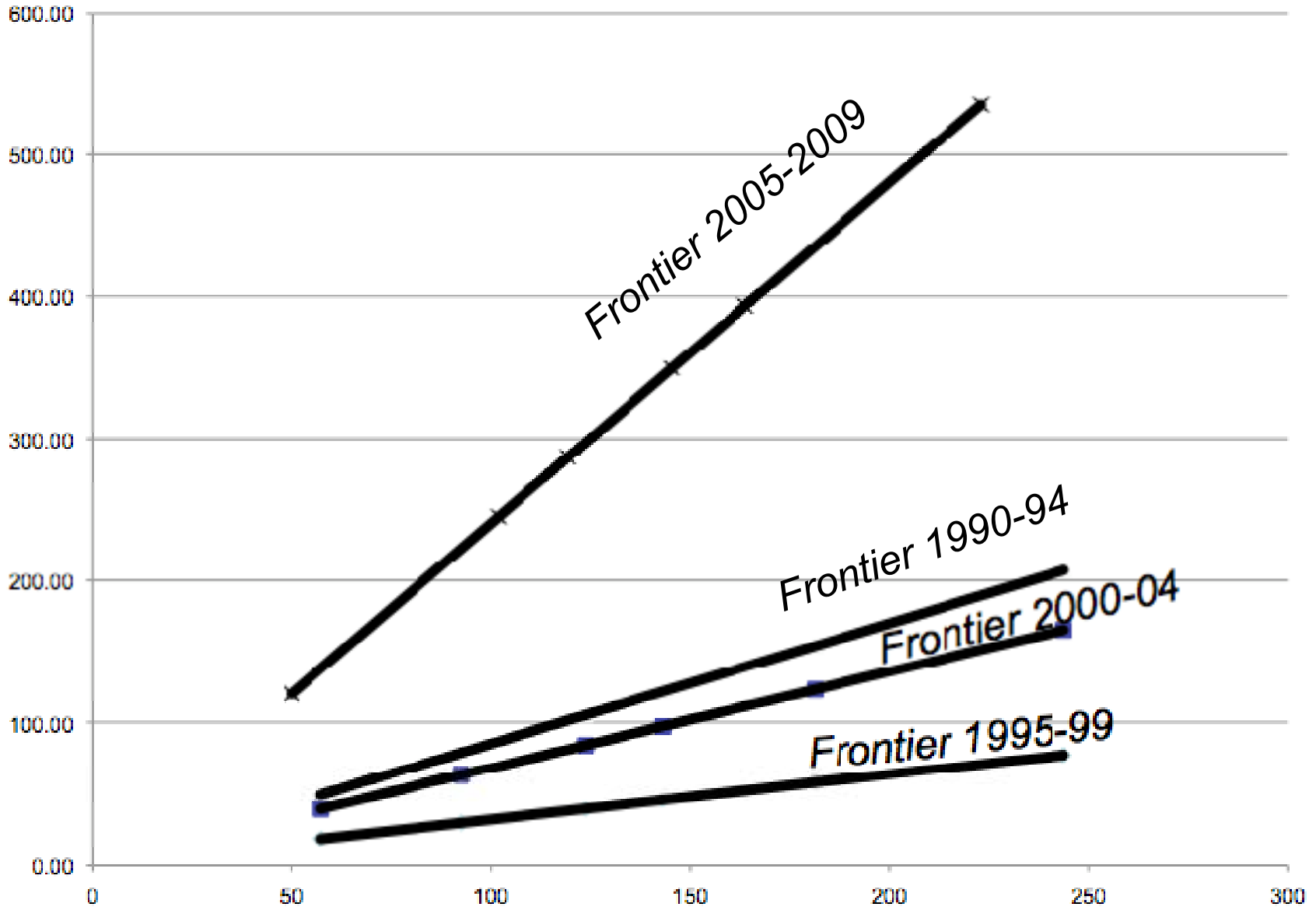
# 2004-09



# Efficiency Coefficients Across Time



# Efficiency Frontiers Across Time



# Total Publications – Annual Growth Rates (%)

	ISEG	FEUNL	FEP	UCP	Minho (1)	Coimbra	Aveiro (2)	Évora (3)	Algarve
<b>2005-09/ 1990-05</b>	<b>23</b>	<b>12</b>	<b>20</b>	<b>11</b>	<b>19</b>	<b>14</b>			
<b>2005-09/ 2000-04</b>	<b>24</b>	<b>16</b>	<b>26</b>	<b>12</b>	<b>16</b>	<b>20</b>	<b>10</b>	<b>20</b>	<b>15</b>

Note: (1) 2005-09/1995-99; (2) 2005-09/2001-05; (3) 2005-09/ 2002-07

# Citations – Annual Growth Rates (%)

	<b>ISEG (4)</b>	<b>FEUNL</b>	<b>FEP</b>	<b>UCP</b>	<b>Minho (1)</b>	<b>Coimbra</b>	<b>Aveiro (2)</b>	<b>Évora (3)</b>	<b>Algarve</b>
<b>2005-09/ 1990-05</b>	<b>45</b>	<b>25</b>	<b>26</b>	<b>-2</b>	<b>30</b>	<b>32</b>			
<b>2005-09/ 2000-04</b>	<b>34</b>	<b>32</b>	<b>33</b>	<b>27</b>	<b>29</b>	<b>28</b>	<b>37</b>	<b>63</b>	<b>25</b>

Note: (1) 2005-09/1995-99; (2) 2005-09/2001-05; (3) 2005-09/ 2002-07; (4) 2005-09/1991-5

# Portuguese ISI Publications, 1990-2009

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
<b>D1</b>	957	1056	1275	1411	1664	1962	2146	2537	2879	3516
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009***
<b>D2</b>	3791	4114	4748	5220	6003	6449	8008	8079	9623	10081

## Annual growth rate D2/D1

All Scientific Fields - 13%

6 Largest E&BSs:- 16%

FEP - 26%; ISEG – 25%; Coimbra – 20%; Minho – 18%; FEUNL – 12%; UCP – 8%

### Fontes:

GPEARI - Gabinete de Planeamento, Estratégia, Avaliação e Relações Internacionais / Ministério da Ciência, Tecnologia e Ensino Superior

Thomson Reuters / National Citation Report for Portugal 1981-2008 (NCR)

Thomson Reuters / Web of Science - WoS (Science Citation Index Expanded - SCI; Social Science Citation Index - SSCI; Arts & Humanities Citation Index - AHCI)

\* Apuramento efectuado pelo método de contagem fraccionada

\*\* Pesquisa efectuada a 19 de Abril de 2010

\*\*\* Valores Provisórios

# Final Remarks

- Two decades --- significant progress
  - both in publications and citations, and
  - efficiency rising
- Future work
  - Account for output and productivity and its evolution: staff demography; endogamy; teaching demands; financial resources; ... ?
  - More schools; scientific areas; IF of journals; highly productive individuals; who is citing; international and national collaborations...
  - International comparisons