

Developments in the labor markets and sectors of the business economy during 2008-2017 in Greece

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Abstract

The article looks into the structure and performance of twelve sectors of Greece's business economy, and into the developments in their respective labor markets, during the country's long economic downturn. Using Eurostat's structural business statistics, it finds that: (a) Between 2008 and 2017, the sectors moved at different paces and/or in different ways. For instance, the trade sector shrunk in terms of jobs and companies, the water supply sector shrunk in terms of staff. The accommodation-food service sector came to employ (absorb) more people in 2017 compared to the 2008, but, on average, profits decreased. In the electricity sector, profits increased. In the mining-quarrying sector, labor productivity increased, and in the information-communication sector, it decreased. (b) The developments regarding the number of businesses and employees in two sectors (trade and manufacturing) are similar to the corresponding developments in other EU member states. (c) Whenever the number of businesses and the average size of businesses in a sector fell, the respective labor market was (or had been) dominated by a leftward demand shift or a binding reduction of a wage ceiling, and, consequently, by a reduction in employment.

Keywords: Debt crisis & recession, labor supply & demand, Number & size of businesses, Labor productivity & profitability, Greek & European businesses.

JEL classification: J20, L60, L70, L80, L90, M20.

1. Introduction

The international financial crisis of 2007-08 sparked in Greece a government debt crisis. The crisis was dealt with via three successive bailouts, and measures that led to a long recession both in terms of output and of employment. The recession brought about uncertainty and fluidity in many aspects of social, economic, political and cultural life, which, in turn, probably culminated with the imposition of capital controls in 2015. The bailout agreements were completed in 2018. However, the recovery was interrupted in 2020-21 by the outbreak of the SARS-CoV-2 pandemic. See Figure 1. The expectation is that things will return to normal, and a new economic policy will be employed.

Before moving forward, in the pages that follow, we briefly look back and discuss what happened during 2008-17 in the labor markets and to key features of the *business economy*. The features that we consider most crucial touch on market structure and competition, and on businesses performance. They are four: the number of businesses, the average size of businesses (in terms of people employed), the average labor productivity of businesses (in terms of gross value added per person employed), and the average profitability of businesses (proxied by the share of the gross operating surplus in turnover; OECD, 2010).

As more data regarding the recession period are now available by Eurostat, we turn to the twelve *business economy* sectors that Eurostat keeps track of. These are: (a) mining-quarrying, (b) manufacturing, (c) electricity-gas-steam-air conditioning supply, (d) water supply-sewerage-waste management-remediation activities, (e) construction, (f) trade (wholesale and retail) plus the repair of motor vehicles-motorcycles, (g) transportation-storage, (h) accommodation-food service activities, (i) Information-communication, (j) real estate activities, (k) professional-scientific-technical activities, (l) administrative-support service activities.**¹ However, the data regarding construction are available only from

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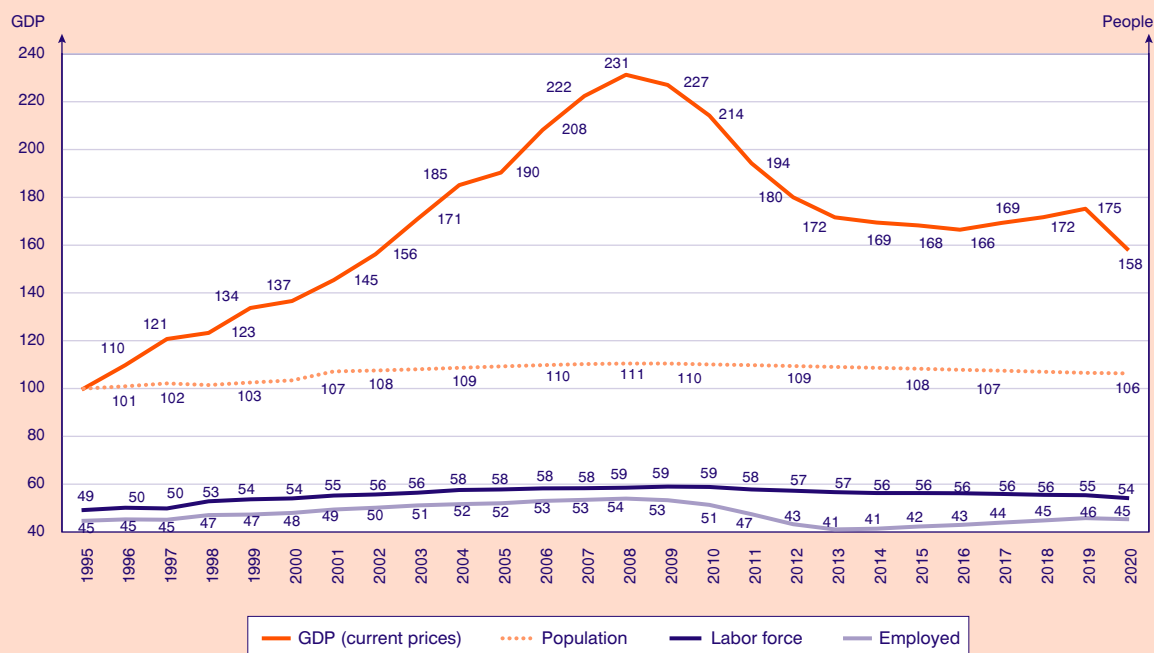
– Opinions or value judgments expressed in this article are the author's own and do not necessarily reflect those of the Centre of Planning and Economic Research.

