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Conference Paper

Productivity in the Spanish regions during the recent economic cycles

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Productivity in the Spanish regions during the recent economic cycles

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Very preliminary version, June 2011

Abstract:

In this paper, the decomposition proposed by Leamer (2008) between normal and extraordinary contributions is applied to nine productive sectors of the Spanish regions in order to examine their behaviour in productivity during expansions, so that will help us identify more branches potential to stimulate economic growth when it reached again the path of recovery.

Keywords: Business Cycles, Productivity, Time series, Productive sectors, Spanish regions, Services

JEL Codes: E32, E24, C22, E23, 052

"Productivity isn't everything, but in the long run it is almost everything"
Krugman (1992, p. 9)

1. Introduction

The Spanish regions are facing a severe recession caused by the international financial crisis that has overlapped with the correction that had been recorded in the property market, which has led to a sharp drop in economic activity and a rapid destruction process employment. In these circumstances it is a priority to begin a new growth path based on a more productive and sustainable pattern, which enhances competitive sectors and contribute to the creation and consolidation of employment.

Given the modest track record in productivity, emphasis has been placed on productivity growth. Questions has been raised on whether such record has its origin in a few sectors or if it is a generalize problem, on what are the sectors favoring the advancement of productivity, and on what are the causes of the uneven productivity performance among the regions.

This paper attempts to shed light on these questions examining the evolution of the contributions to productivity growth during the period 1980-2008, with special emphasis on the evolution of productivity growth in service sectors over the economic cycle.

The paper is organized as follows. Section 2 presents the data used and outlines the methodology, while Section 3 provides the results. Finally, Section 4 offers some concluding remarks.

2. Data and methodology

In this paper, we use the DBMORES database (Bustos *et al.*, 2008), extended to 2007 using data from the Spanish Regional Accounts (INE 2011). From both sources we have obtained homogeneous series covering the 1980-2008 period for Gross Value Added at constant prices of 2000 (*GVA*) and for employment (*L*) for both total production (TOT) and nine productive sectors.

The productive sectors under review are:

1. Agriculture and fisheries (AGR)
2. Extractive industries and energy (ENE)
3. Industry (IND)
4. Construction (CON)
5. Trade and catering (COM)
6. Transport and communications (TRA)
7. Financial intermediation (FIN)
8. Other market services (OTH), and
9. Non-market services and government (NMS)

From these data, we first calculate productivity (*Prod*) as the ratio between *GVA* and *L* for each region:

$$Prod_{j,t} = \frac{GVA_{j,t}}{L_{j,t}}$$

where *j* represents region and *t* denotes time. Regional productivity growth ($\rho_{j,t}$) is then computed from *t-1* to *t* as follows:

$$\rho_{j,t} = \left(\frac{Prod_{j,t} - Prod_{j,t-1}}{Prod_{j,t-1}} \right) \cdot 100$$

Note that $\rho_{j,t}$ can also be obtained from the following expression:

$$\rho_{j,t} = \delta_{t,j} - \theta_{t,j} + \delta_{t,j} \theta_{t,j}$$

where $\delta_{t,j} = \frac{(GVA_{j,t} - GVA_{j,t-1})}{GVA_{j,t-1}} \cdot 100$ and $\theta_{t,j} = \frac{(L_{j,t} - L_{j,t-1})}{L_{j,t-1}} \cdot 100$ (i. e., $\delta_{t,j}$ is the real growth rate and $\theta_{t,j}$ is the employment growth rate).

Second, we calculate the contributions of each productive sector to the regional productivity growth in aggregate productive:

$$\rho_{j,t} = \sum_{i=1}^9 (\alpha_{i,j,t-1} \delta_{i,j,t} - \beta_{i,j,t-1} \theta_{i,j,t} + \alpha_{i,j,t-1} \delta_{i,j,t} \cdot \beta_{i,j,t-1} \theta_{i,j,t})$$

where $\alpha_{i,j,t-1}$ is the share of sector i in total regional GVA at time $t-1$, $\delta_{i,j,t}$ is the real rate of growth in sector i , $\beta_{i,j,t-1}$ is the share of sector i in total regional employment at time $t-1$, and $\theta_{i,j,t}$ is the employment rate of growth in sector i : $\alpha_{i,j,t-1} = \frac{GVA_{i,j,t-1}}{GVA_{j,t}}$,

$$\delta_{i,j,t} = \frac{(GVA_{i,j,t} - GVA_{i,j,t-1})}{GVA_{i,j,t-1}} \cdot 100, \beta_{i,j,t-1} = \frac{L_{i,j,t-1}}{L_{j,t}}, \text{ and } \theta_{i,j,t} = \frac{(L_{i,j,t} - L_{i,j,t-1})}{L_{i,j,t-1}} \cdot 100,$$

Third, and following Leamer (2008), we decompose the contributions of each of the subsectors to aggregate productivity in "normal" and "abnormal". To that end, we first apply the filter proposed by Hodrick and Prescott (1997) to the series of contributions to get the trends, which are identified as normal contributions. Subsequently, we calculate the difference between the original contributions and regular contributions to obtain the extraordinary contributions of each component to aggregate productivity. It should be noted that, in accordance with the recommendations of Baxter and King (1999) and Maravall and del Rio (2001), as we use annual series, the parameter that determines the degree of smoothness of the filter is set at a value equal 10.

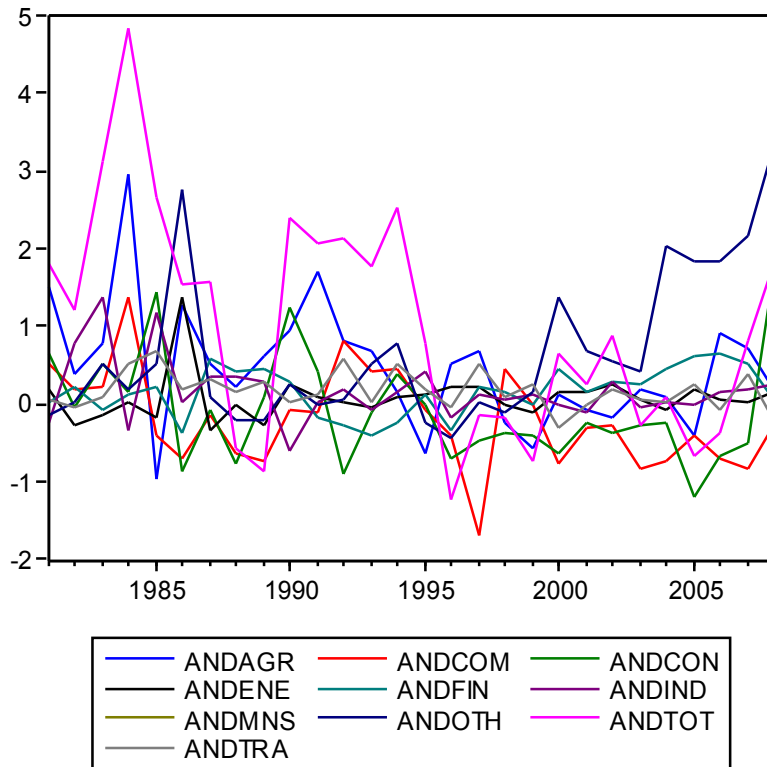
Since we are interested in analyzing the behavior of the various production sectors throughout the economic cycle, we need to adequately characterize the cycle for the Spanish economy from the available data. In this regard, we note that there are several statistical procedures for calculating economic cycles involving several steps, so we adopted the results of ECRI (2011) concerning the detection of peaks and troughs in the economic cycle of the economy Spanish, which is a benchmark widely used in literature

ECRI (2011) notes the existence of two phases of expansion in the Spanish economy during the period under review (which would go from 1984 to 1991 and from 1993 to 2008) and two recessions (which would include the sub-periods 1980-1984 and 1991-1993). These phases roughly correspond with those found by the International Monetary Fund (2002).

3. Empirical results

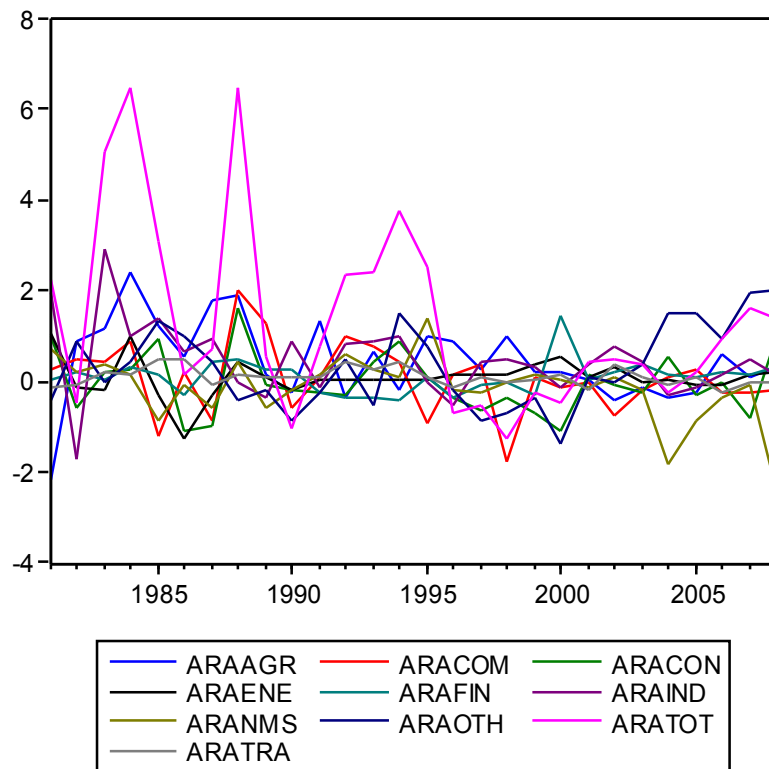
Figures 1 to 17 show the evolution of total productivity growth and the contributions of each nine sectors for the Spanish regions.

Figure 1: Regional productivity growth and sectoral contributions: Andalucia, 1981-2008



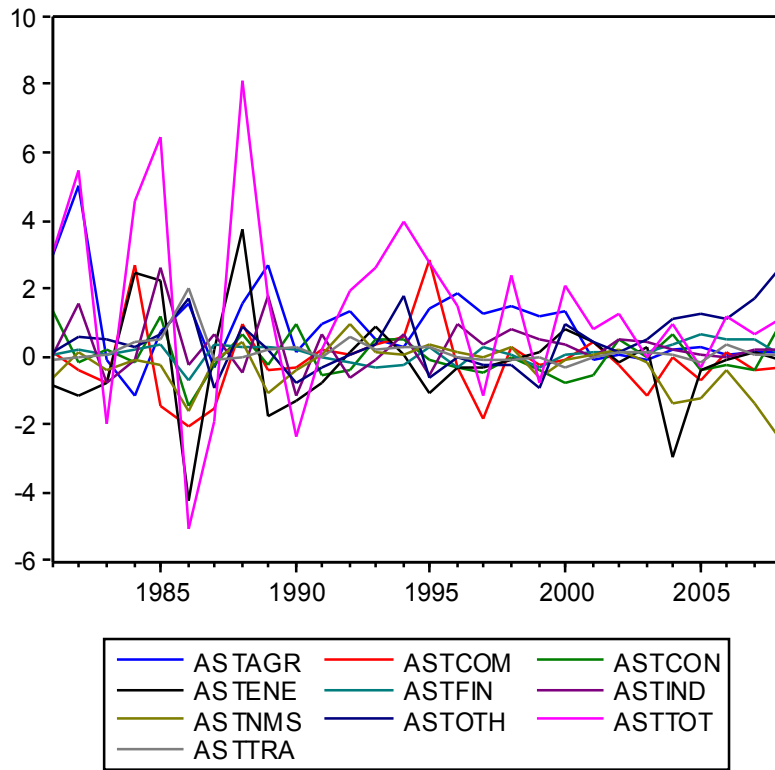
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 2: Regional productivity growth and sectoral contributions: Aragón, 1981-2008



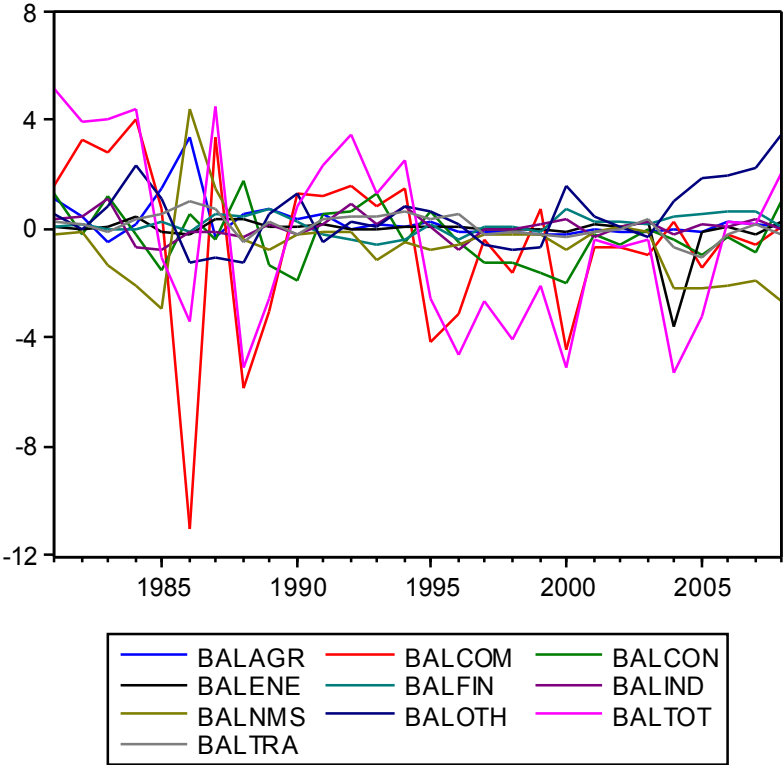
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 3: Regional productivity growth and sectoral contributions: Asturias, 1981-2008



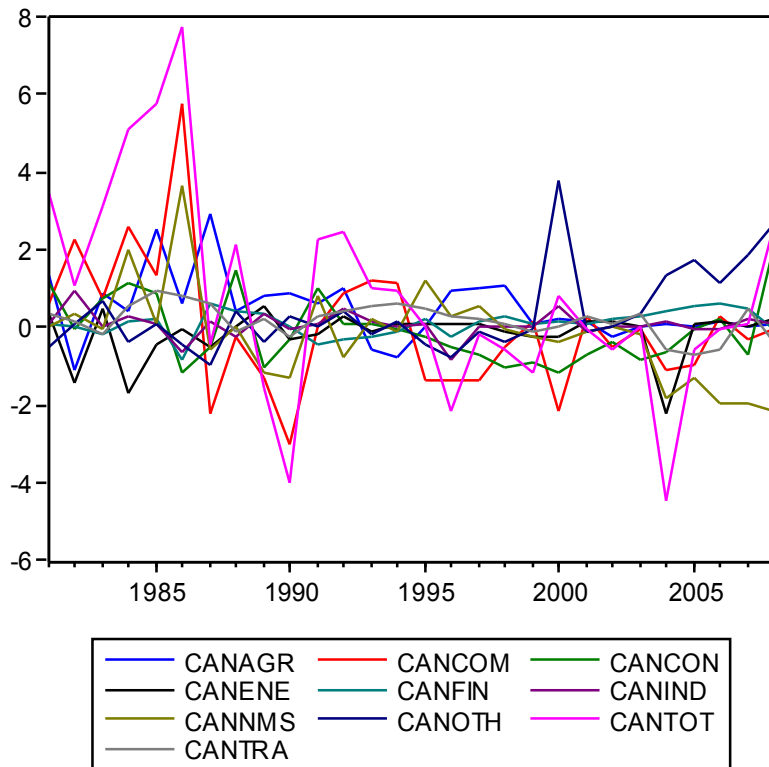
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 4: Regional productivity growth and sectoral contributions: Balears, 1981-2008



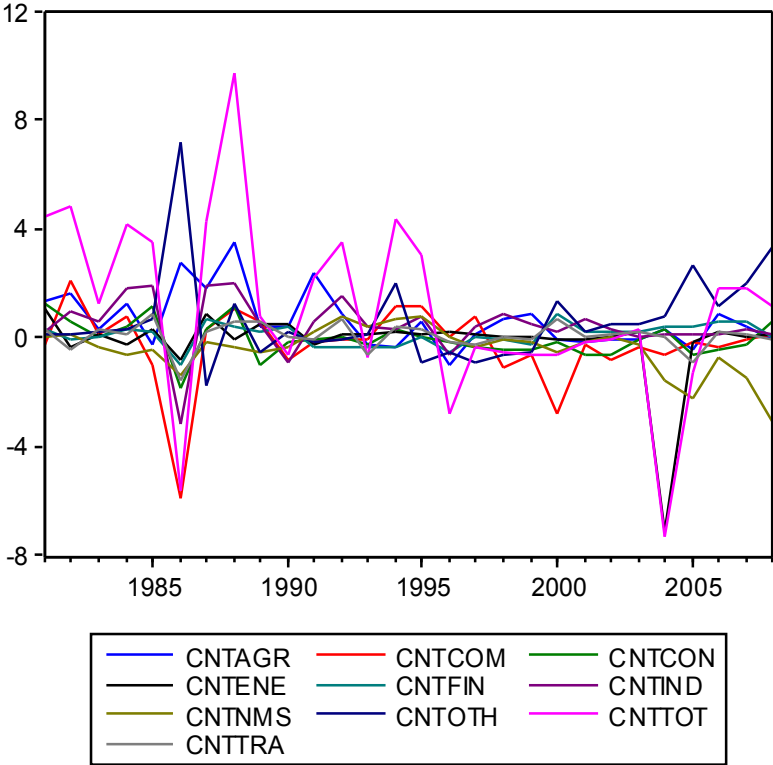
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 5: Regional productivity growth and sectoral contributions: Canarias, 1981-2008



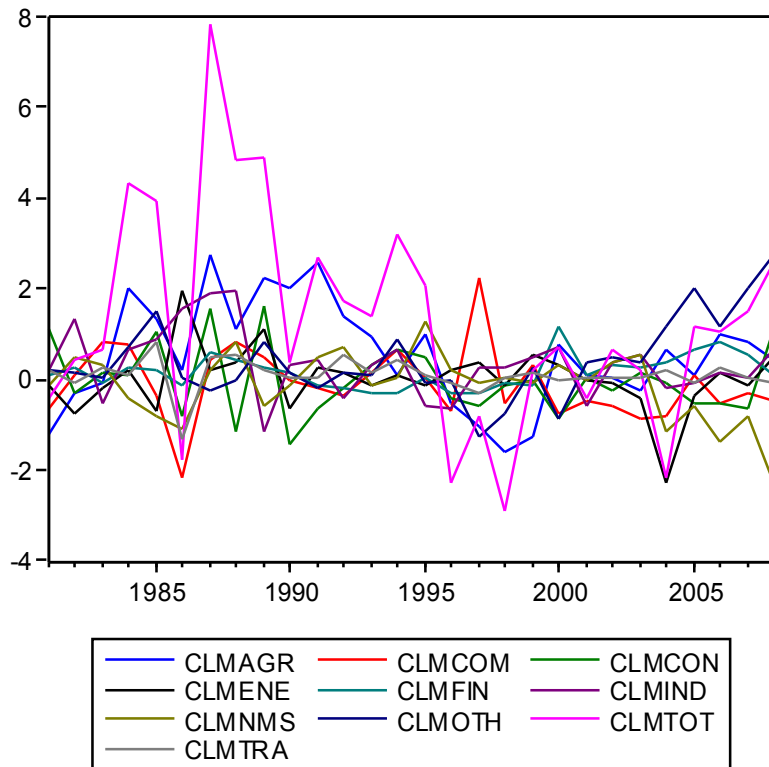
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 6: Regional productivity growth and sectoral contributions: Cantabria, 1981-2008



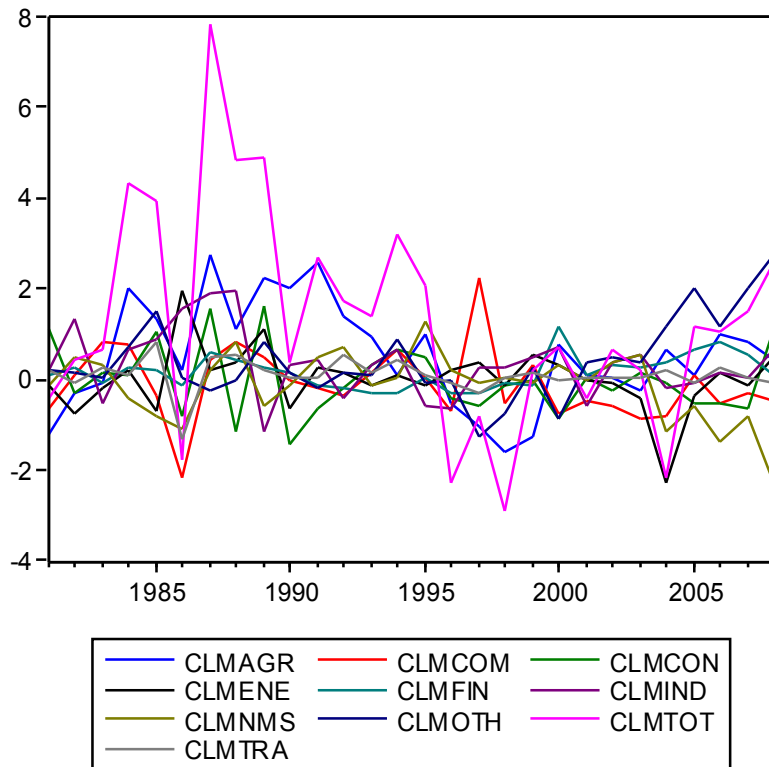
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 7: Regional productivity growth and sectoral contributions: Castilla-La Mancha, 1981-2008



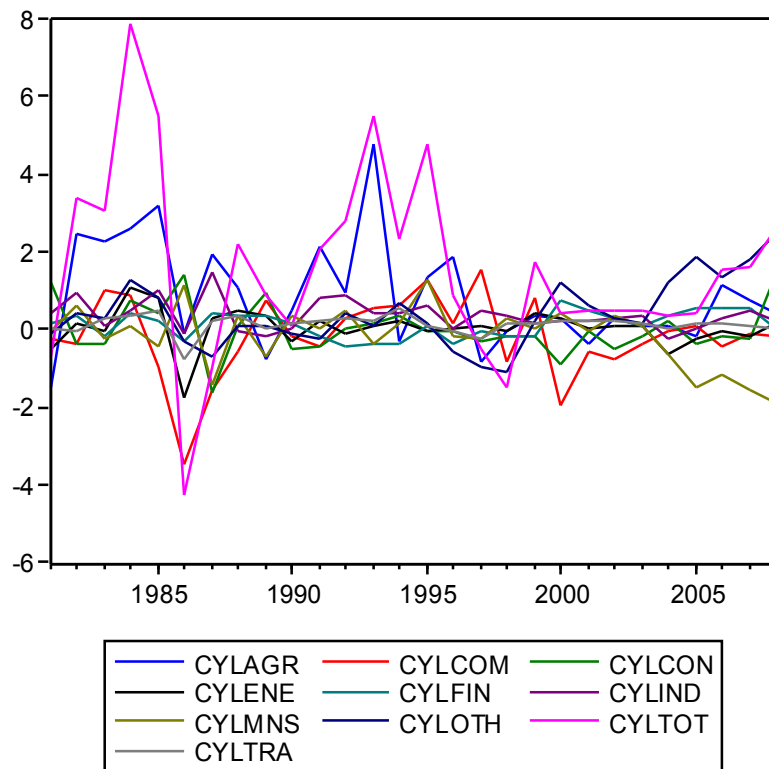
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 7: Regional productivity growth and sectoral contributions: Castilla-La Mancha, 1981-2008



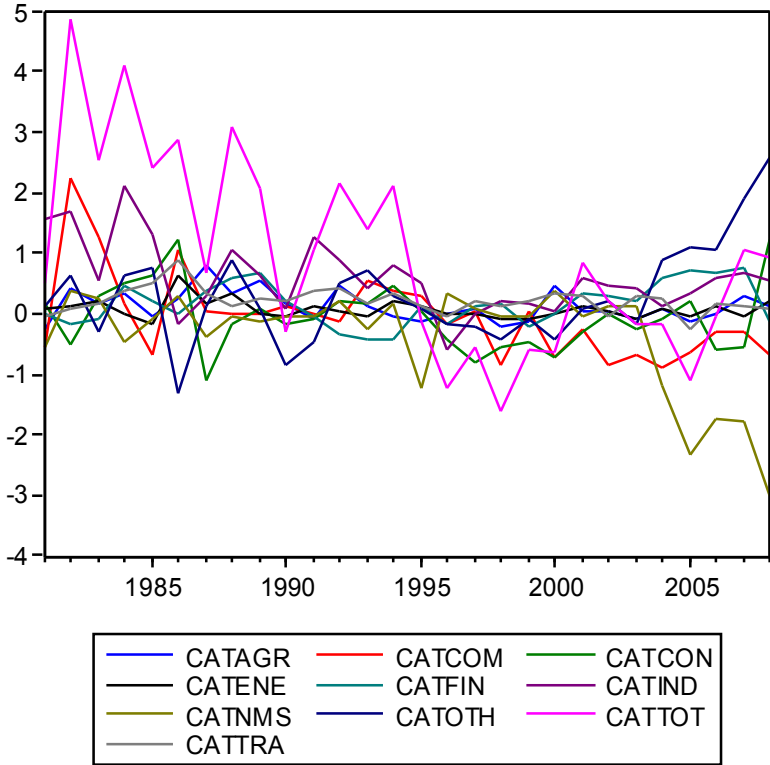
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 8: Regional productivity growth and sectoral contributions: Castilla y León, 1981-2008



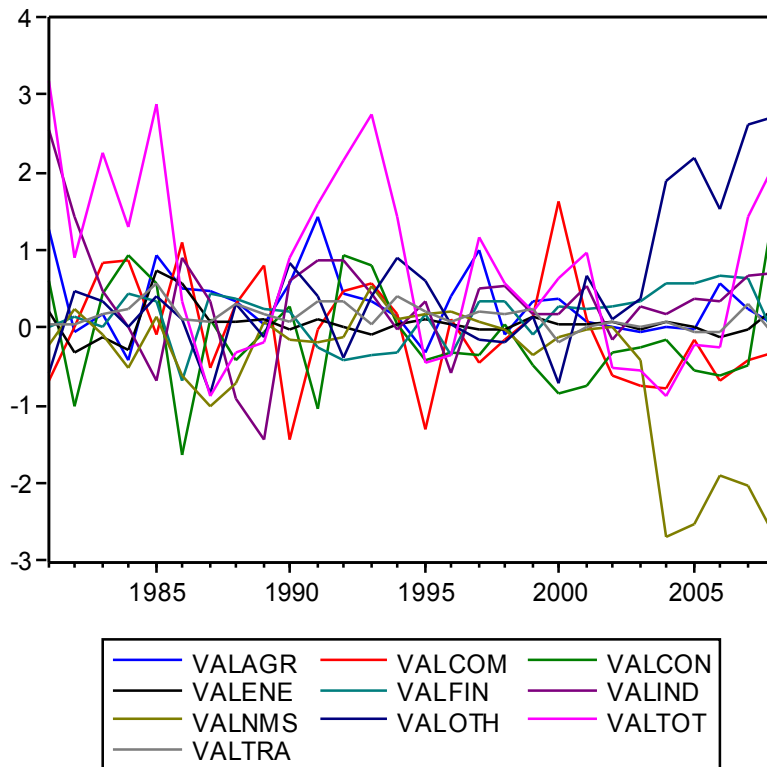
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 9: Regional productivity growth and sectoral contributions: Cataluña, 1981-2008



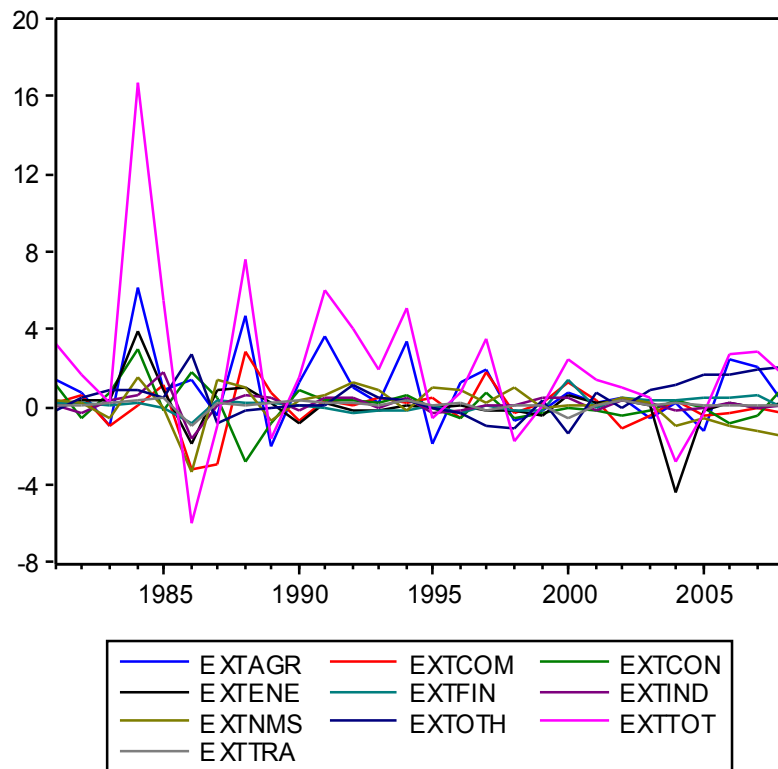
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 10: Regional productivity growth and sectoral contributions: Comunidad Valenciana, 1981-2008



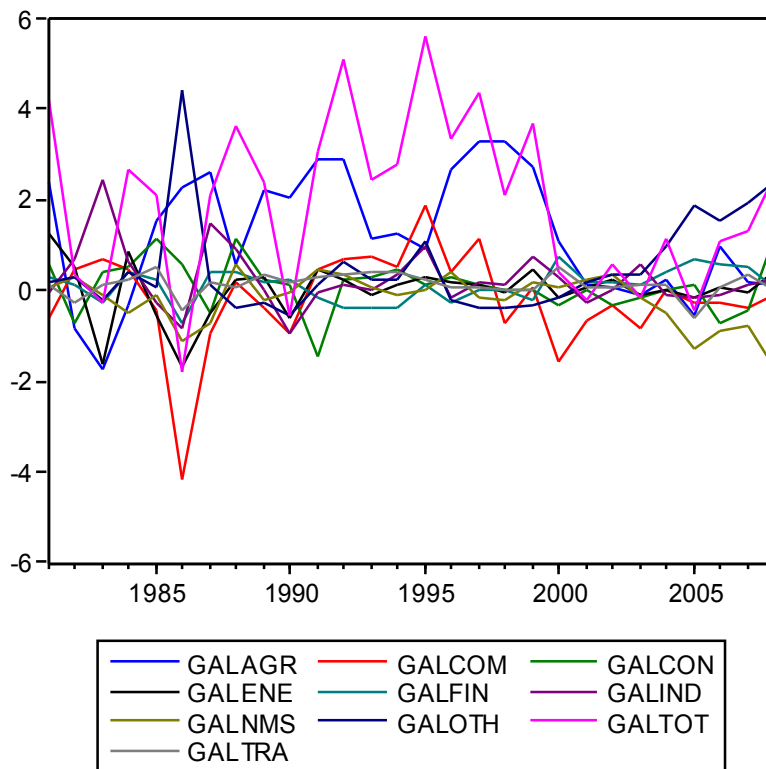
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 11: Regional productivity growth and sectoral contributions: Extremadura, 1981-2008



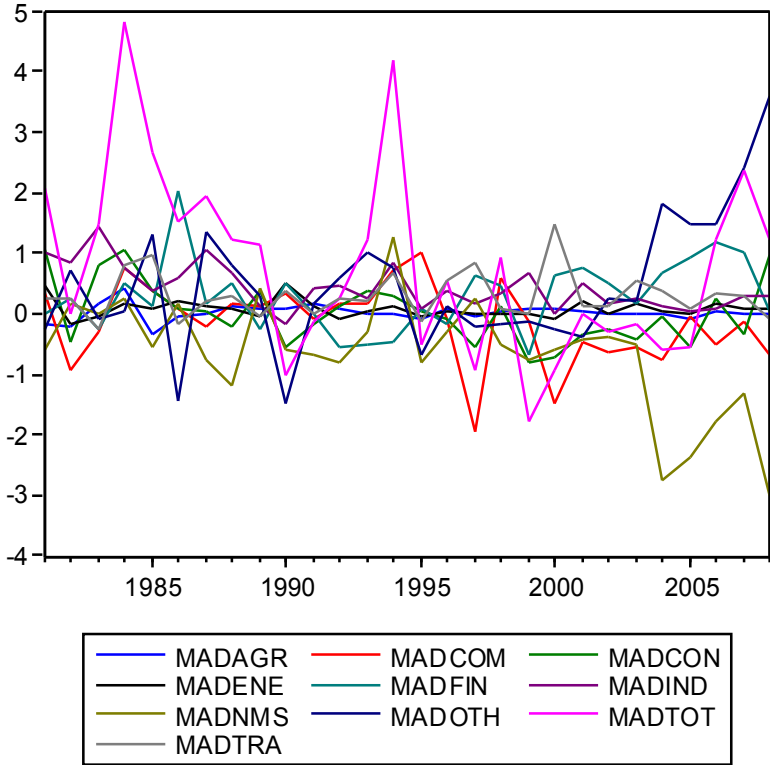
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 12: Regional productivity growth and sectoral contributions: Galicia, 1981-2008



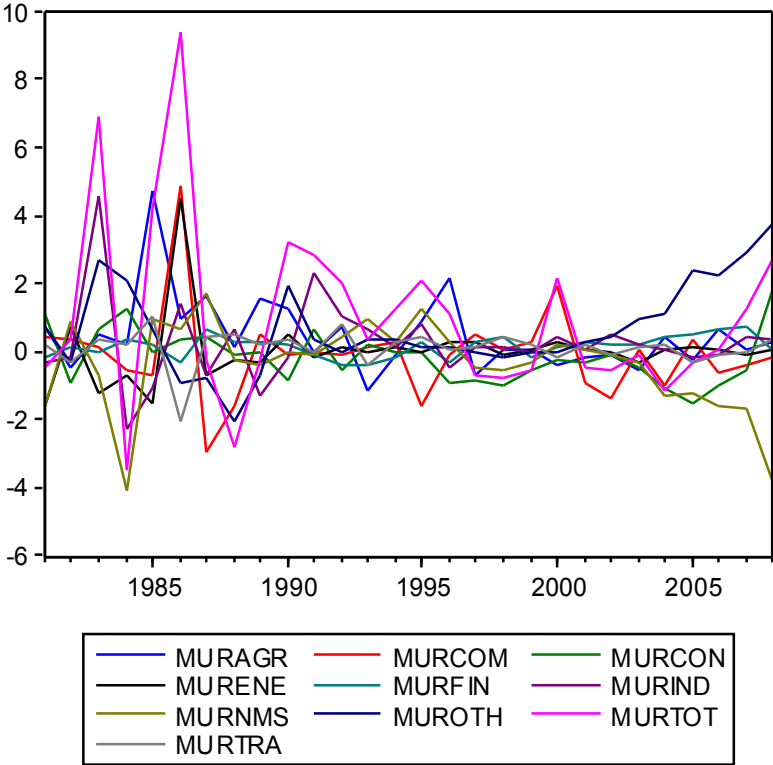
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 13: Regional productivity growth and sectoral contributions: Madrid, 1981-2008



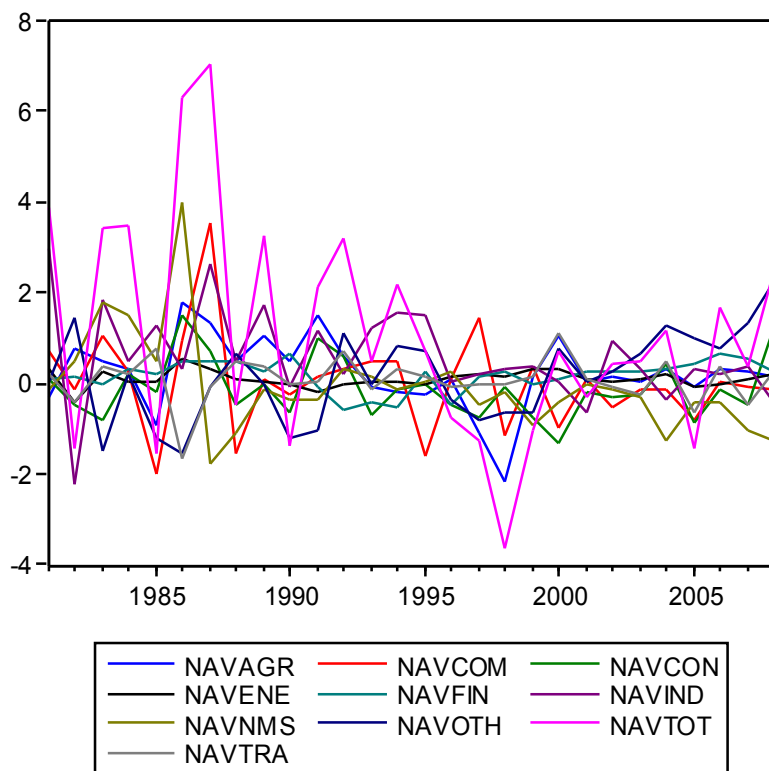
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 14: Regional productivity growth and sectoral contributions: Murcia, 1981-2008



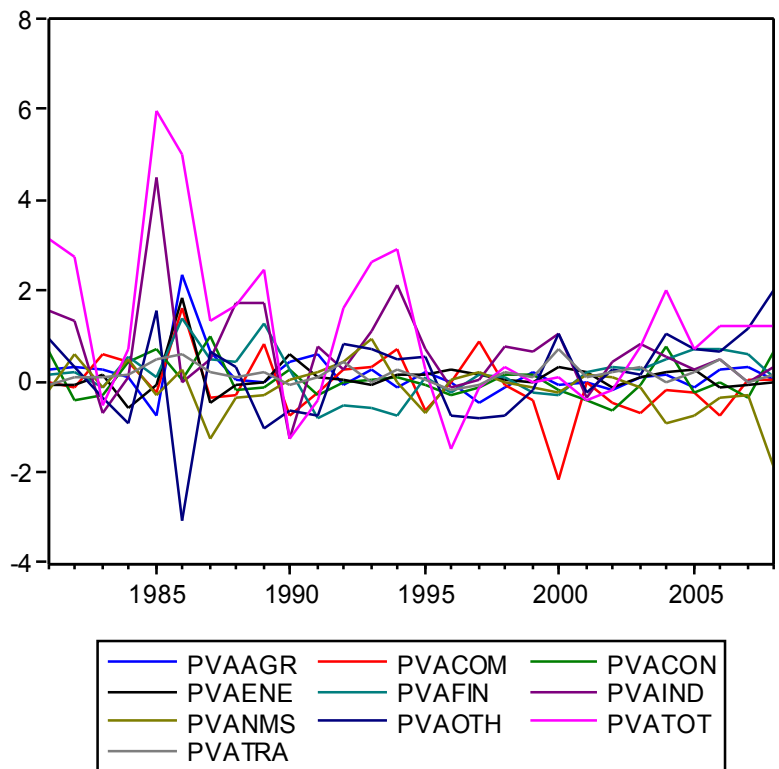
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 15: Regional productivity growth and sectoral contributions: Navarra, 1981-2008



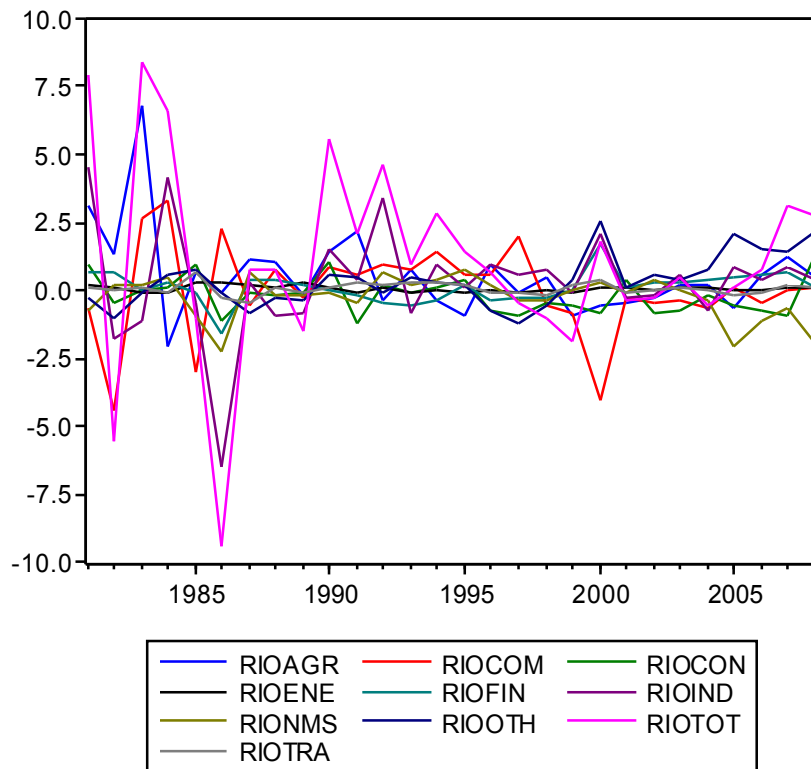
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 16: Regional productivity growth and sectoral contributions: País Vasco, 1981-2008