** Certain footnotes are cross-referenced several times. Please keep in mind that the original footnote may be found on a previous page.

1. The agriculture-forestry-fishing and financial sectors are treated separately, while the personal services sector and sectors that by and large consist of non-market services (e.g., public administration, education, health) are not included in the particular dataset.

FIGURE 1

The evolution of output, of the population aged 15 years or older, and of the employed and unemployed people of the same age in Greece, 1995-2020 (1995=100)



Sources: Hellenic Statistical Authority (GDP statistics), Eurostat (other statistics); own calculations.

Note: Both the GDP (measured on the vertical axis on the left) and the other variables (measured on the vertical axis on the right) are in index form. The population includes the labor force and the people who do not participate in the labor market. The workforce consists of the employed and the unemployed people.

2011 on, a break in the series occurs in 2014,² and the data regarding 2014-17 are temporary (i.e., not yet finalized). Construction aside, the eleven other sectors appear to employ 52.9-63.6% of all employees, and to contribute about 60.7-65.2% of Greece's gross value added or 54.2-57.7% of the country's gross domestic product (GDP).

In view of the above, the purpose of the article is twofold: (i) To identify similarities and differences in the way the labor markets and businesses in the said sectors adjusted or reacted. (ii) To ascertain how key labor market and key business features may be linked, at least under the special conditions of the recession and the policy mix followed. Some of these issues have been studied by Karamessini (2012), Agiomirgianakis et al. (2013), Moutos (2015), Voulgaris et al. (2015), Papastathopoulos et al. (2019), Papathanasiou et al. (2020), and others; while a number of

relations among the labor supply, the labor demand, market structure, business size, and sectoral performance have been studied by a rather small number of analysts, such as Prskawetz et al. (2008) and Dustmann and Glitz (2015).

The article is organized as follows: Section 2 describes the developments in the labor market of the *business economy*, as well as the developments in the number, the average size, and the performance of businesses in terms of labor productivity and profitability in the *business economy* collectively (i.e., the eleven sectors for which data exist for the whole period). Section 3 describes the developments in each of the twelve sectoral labor markets. Section 4 describes the developments in the average size and number of businesses in each of the twelve sectors. Section 5 describes the developments in average labor productivity and the profitability of businesses in each of the twelve sec-

2. Breaks in statistical time series occur when there is a change in the standards for defining and observing a variable over time. Ideally, the use of a new method involves the recalculation by the data producer of past values with the new method. This, however, did not happen here.

tors. Section 6 looks into sectoral similarities in other European Union (EU) member states; and Section 7 provides the conclusions.

2. Developments in the eleven sectors collectively

If the employment and wage statistics in the eleven sectors correctly capture what happened (Figure 2), then the simultaneous: (a) Fall in the number of employees and rise in the average wage observed in 2008-09 suggests the dominance of a leftward labor supply shift, possibly due to reduced participation in the labor market or due to rightward labor demand shifts in other sectors or due to other developments. (b) Fall in both the number of employees and the average wage observed in 2009-13 suggests the dominance of a leftward labor demand shift, possibly due to reduced demand for goods and services, and/or a binding re-

duction of a wage ceiling. Indeed, at the same time, economic activity, as proxied by the GDP, fell by 24%, and pay cuts were applied in state-controlled enterprises in transportation, electricity etc. (c) Rise in the number of employees and fall in the average wage observed in 2013-14 suggests the dominance of a rightward labor supply shift. On the other hand, the development may be attributed to the aforesaid break in the time series.² (d) Fall in the number of employees and rise in the average wage observed in 2014-15 suggests the dominance of a new leftward labor supply shift. (e) Rise in the number of employees and fall in the average wage observed in 2015-17 suggests the dominance of a rightward labor supply shift.

The evolution of the overall number of businesses and of the overall number of people employed in the eleven sectors (provided in Figure 3) shows that: (a) In 2008-13 both fell, the former by 16% and the latter by 21% (compared to the beginning of the period). This sug-

FIGURE 2
The evolution of the total number of employed people and of average wages (on the horizontal and on the vertical axis, respectively) in the eleven sectors of activity in Greece, 2008-17 (2008 = 100)