Source: Own computations based on BDMORES database and Spanish Regional Accounts

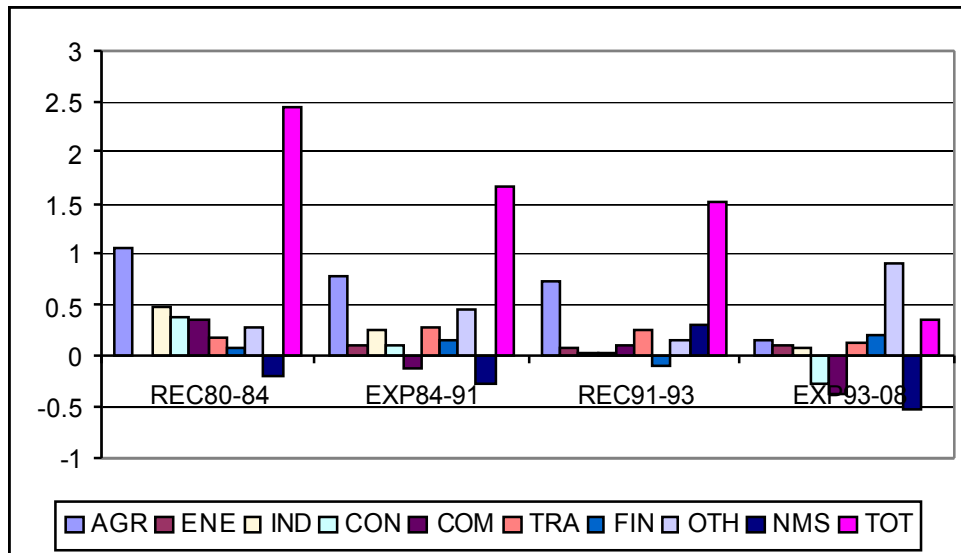
Figure 17: Regional productivity growth and sectoral contributions: Rioja, 1981-2008



Source: Own computations based on BDMORES database and Spanish Regional Accounts

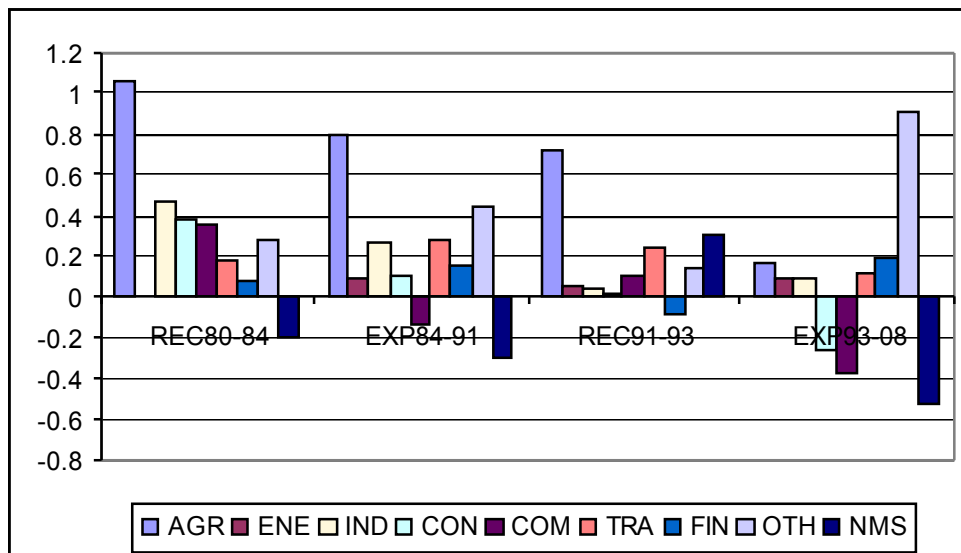
Figures 18 to 34 show the average normal contributions to regional productivity growth in each of the phases of the cycle that we detected during the period under study.

Figure 18: Average normal contributions to regional productivity growth during recent business cycles: Andaluca



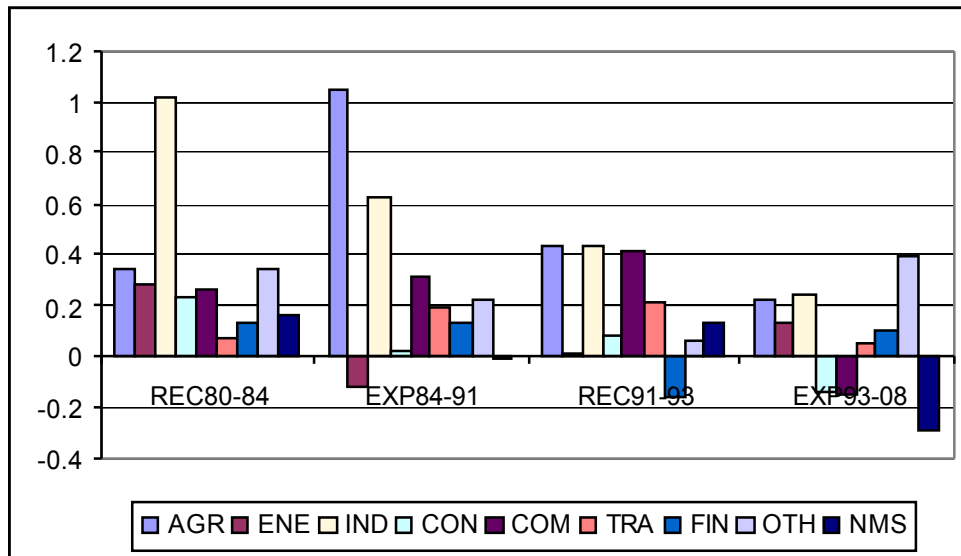
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 19: Average normal contributions to regional productivity growth during recent business cycles: Aragón



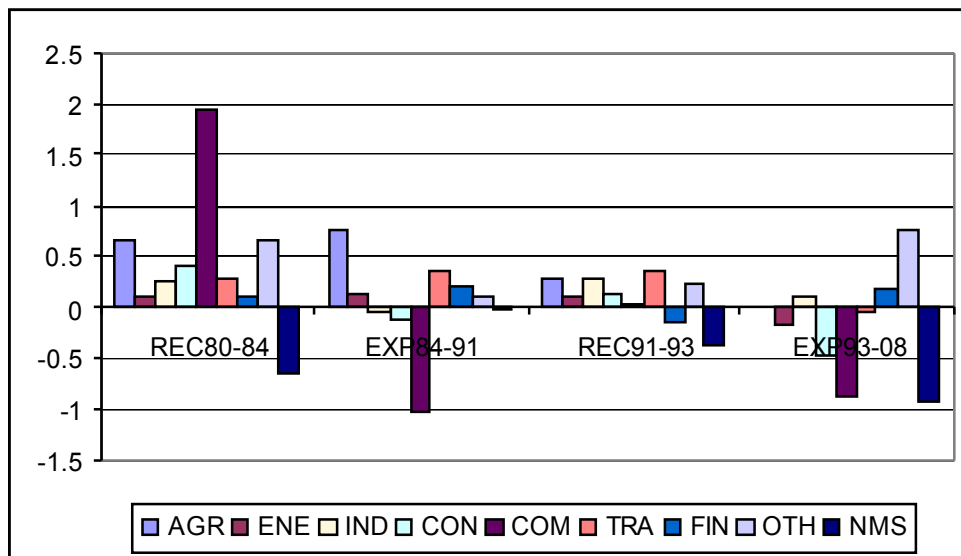
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 20: Average normal contributions to regional productivity growth during recent business cycles : Asturias



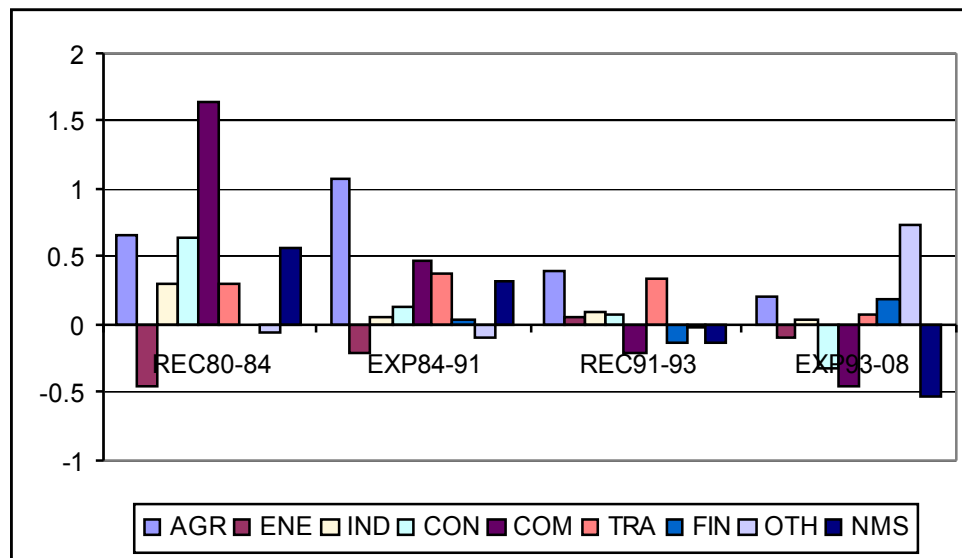
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 21: Average normal contributions to regional productivity growth during recent business cycles : Baleares



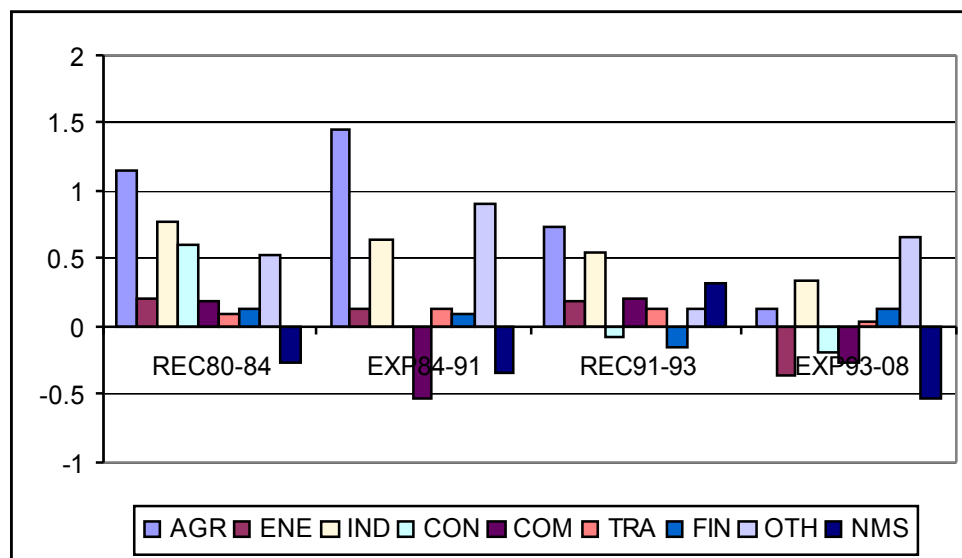
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 22: Average normal contributions to regional productivity growth during recent business cycles: Canarias



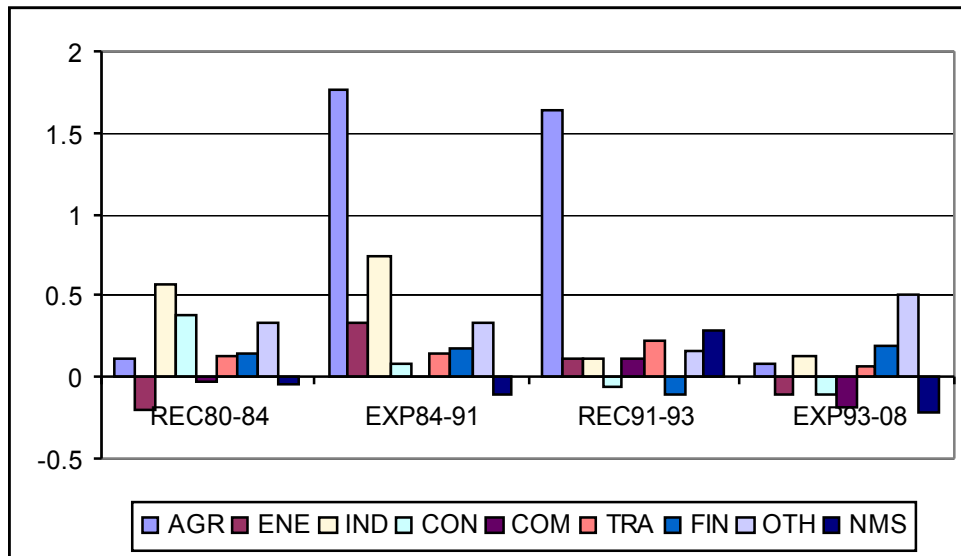
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 23: Average normal contributions to regional productivity growth during recent business cycles: Cantabria



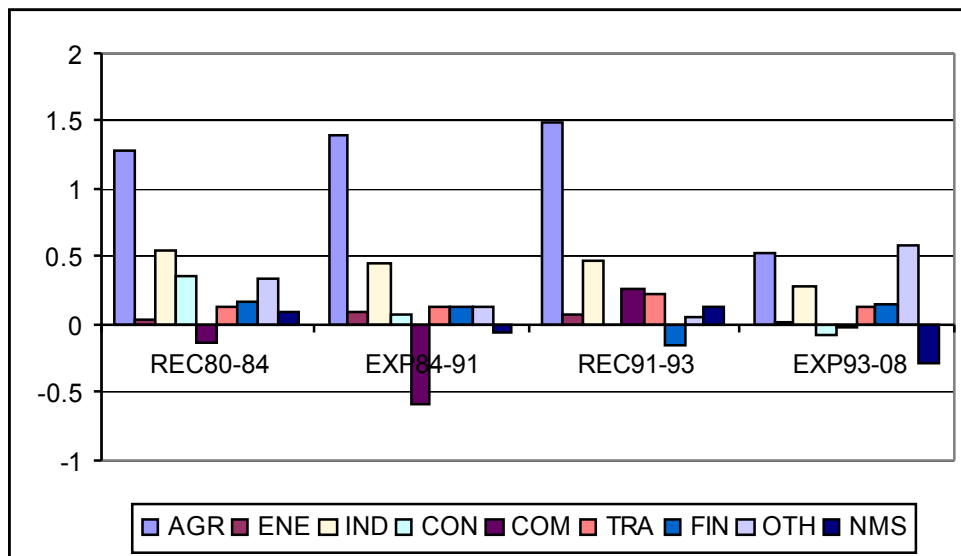
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 24: Average normal contributions to regional productivity growth during recent business cycles : Castilla-La Mancha



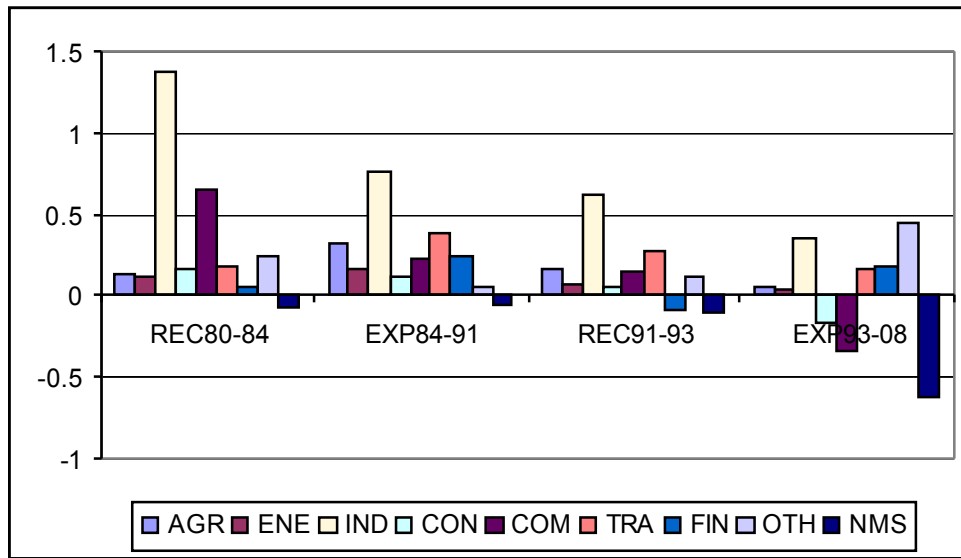
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 25: Average normal contributions to regional productivity growth during recent business cycles : Castilla y León



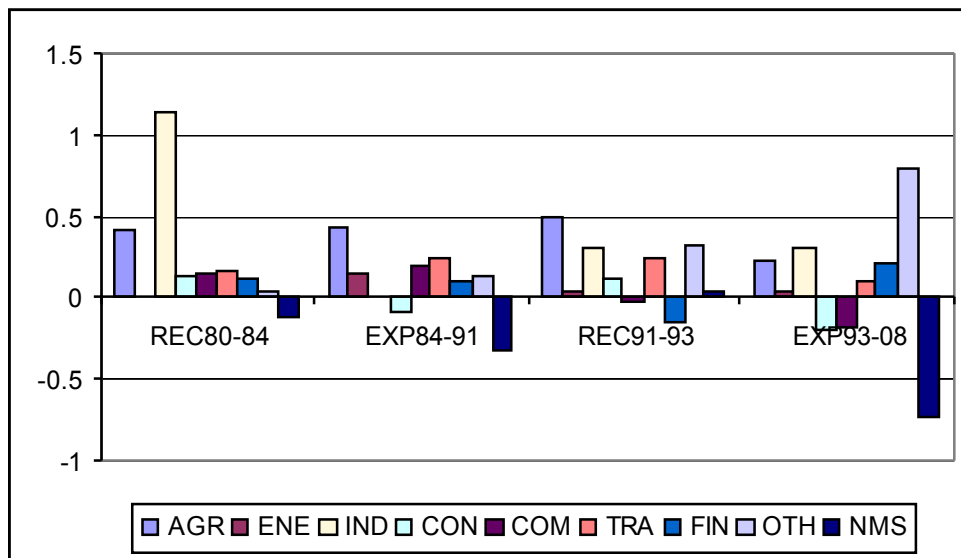
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 26: Average normal contributions to regional productivity growth during recent business cycles: Cataluña



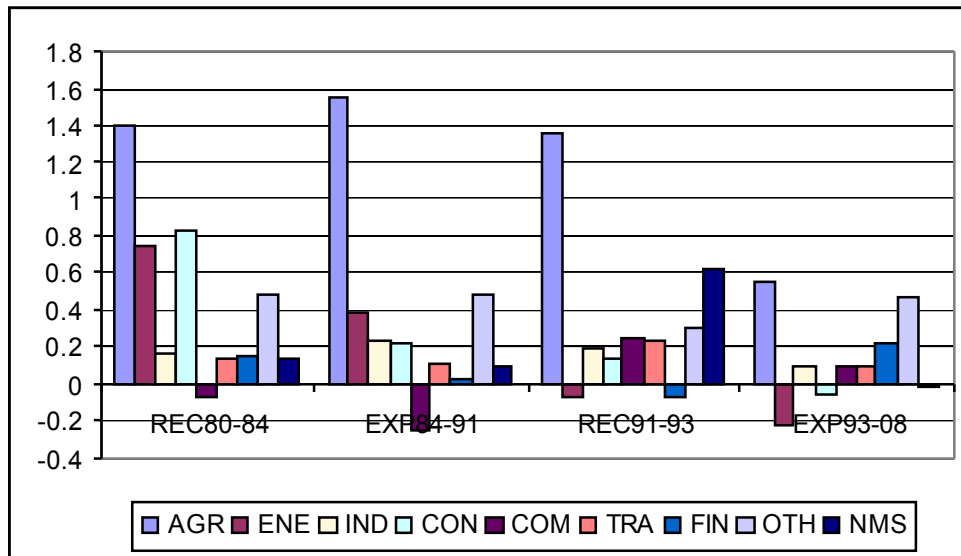
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 27: Average normal contributions to regional productivity growth during recent business cycles: Comunidad Valenciana



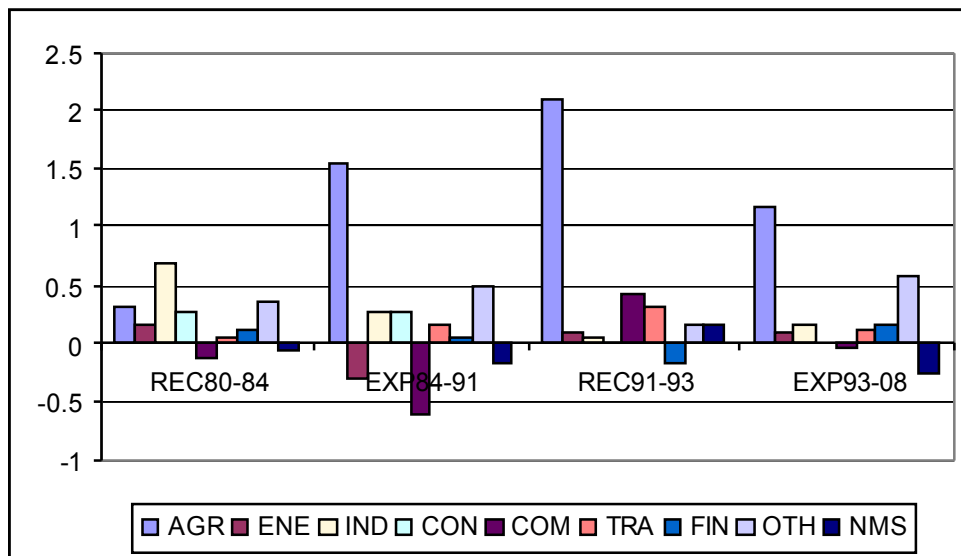
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 28: Average normal contributions to regional productivity growth during recent business cycles: Extremadura



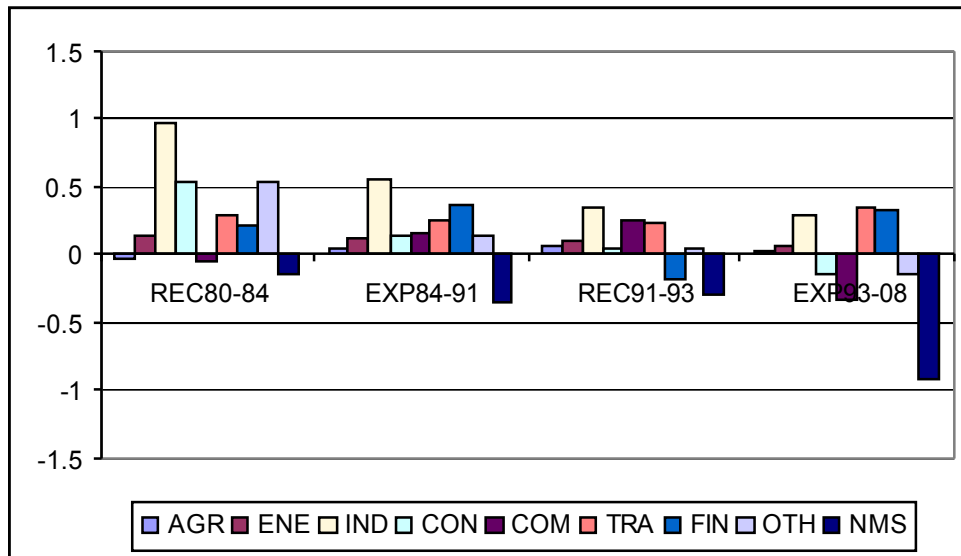
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 29: Average normal contributions to regional productivity growth during recent business cycles: Galicia



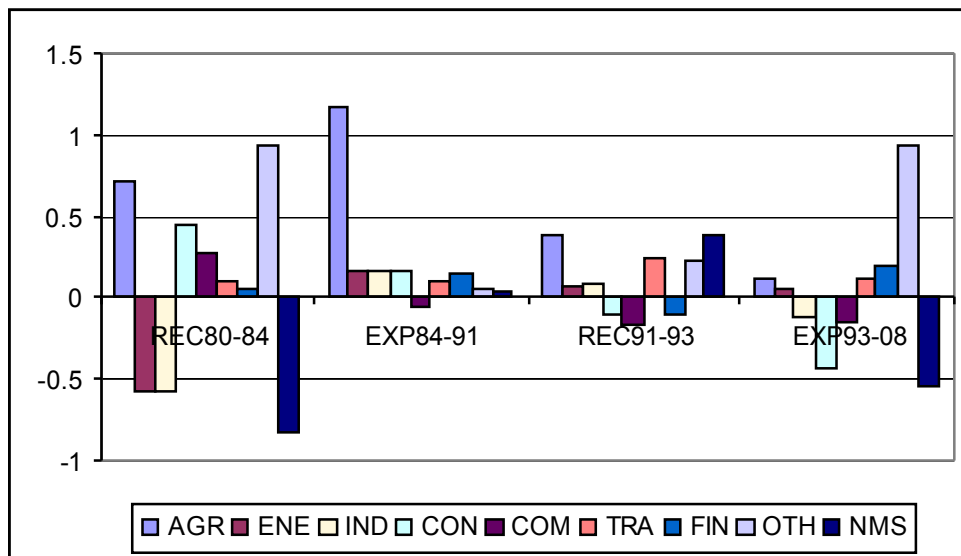
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 30: Average normal contributions to regional productivity growth during recent business cycles: Madrid



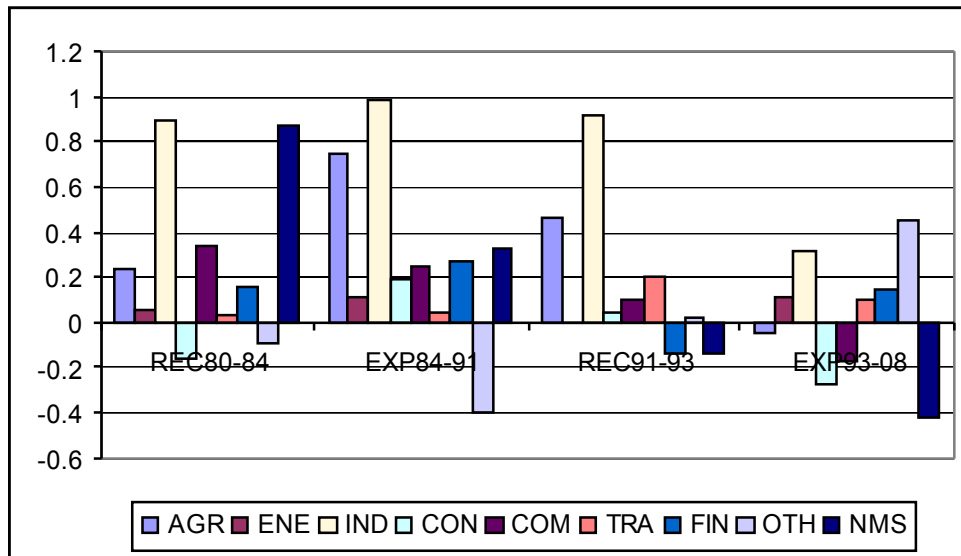
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 31: Average normal contributions to regional productivity growth during recent business cycles: Murcia



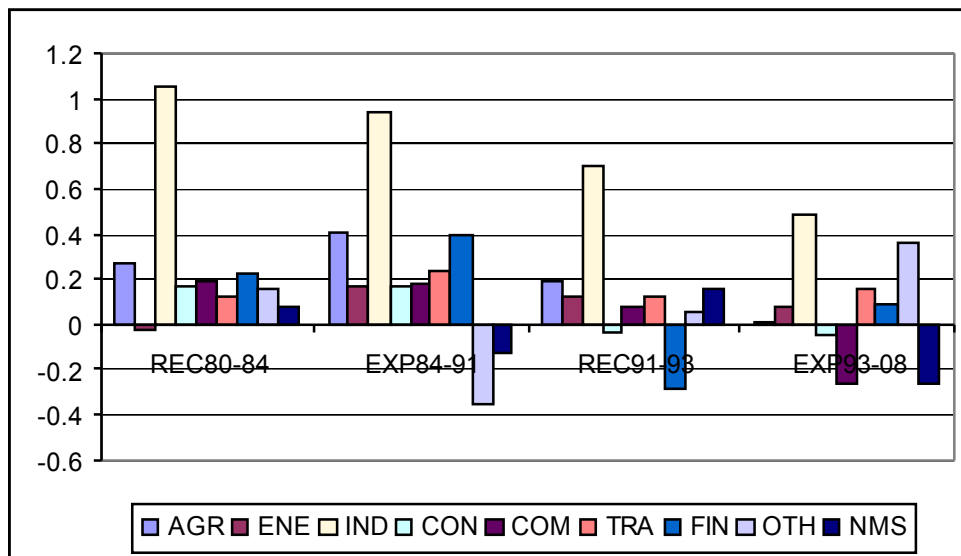
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 32: Average normal contributions to regional productivity growth during recent business cycles : Navarra



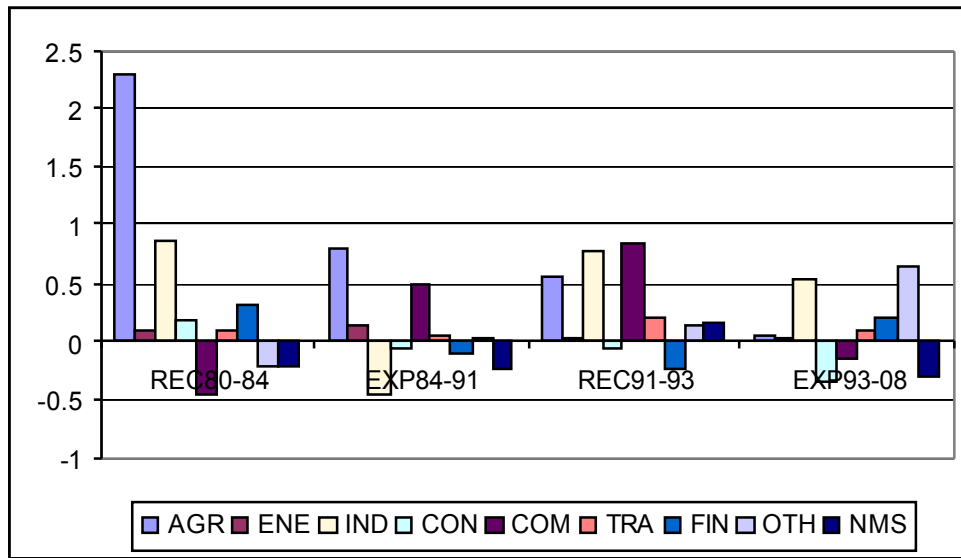
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 33: Average normal contributions to regional productivity growth during recent business cycles : País Vasco



Source: Own computations based on BDMORES database and Spanish Regional Accounts

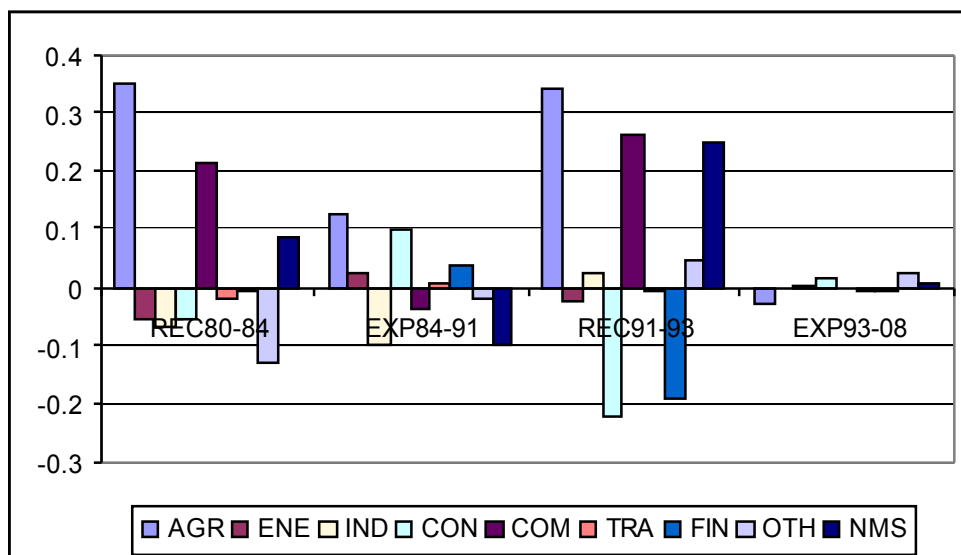
Figure 34: Average normal contributions to regional productivity growth during recent business cycles: Rioja



Source: Own computations based on BDMORES database and Spanish Regional Accounts

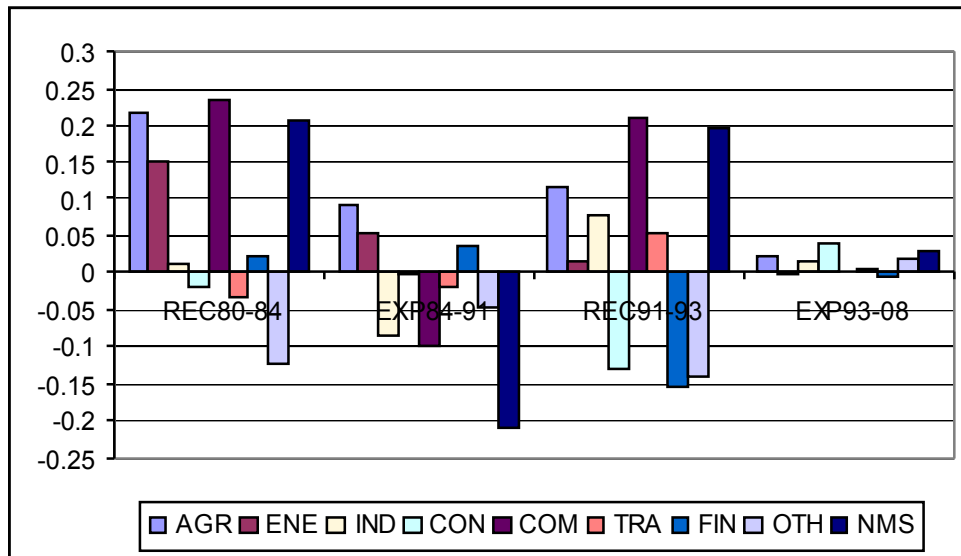
Figures 35-51 show the abnormal sectoral contributions to regional productivity growth.

Figure 35: Average abnormal contributions to regional productivity growth during recent business cycles: Andalucia



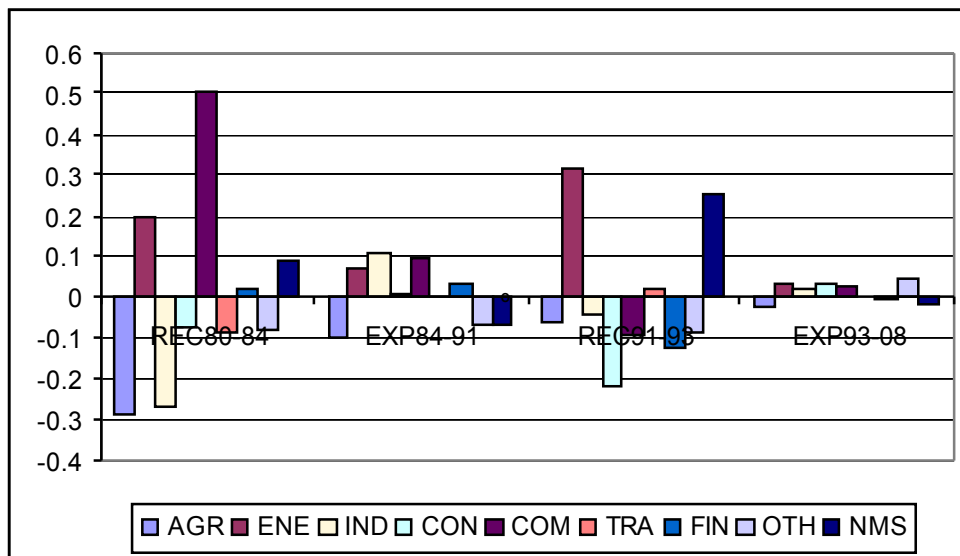
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 36: Average abnormal contributions to regional productivity growth during recent business cycles: Aragón



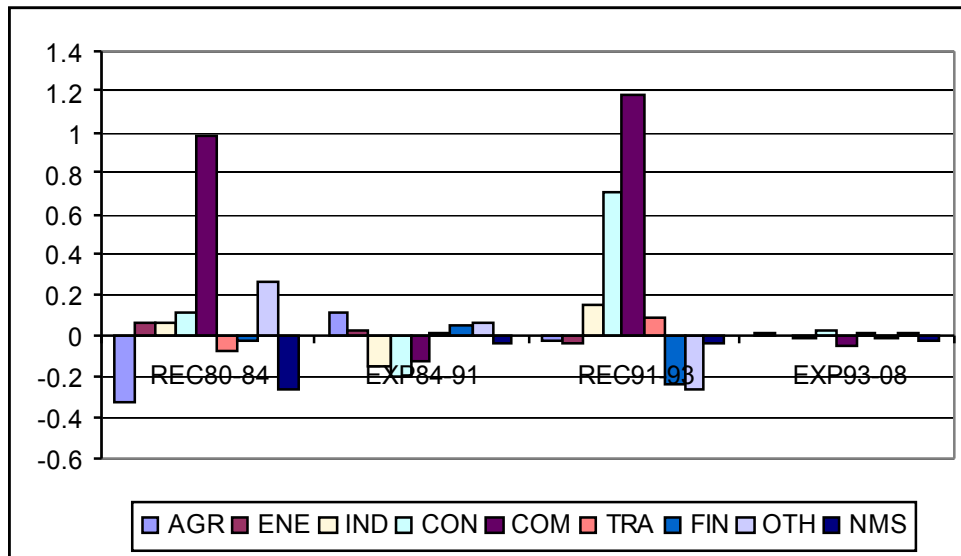
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 37: Average abnormal contributions to regional productivity growth during recent business cycles: Asturias



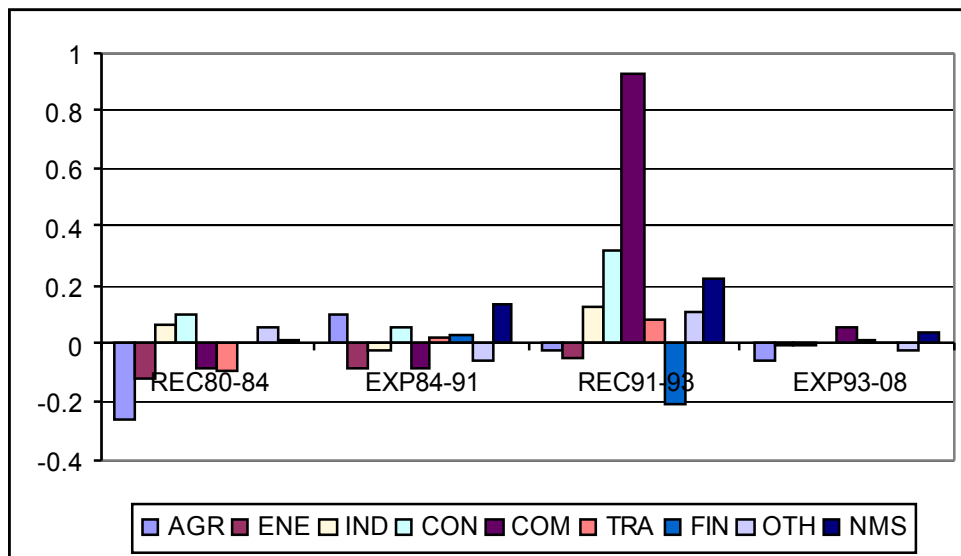
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 38: Average abnormal contributions to regional productivity growth during recent business cycles : Baleares



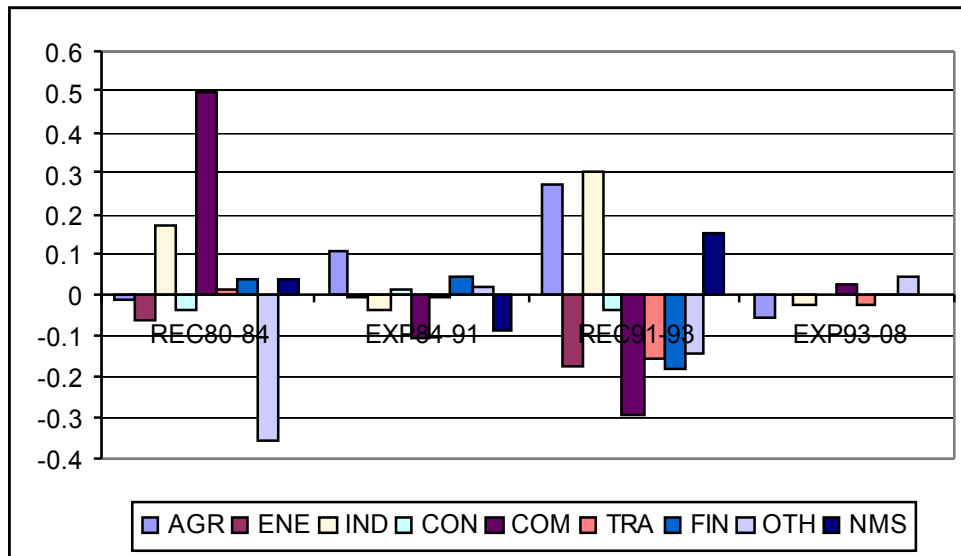
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 39: Average abnormal contributions to regional productivity growth during recent business cycles : Canarias



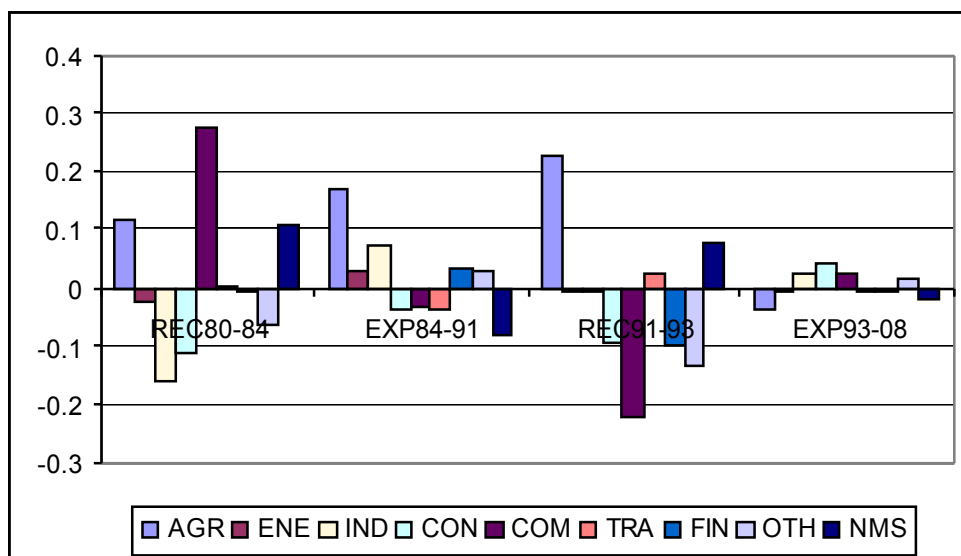
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 40: Average abnormal contributions to regional productivity growth during recent business cycles: Cantabria



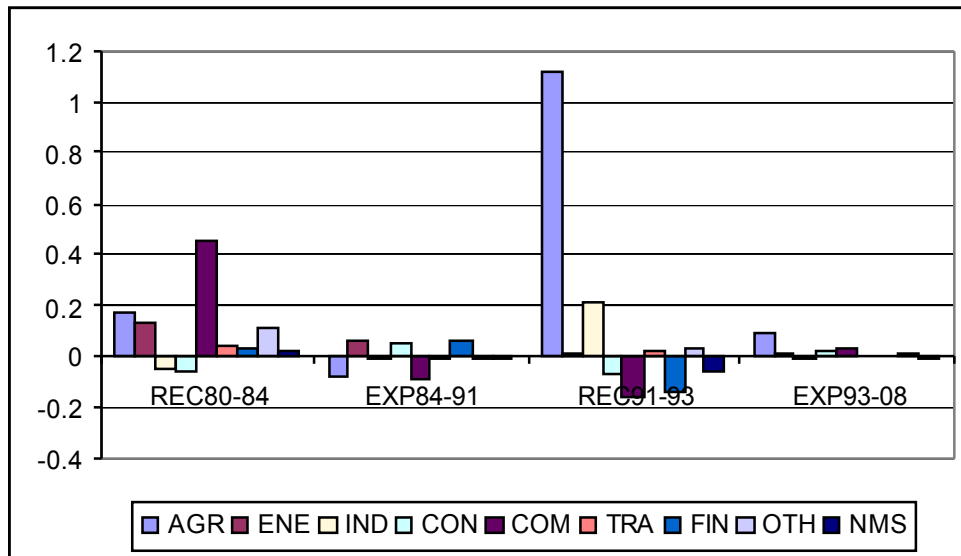
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 41: Average abnormal contributions to regional productivity growth during recent business cycles: Castilla-La Mancha



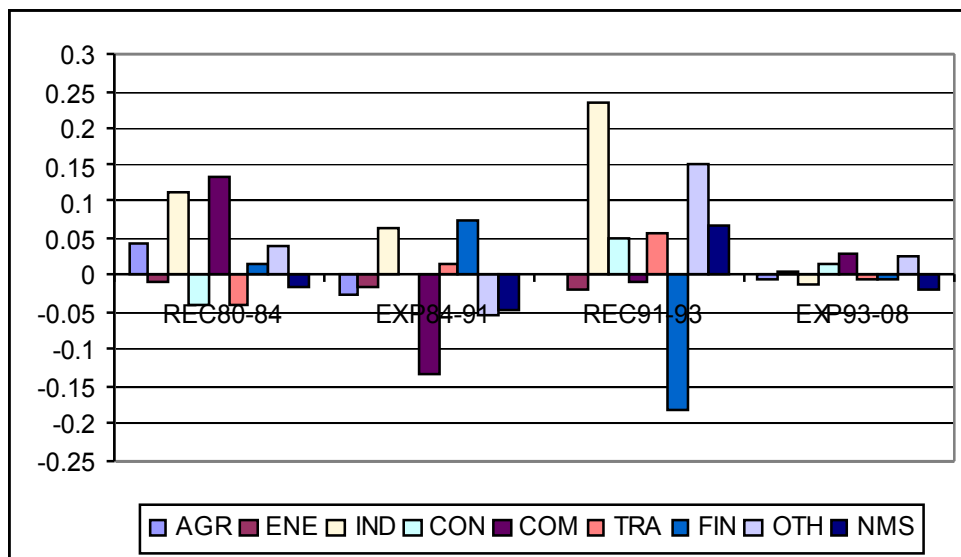
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 42: Average abnormal contributions to regional productivity growth during recent business cycles : Castilla y León



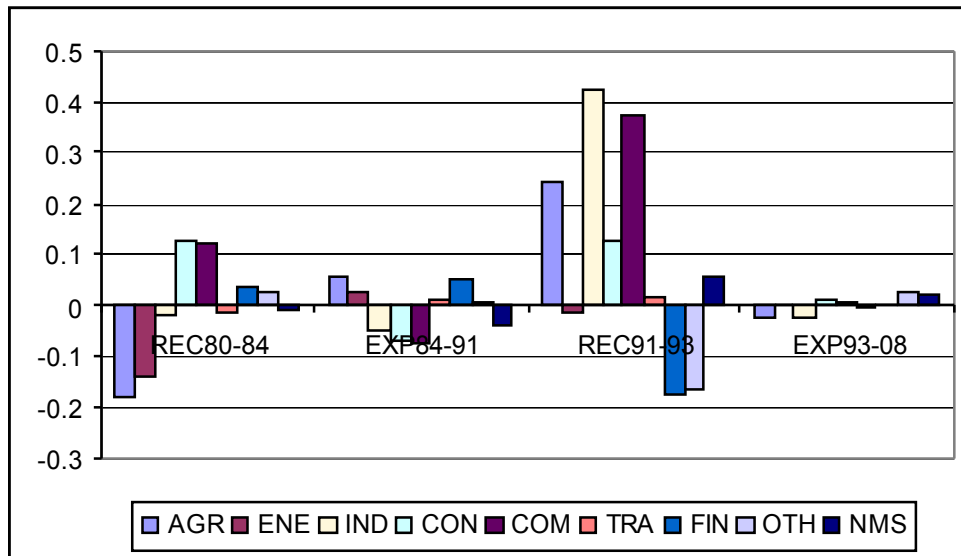
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 43: Average abnormal contributions to regional productivity growth during recent business cycles : Cataluña



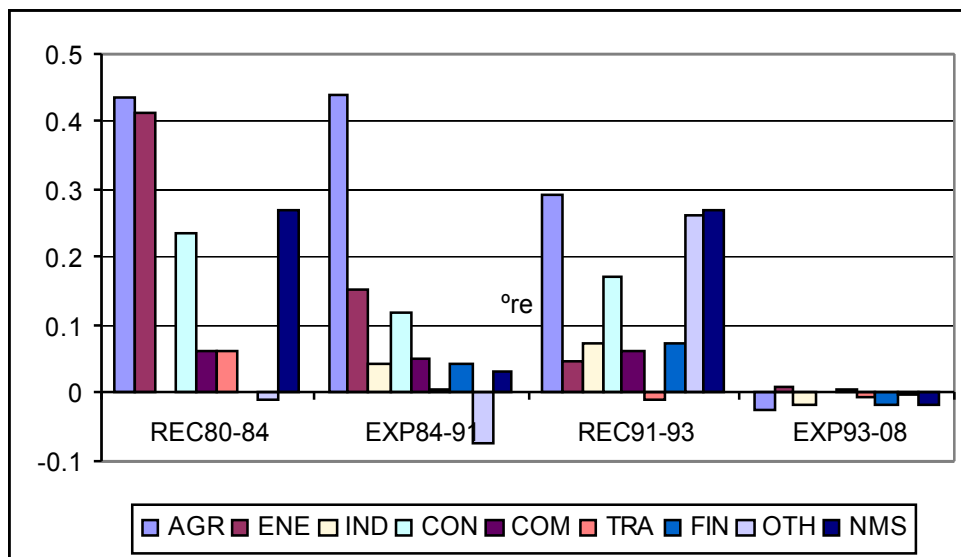
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 44: Average abnormal contributions to regional productivity growth during recent business cycles: Comunidad Valenciana



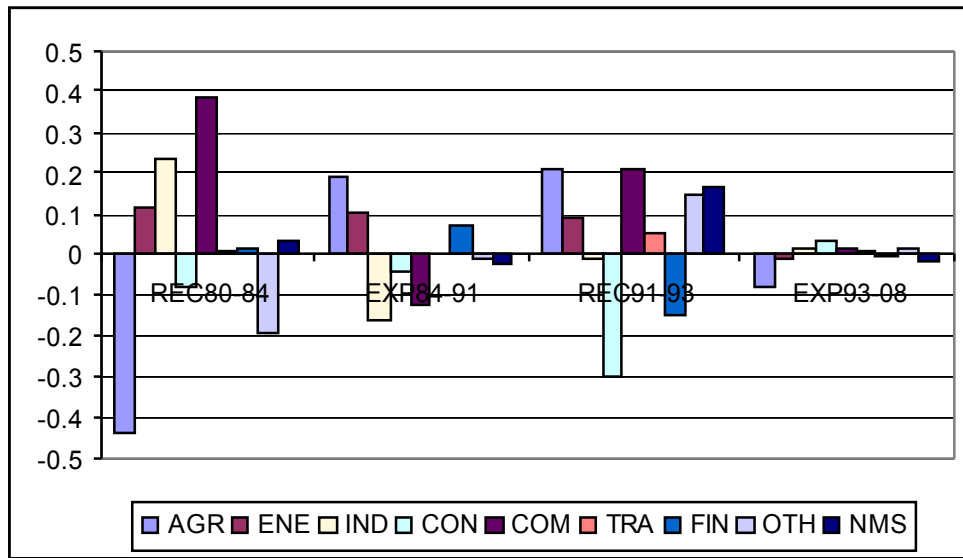
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 45: Average abnormal contributions to regional productivity growth during recent business cycles: Extremadura



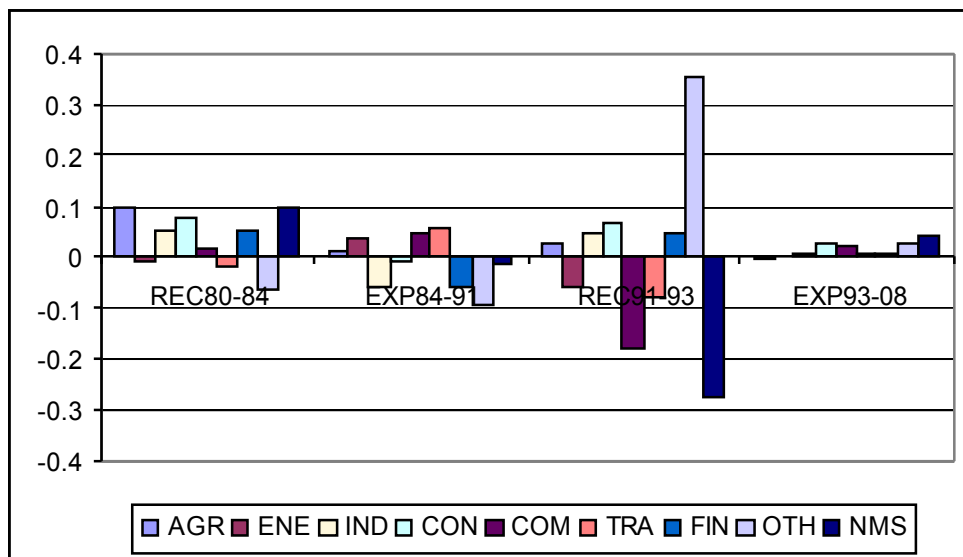
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 46: Average abnormal contributions to regional productivity growth during recent business cycles: Galicia



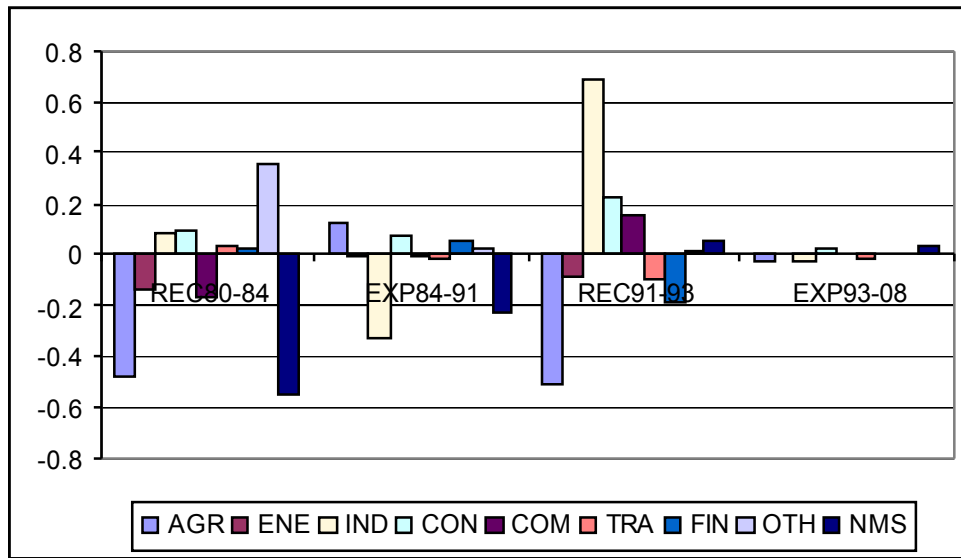
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 47: Average abnormal contributions to regional productivity growth during recent business cycles: Madrid



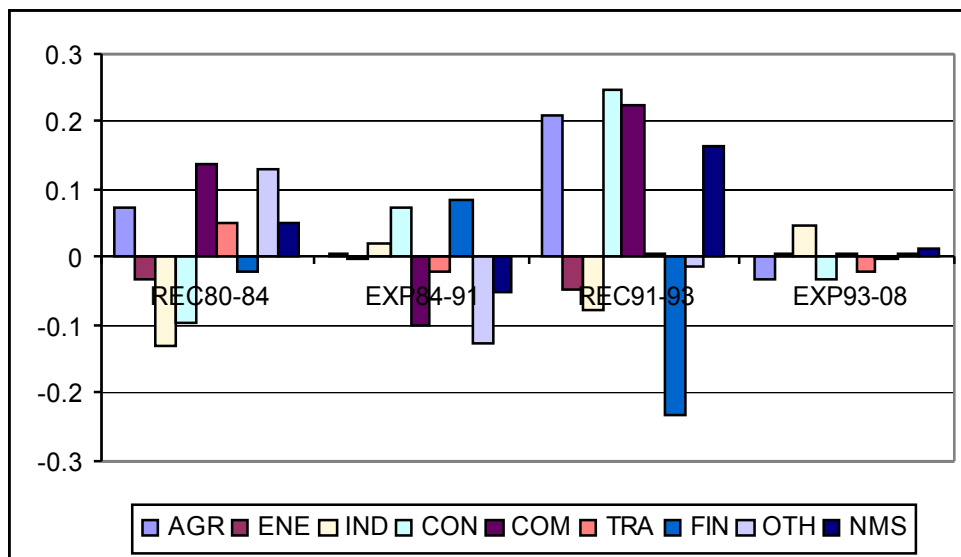
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 48: Average abnormal contributions to regional productivity growth during recent business cycles: Murcia



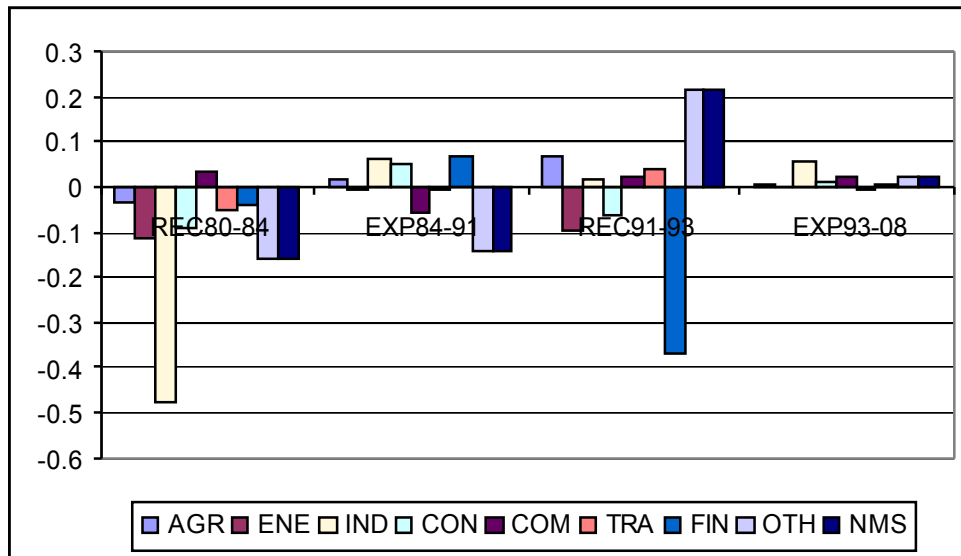
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 49: Average abnormal contributions to regional productivity growth during recent business cycles: Navarra



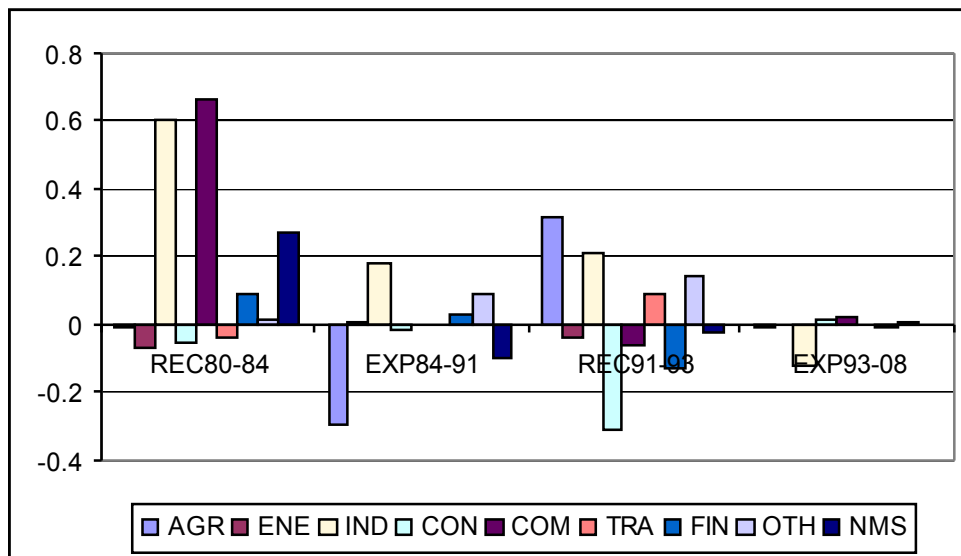
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 50: Average abnormal contributions to regional productivity growth during recent business cycles : País Vasco



Source: Own computations based on BDMORES database and Spanish Regional Accounts

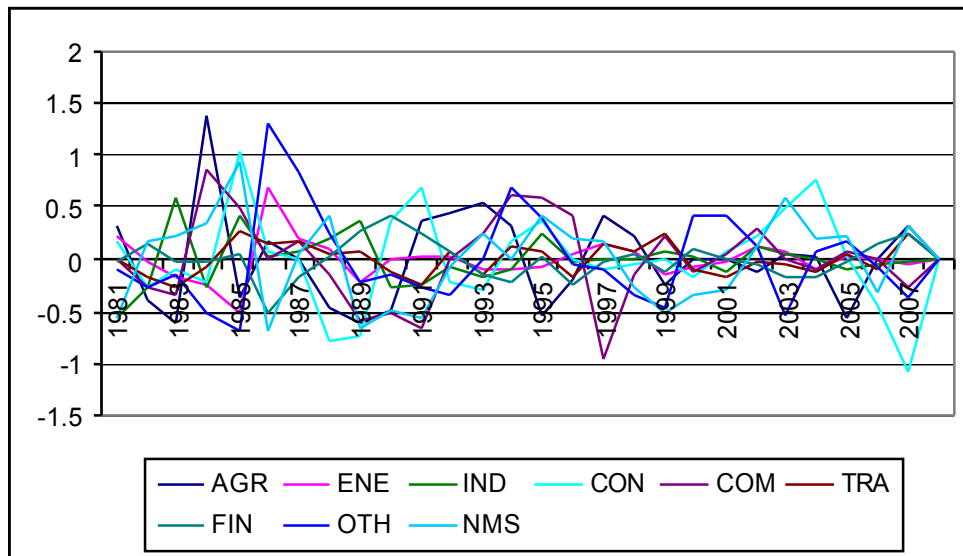
Figure 51: Average abnormal contributions to regional productivity growth during recent business cycles : Rioja



Source: Own computations based on BDMORES database and Spanish Regional Accounts

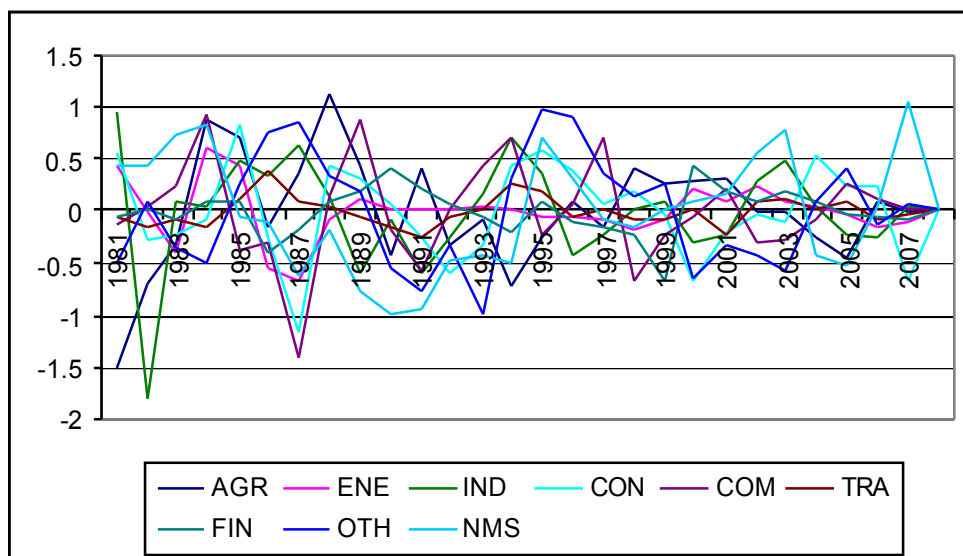
Cumulative abnormal sectoral contributions turn the growth rates into levels. Figures 52-68 plots the results, where the lines wiggle up and down around zero by construction. Notice that when the line is moving down, the sectoral contributions are less than normal, while when the line is moving up, the sectoral contributions exceed normal.

Figure 52: Cumulative abnormal contributions to regional productivity growth: Andaluca



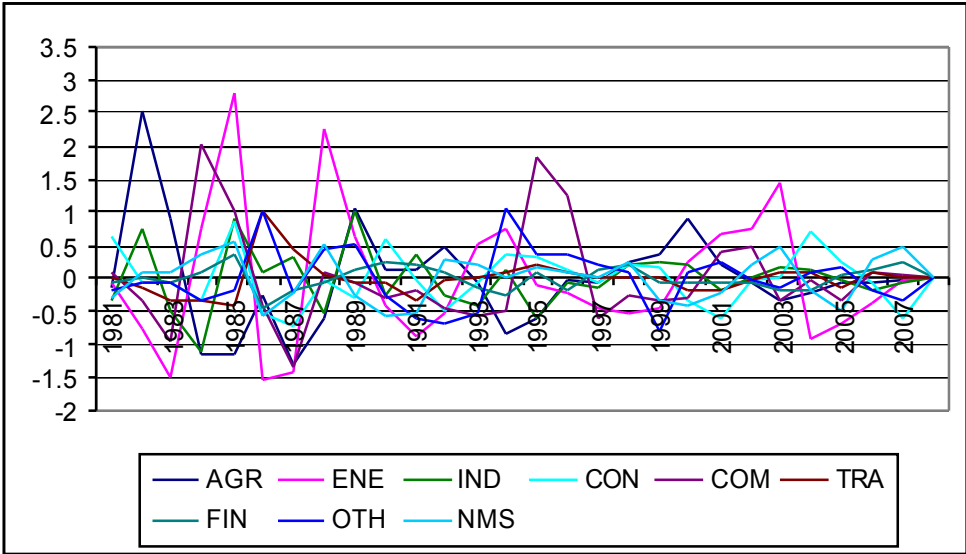
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 53: Cumulative abnormal contributions to regional productivity growth: Aragón



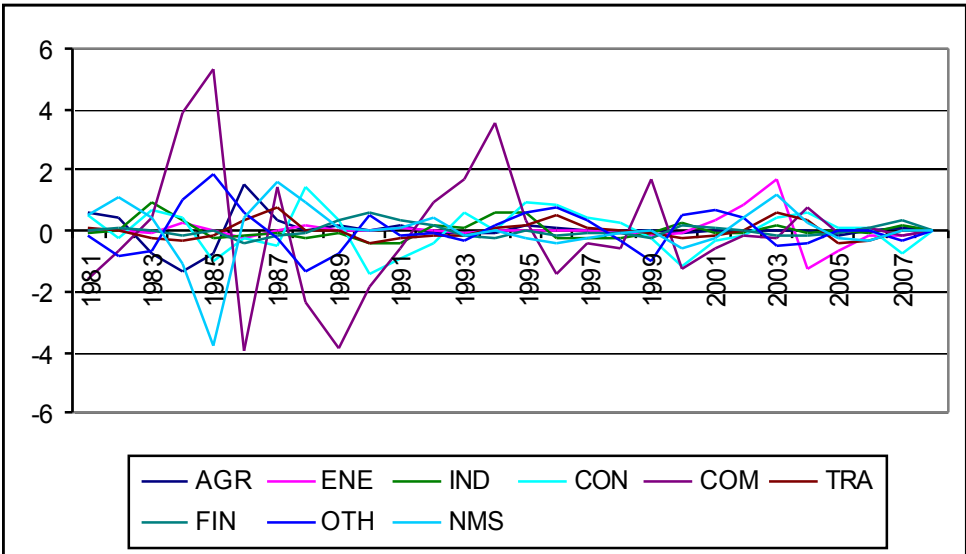
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 54: Cumulative abnormal contributions to regional productivity growth: Asturias



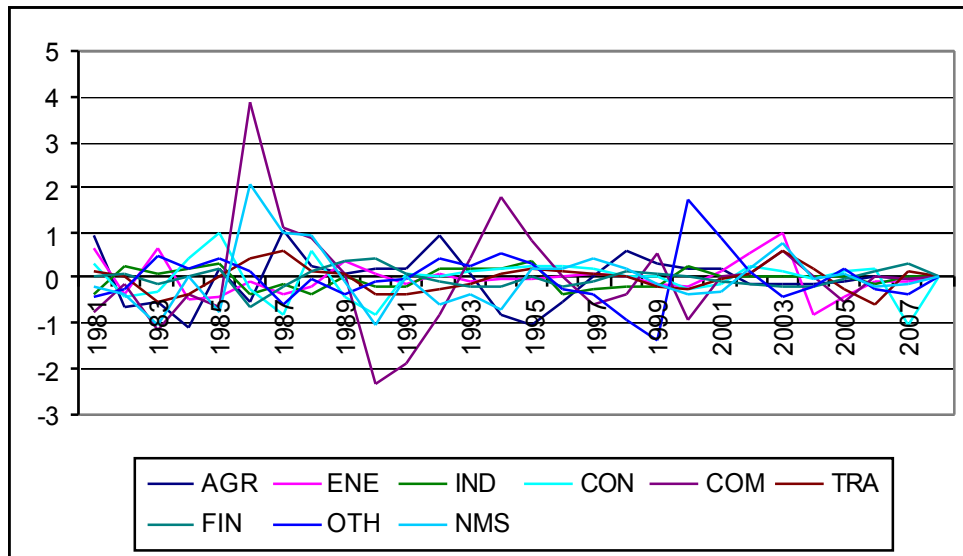
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 55: Cumulative abnormal contributions to regional productivity growth: Baleares



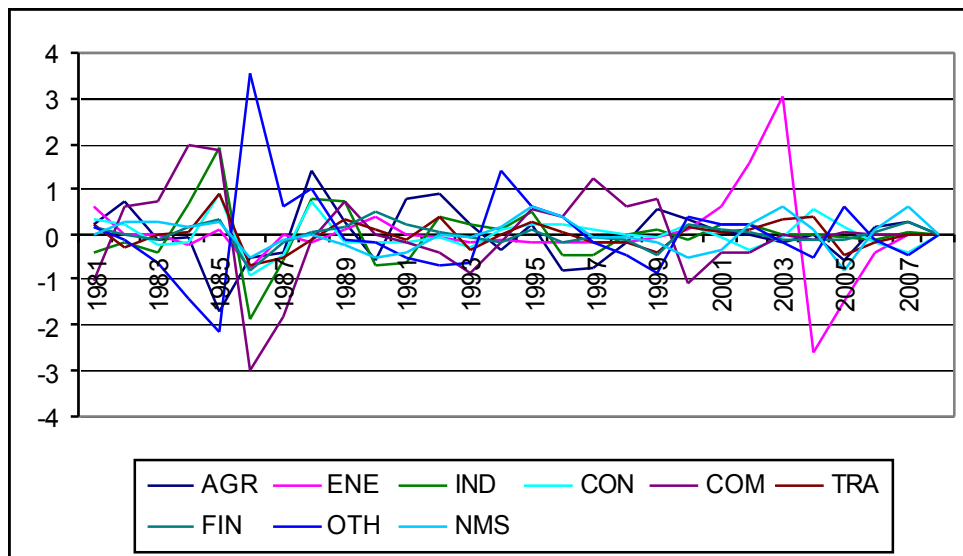
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 56: Cumulative abnormal contributions to regional productivity growth: Canarias



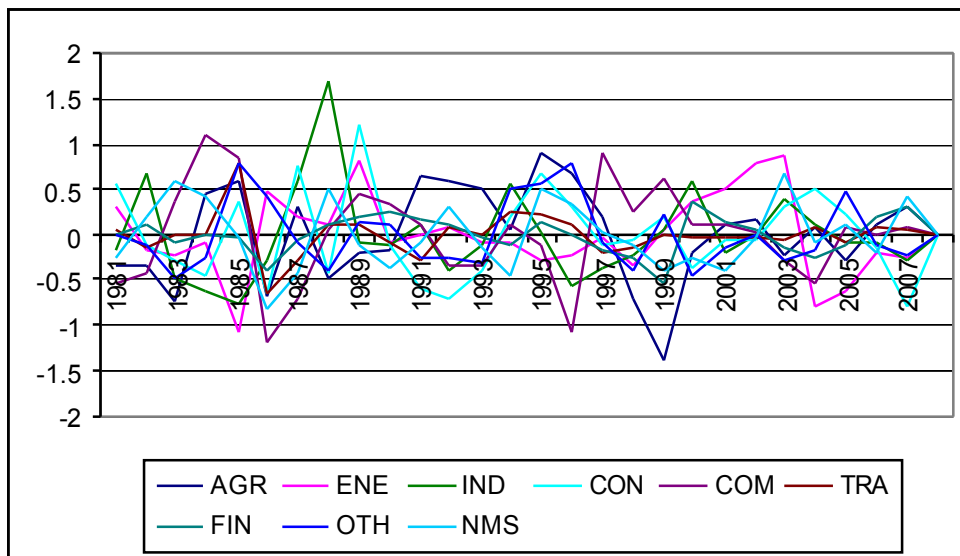
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 57: Cumulative abnormal contributions to regional productivity growth: Cantabria



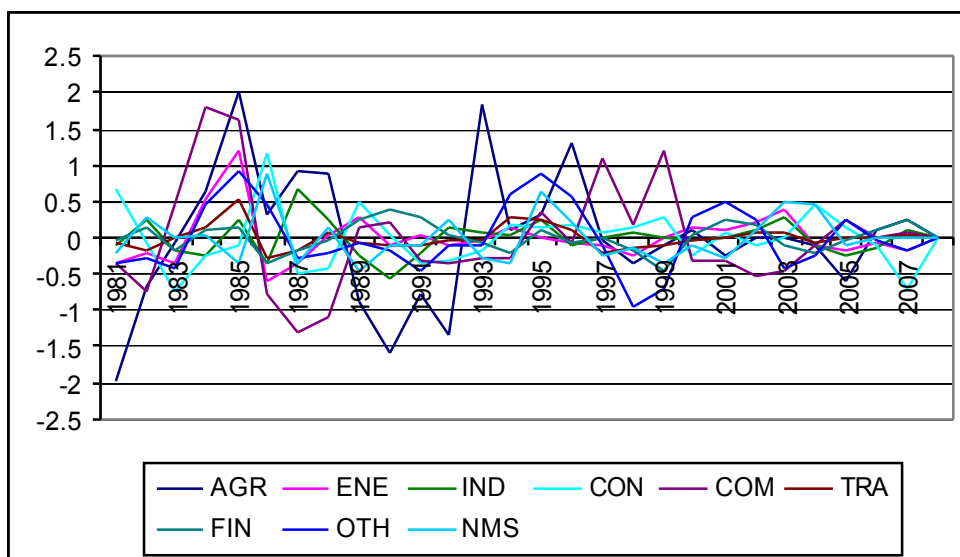
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 58: Cumulative abnormal contributions to regional productivity growth: Castilla-La Mancha



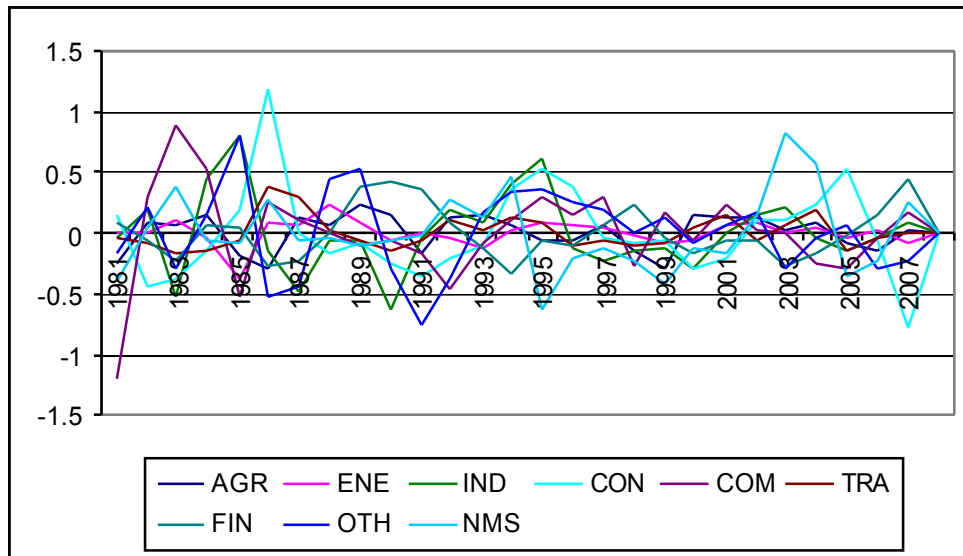
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 59: Cumulative abnormal contributions to regional productivity growth: Castilla y León



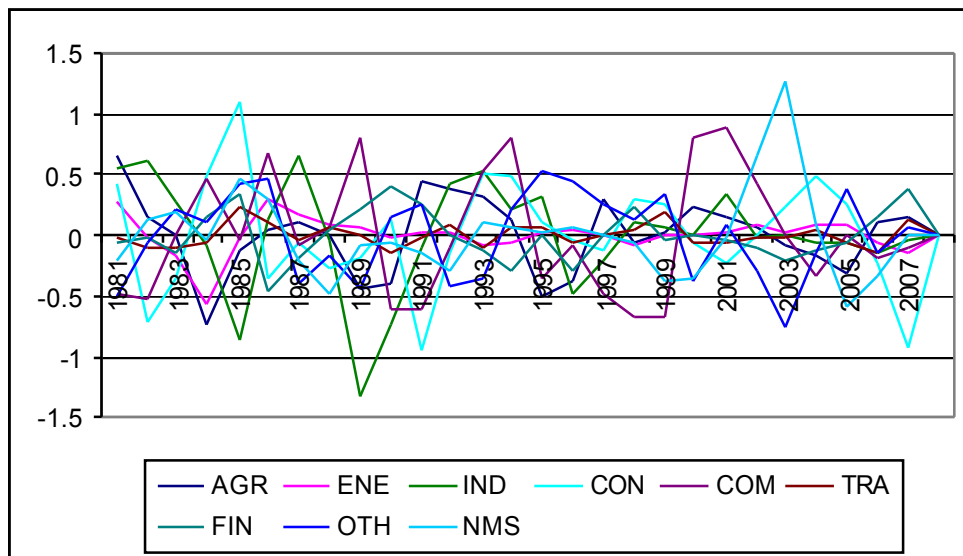
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 60: Cumulative abnormal contributions to regional productivity growth: Cataluña



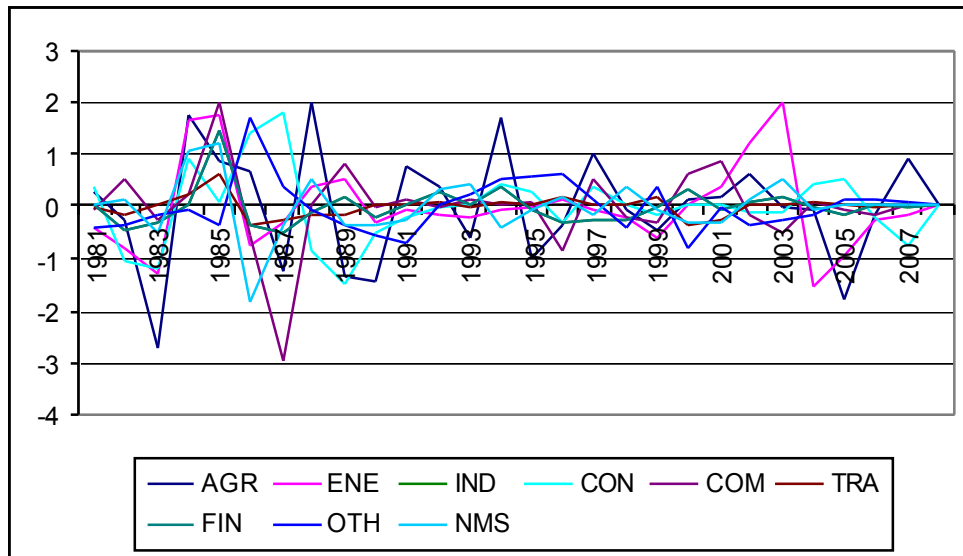
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 61: Cumulative abnormal contributions to regional productivity growth: Comunidad Valenciana



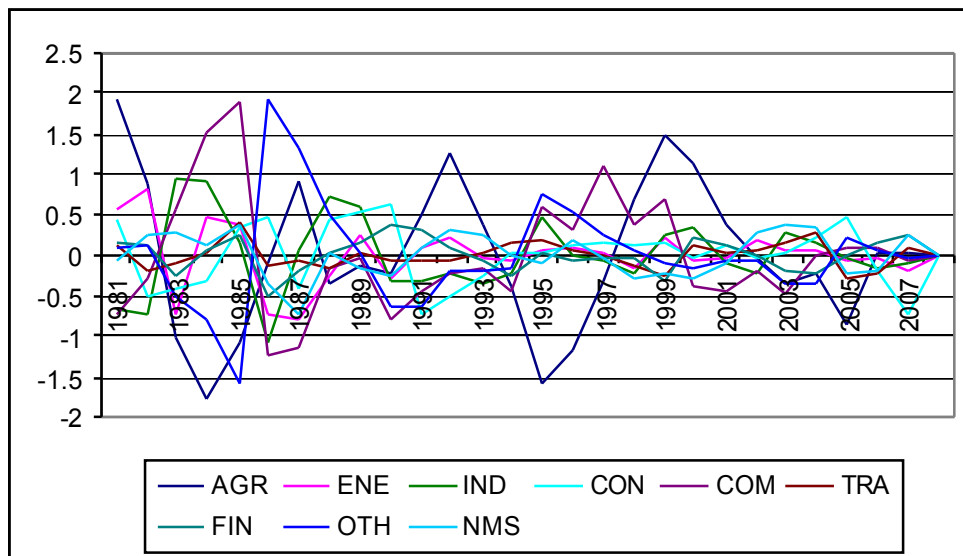
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 62: Cumulative abnormal contributions to regional productivity growth: Extremadura



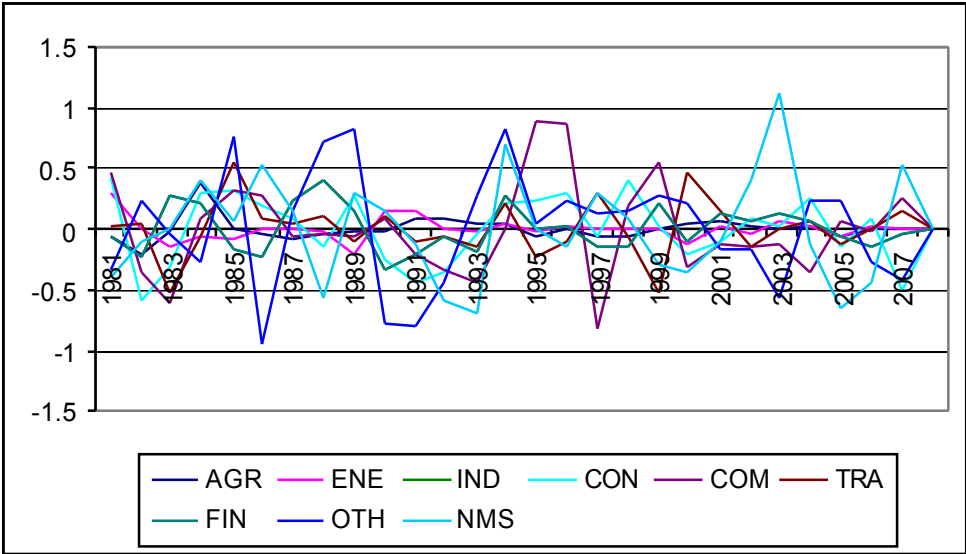
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 63: Cumulative abnormal contributions to regional productivity growth: Galicia



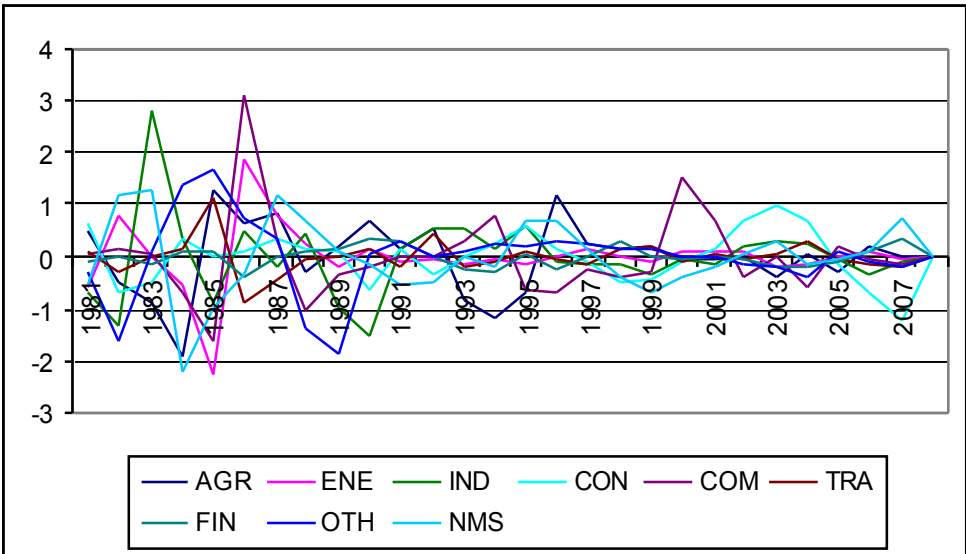
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 64: Cumulative abnormal contributions to regional productivity growth: Madrid



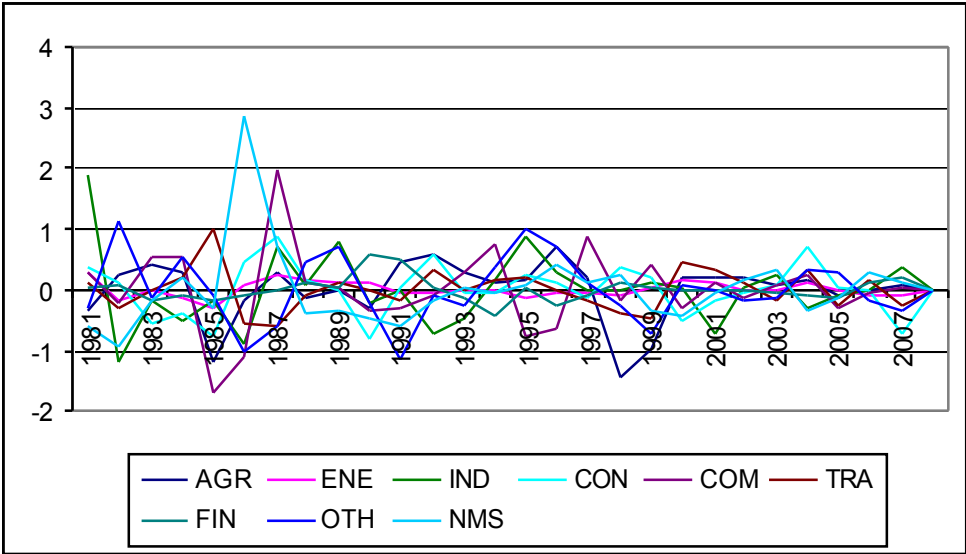
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 65: Cumulative abnormal contributions to regional productivity growth: Murcia



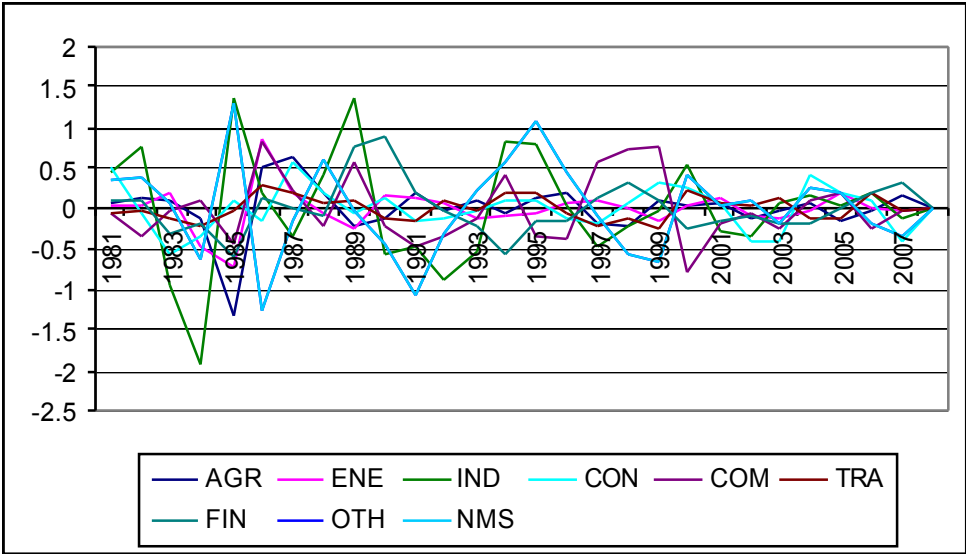
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 66: Cumulative abnormal contributions to regional productivity growth: Navarra



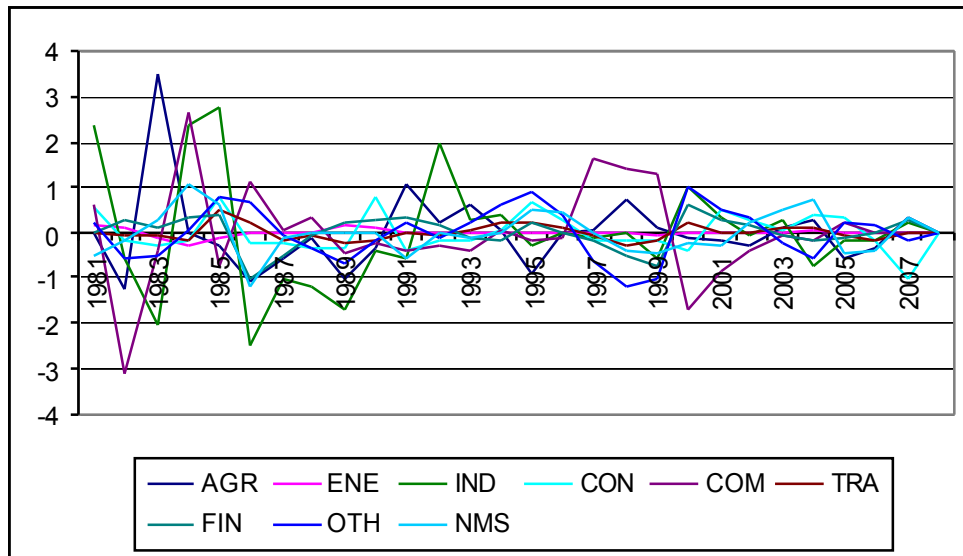
Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 67: Cumulative abnormal contributions to regional productivity growth: País Vasco



Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 68: Cumulative abnormal contributions to regional productivity growth: Rioja

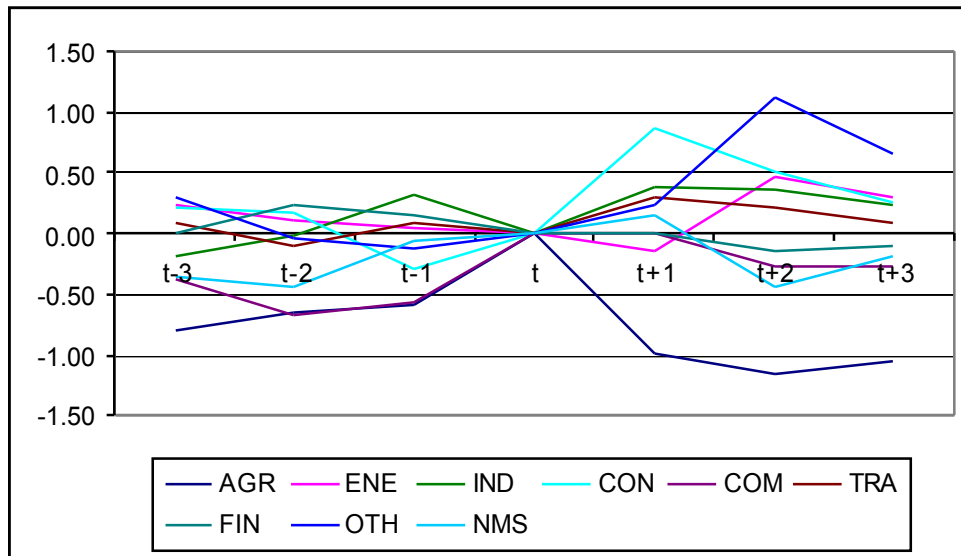


Source: Own computations based on BDMORES database and Spanish Regional Accounts

An alternative way of analysing the information of the cumulated abnormal contributions consists in extracting the data around expansions, normalized by subtracting the value at the cycle through. This makes the value at each cycle equal to zero. Figures 69-85 show the results for the average of these contributions during the two expansions experienced in our sample. In particular, we offer the average behaviour from three years before the cycle through to three years after the cycle through. Note that if the line for a given sector is flat that sectoral contribution is normal. If the line is declining, that means that the sectoral contribution is less than normal, indicating that the sector is contributing to weakness in regional productivity growth. Finally, if the line is rising, is greater than normal, suggesting that the sector is contributing to strength of regional productivity growth.

Figure 69: Cumulative abnormal contributions to regional productivity during expansions:

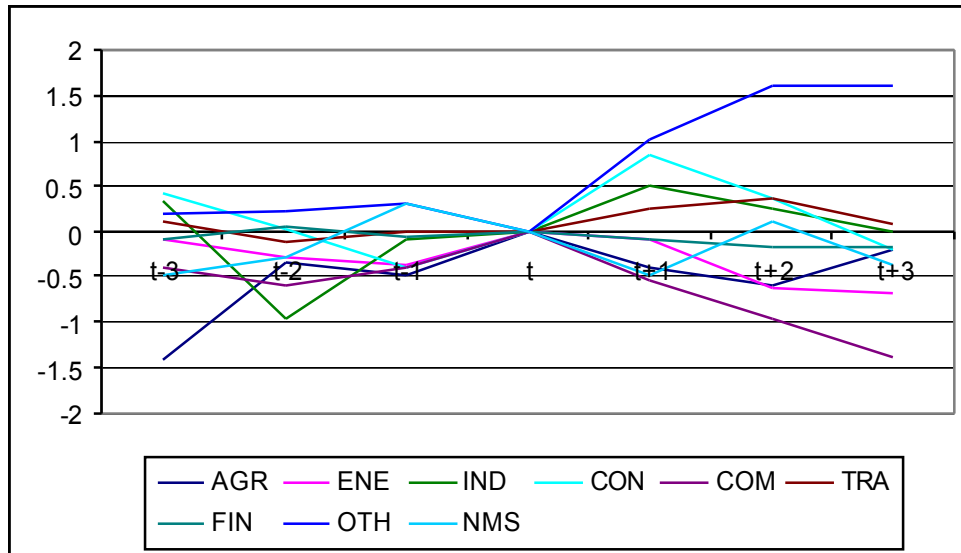
Andalucía



Note: Average results for the 1984-1991 and 1993-2008 expansions, normalized to zero at the cycle through.

Source: Own computations based on BDMORES database and Spanish Regional Accounts

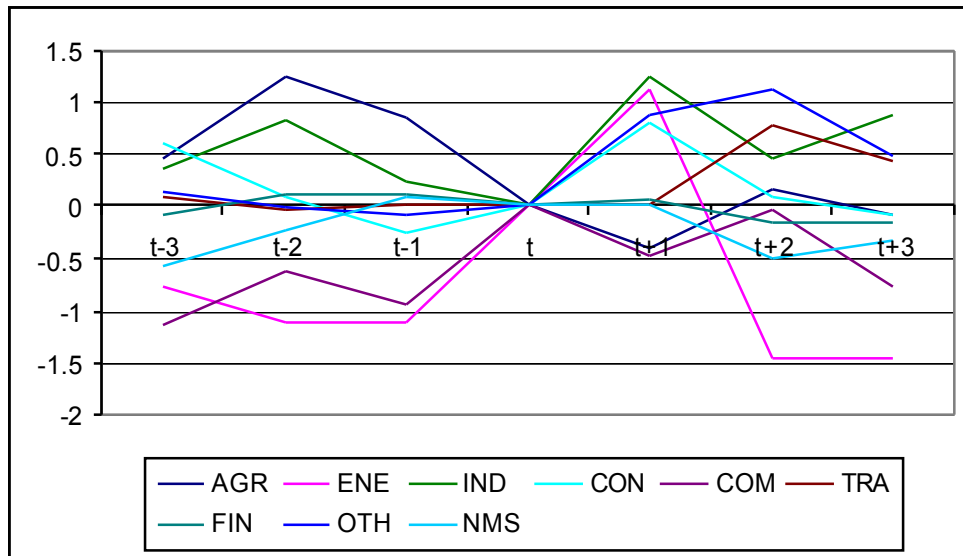
Figure 70: Cumulative abnormal contributions to regional productivity during expansions: Aragón



Note: Average results for the 1984-1991 and 1993-2008 expansions, normalized to zero at the cycle through.

Source: Own computations based on BDMORES database and Spanish Regional Accounts

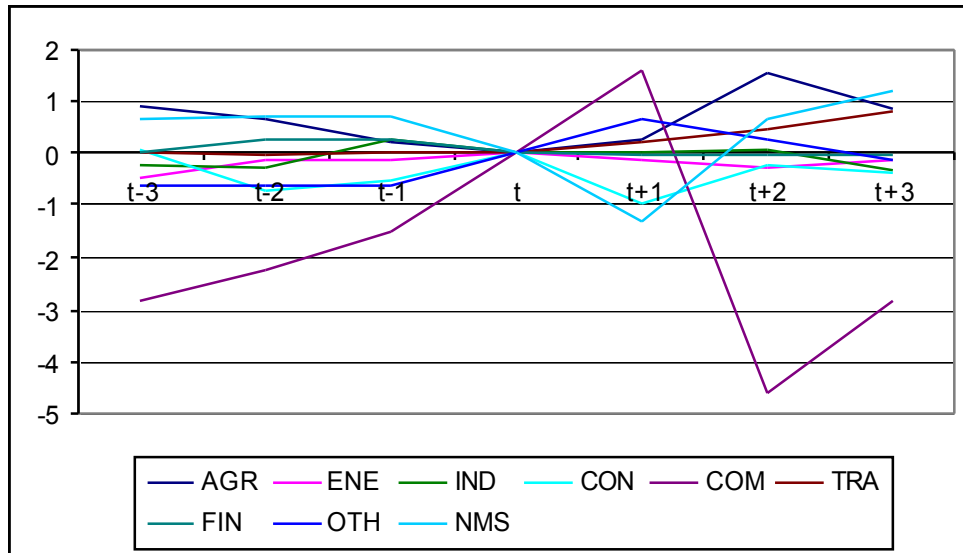
Figure 71: Cumulative abnormal contributions to regional productivity during expansions: Asturias



Note: Average results for the 1984-1991 and 1993-2008 expansions, normalized to zero at the cycle through.

Source: Own computations based on BDMORES database and Spanish Regional Accounts

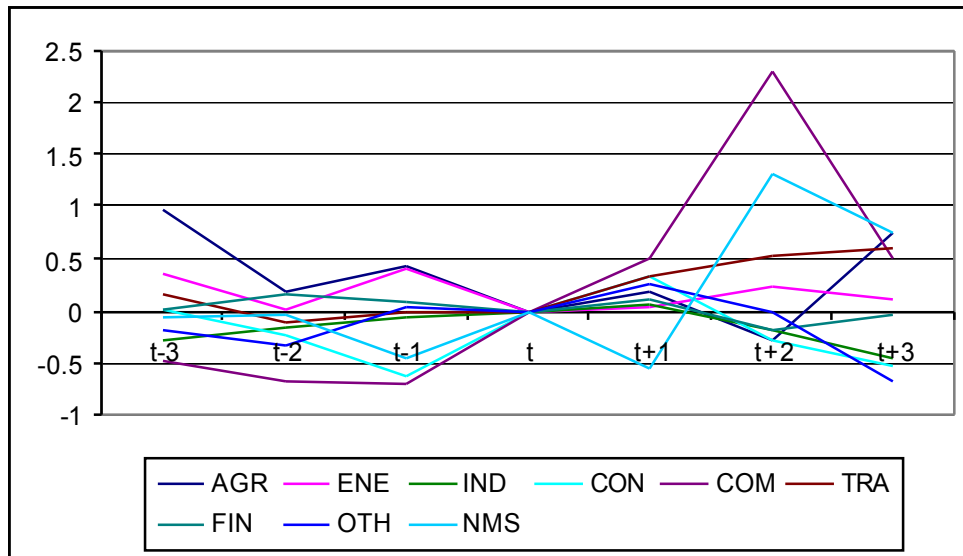
Figure 72: Cumulative abnormal contributions to regional productivity during expansions: Baleares



Note: Average results for the 1984-1991 and 1993-2008 expansions, normalized to zero at the cycle through.

Source: Own computations based on BDMORES database and Spanish Regional Accounts

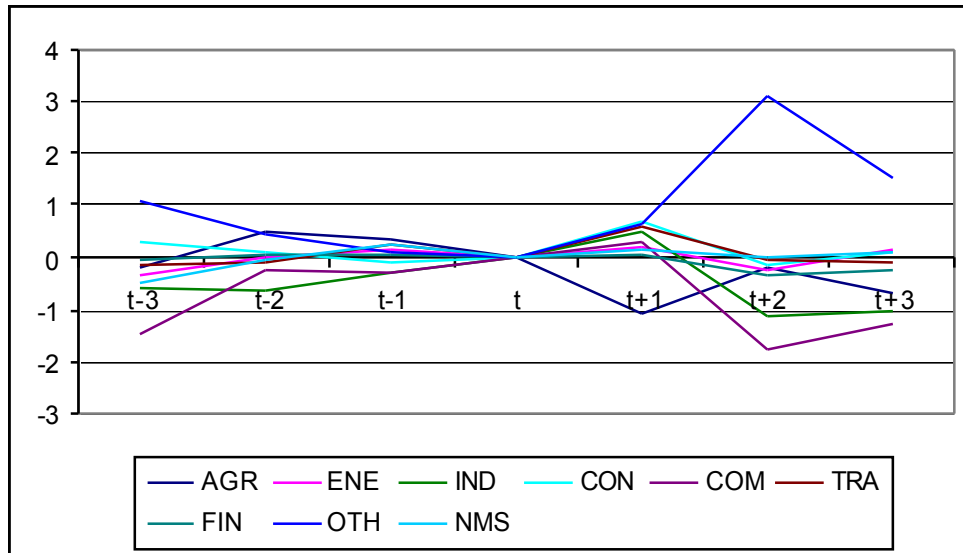
Figure 73: Cumulative abnormal contributions to regional productivity during expansions: Canarias



Note: Average results for the 1984-1991 and 1993-2008 expansions, normalized to zero at the cycle through.

Source: Own computations based on BDMORES database and Spanish Regional Accounts

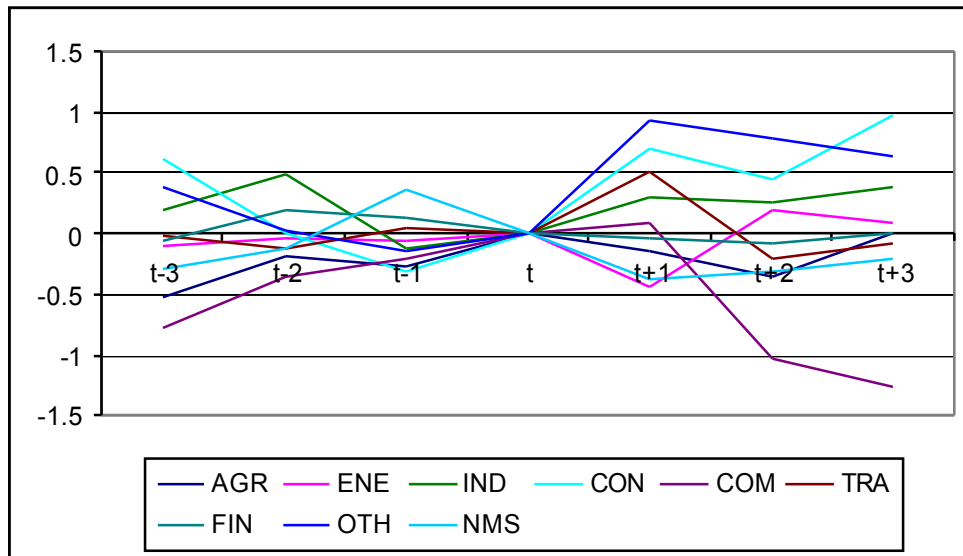
Figure 74: Cumulative abnormal contributions to regional productivity during expansions: Cantabria



Note: Average results for the 1984-1991 and 1993-2008 expansions, normalized to zero at the cycle through.

Source: Own computations based on BDMORES database and Spanish Regional Accounts

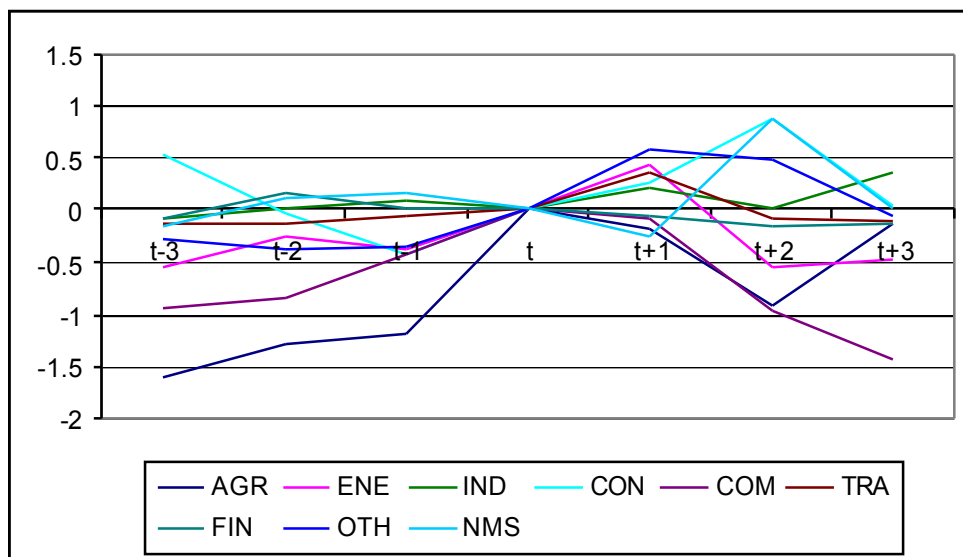
Figure 75: Cumulative abnormal contributions to regional productivity during expansions: Castilla-La Mancha



Note: Average results for the 1984-1991 and 1993-2008 expansions, normalized to zero at the cycle through.

Source: Own computations based on BDMORES database and Spanish Regional Accounts

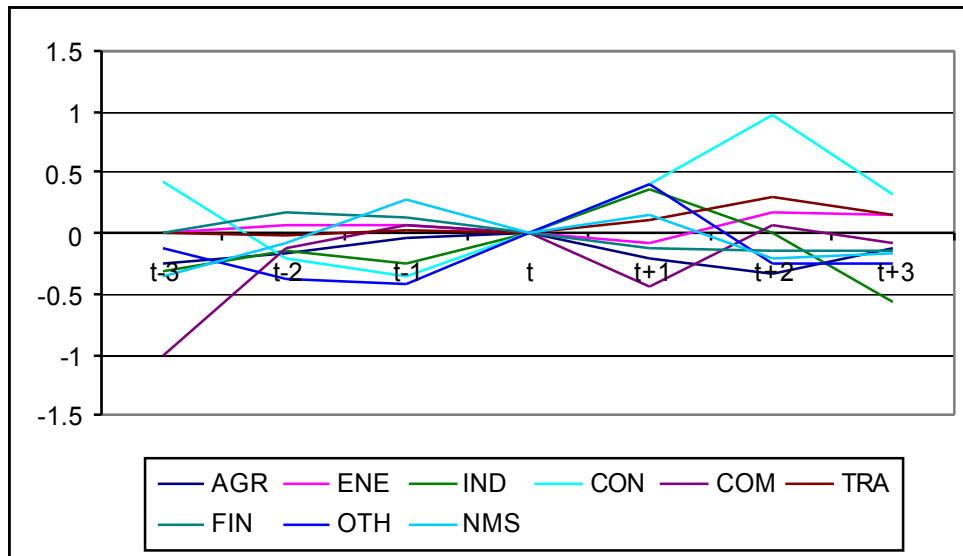
Figure 75: Cumulative abnormal contributions to regional productivity during expansions: Castilla y León



Note: Average results for the 1984-1991 and 1993-2008 expansions, normalized to zero at the cycle through.

Source: Own computations based on BDMORES database and Spanish Regional Accounts

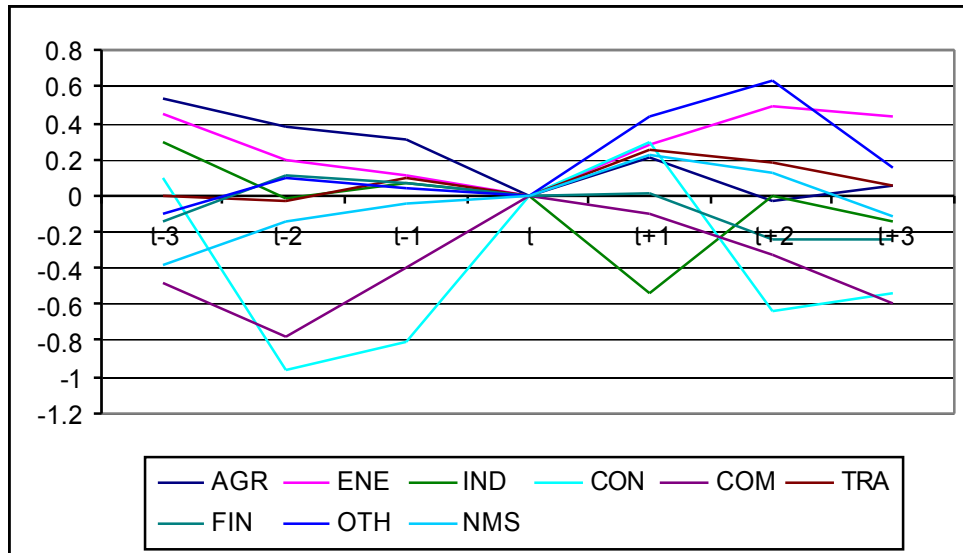
Figure 76: Cumulative abnormal contributions to regional productivity during expansions: Cataluña



Note: Average results for the 1984-1991 and 1993-2008 expansions, normalized to zero at the cycle through.

Source: Own computations based on BDMORES database and Spanish Regional Accounts

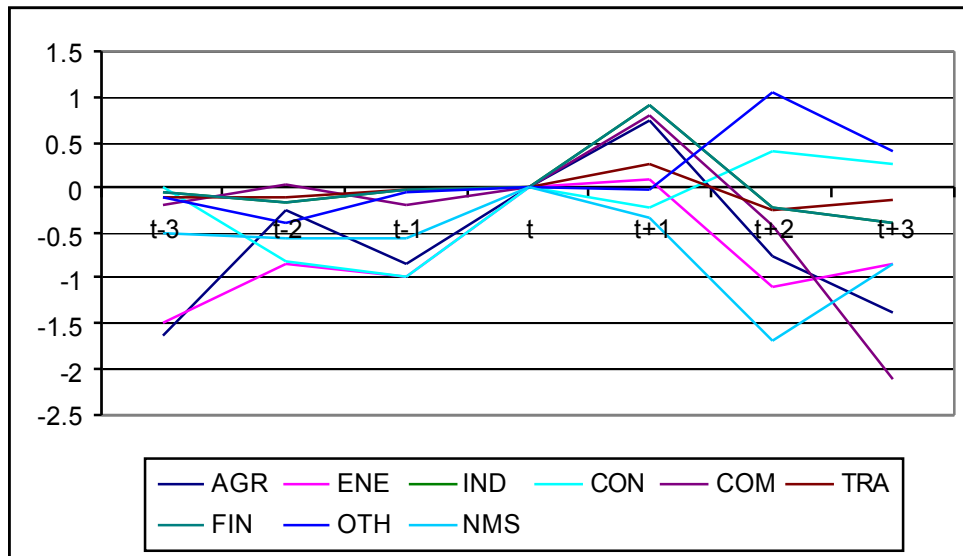
Figure 77: Cumulative abnormal contributions to regional productivity during expansions: Comunidad Valenciana



Note: Average results for the 1984-1991 and 1993-2008 expansions, normalized to zero at the cycle through.

Source: Own computations based on BDMORES database and Spanish Regional Accounts

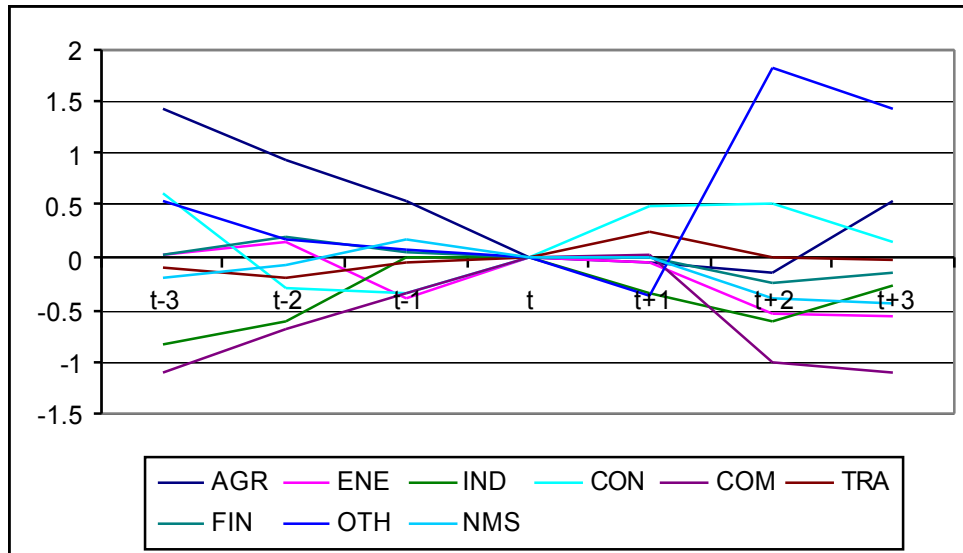
Figure 78: Cumulative abnormal contributions to regional productivity during expansions: Extremadura



Note: Average results for the 1984-1991 and 1993-2008 expansions, normalized to zero at the cycle through.

Source: Own computations based on BDMORES database and Spanish Regional Accounts

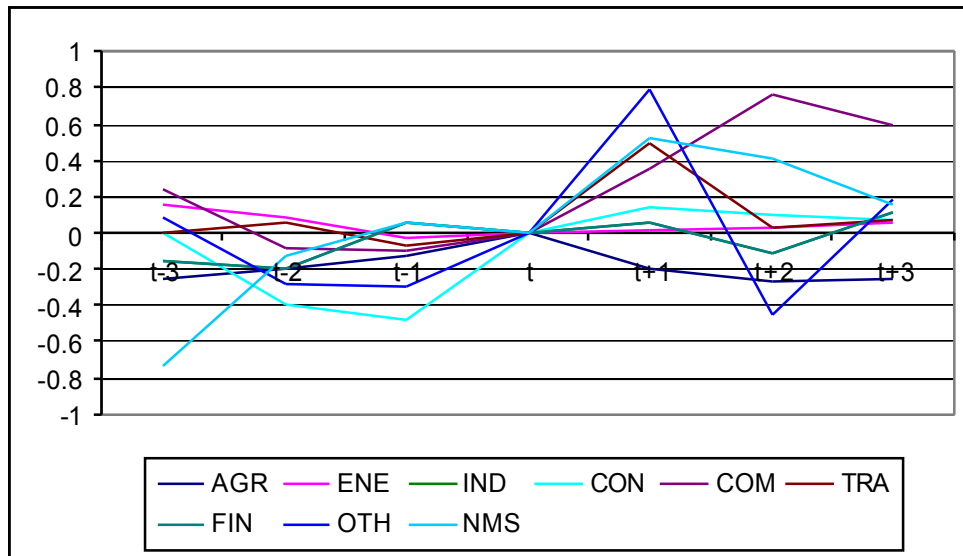
Figure 79: Cumulative abnormal contributions to regional productivity during expansions: Galicia



Note: Average results for the 1984-1991 and 1993-2008 expansions, normalized to zero at the cycle through.

Source: Own computations based on BDMORES database and Spanish Regional Accounts

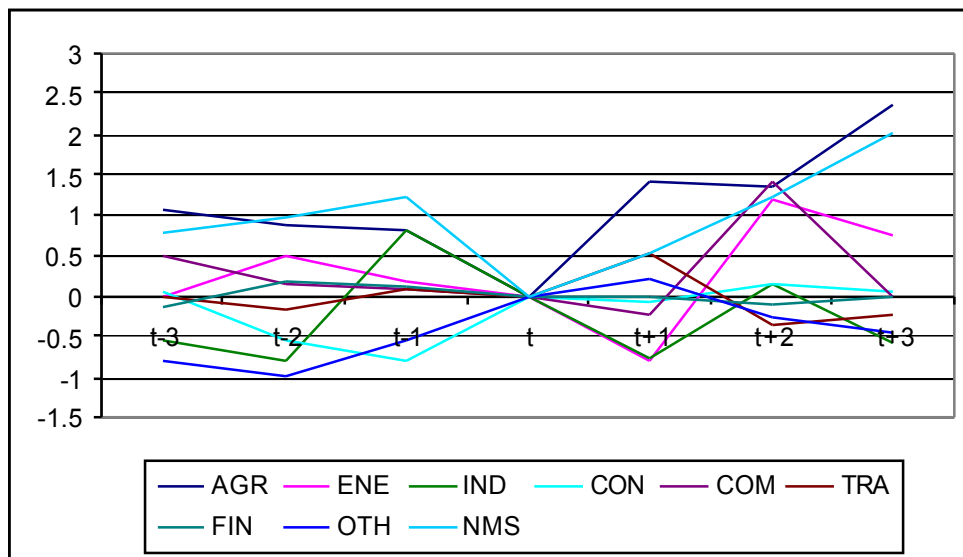
Figure 80: Cumulative abnormal contributions to regional productivity during expansions: Madrid



Note: Average results for the 1984-1991 and 1993-2008 expansions, normalized to zero at the cycle through.

Source: Own computations based on BDMORES database and Spanish Regional Accounts

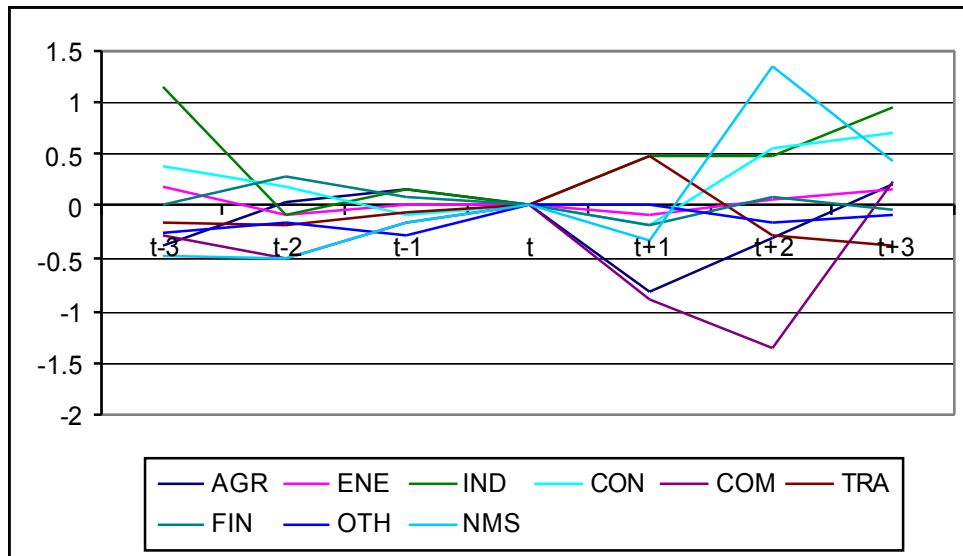
Figure 81: Cumulative abnormal contributions to regional productivity during expansions: Murcia



Note: Average results for the 1984-1991 and 1993-2008 expansions, normalized to zero at the cycle through.

Source: Own computations based on BDMORES database and Spanish Regional Accounts

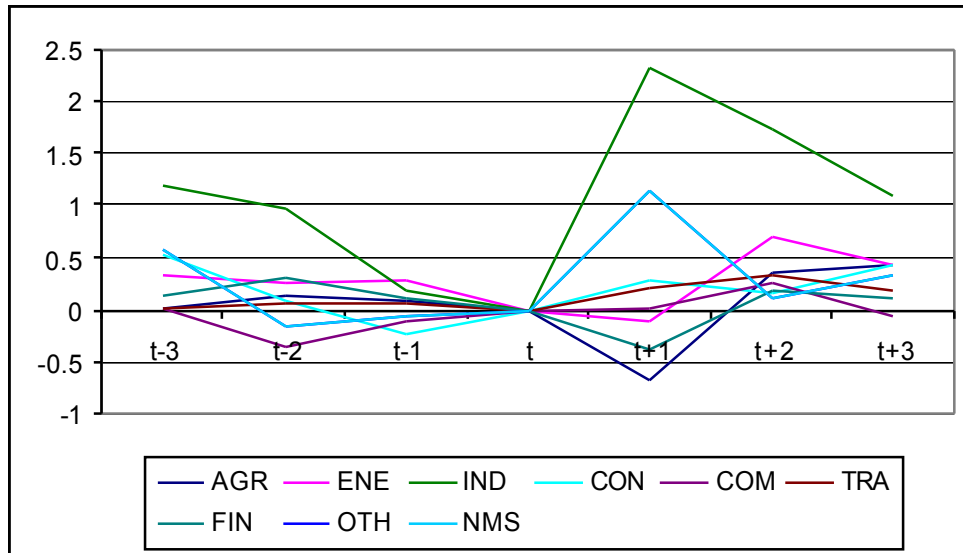
Figure 82: Cumulative abnormal contributions to regional productivity during expansions: Navarra



Note: Average results for the 1984-1991 and 1993-2008 expansions, normalized to zero at the cycle through.

Source: Own computations based on BDMORES database and Spanish Regional Accounts

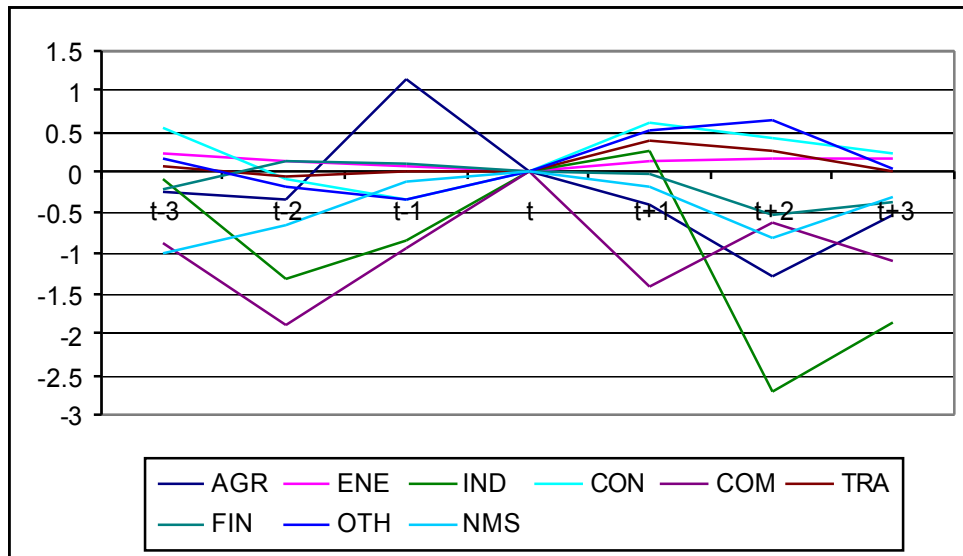
Figure 83: Cumulative abnormal contributions to regional productivity during expansions: País Vasco



Note: Average results for the 1984-1991 and 1993-2008 expansions, normalized to zero at the cycle through.

Source: Own computations based on BDMORES database and Spanish Regional Accounts

Figure 84: Cumulative abnormal contributions to regional productivity during expansions: Rioja



Note: Average results for the 1984-1991 and 1993-2008 expansions, normalized to zero at the cycle through.

Source: Own computations based on BDMORES database and Spanish Regional Accounts

4. Concluding remarks

This paper has attempted to shed light on what branches of production can be the basis for a new production model of the Spanish economy to overcome the weaknesses in the present, making special emphasis in services. To this end, the behavior of productivity during expansions will be analyzed for twenty production branches by applying the methodology proposed by Leamer (2008), based on the decomposition of contributions to the growth of the productivity of each of these branches in "normal" and "outstanding".

The results will identify production branches that have contributed to the weakening of productivity during recessions as well as those that have created an important stimulus to productivity during expansions.

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