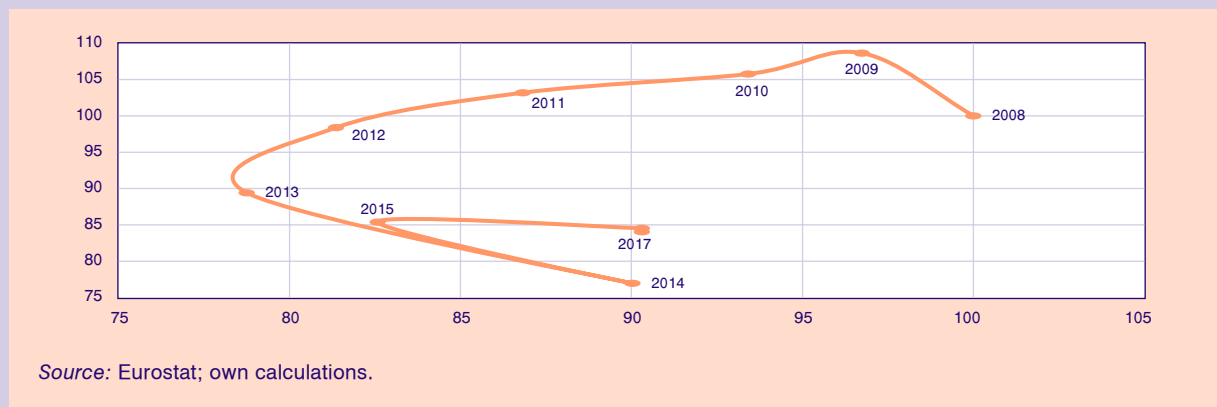
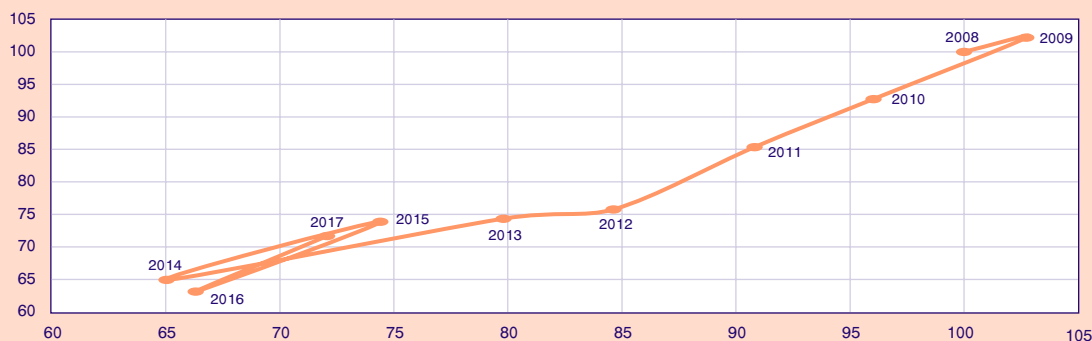


FIGURE 3
The evolution of the number of businesses and of the number of employed people (on the horizontal and on the vertical axis, respectively) in the eleven sectors of activity in Greece, 2008-17 (2008 = 100)



FIGURE 4

The evolution of profitability and of labor productivity (on the horizontal and on the vertical axis, respectively) in the eleven sectors of activity in Greece, 2008-17 (2008 = 100)



Source: See Figure 2.

gests a reduction in market competition and employment. At the same time, it appears that, on average, the size of businesses in terms of staff fell from 3.4 to 3.2 people.³ (b) In 2013-14 both rose. This may suggest increased market competition and employment, but may also be attributed to the aforesaid break in the time series.² (c) In 2014-15 both fell. This suggests a new reduction in market competition and employment. It also appears that, on average, the size of businesses in terms of staff fell to 2.8 people. (d) In 2015-16 both rose (the number of businesses rose marginally). This suggests increased market competition and employment. It also appears that, on average, the size of businesses in terms of staff rose to 3.1 people. (e) In 2016-17 both rose further, which suggests increased market competition and employment. It also appears that, on average, the size of businesses in terms of staff rose to 3.4 people, as at the beginning of the period.

In addition, the labor productivity and profitability data (Figure 4) suggest that both increased in 2008-09, 2014-15 and 2016-17, and both fell in 2009-13, 2015-16 and, possibly, in 2013-14.⁴

3. Developments in the twelve labor markets

According to the labor market data for each of the twelve sectors (Figures 5: 1-12): (a) In mining etc., a rightward labor supply shift in 2008-9 was followed by a leftward labor supply shift in 2009-11, a leftward labor demand shift in 2011-12, a new rightward labor supply shift in 2012-13, possibly a rightward labor demand shift in 2013-14,⁴ a leftward labor supply shift in 2014-15, a leftward labor demand shift in 2015-16, and a rightward labor demand shift in 2016-17.⁵ (b) In manufacturing, a leftward labor supply shift in 2008-10 was followed by a leftward labor demand shift in 2010-13, possibly a rightward labor supply shift in 2013-14,⁴ a new leftward labor supply shift in 2014-15, a rightward labor supply shift in 2015-16, and a rightward labor demand shift in 2016-17.⁶ (c) In electricity etc., a leftward labor supply shift in 2008-09 was followed by a leftward labor demand shift and/or a binding reduction of a wage ceiling in 2009-11, a new leftward labor supply shift in 2011-13, possibly a rightward labor supply shift in 2013-14,⁴ a leftward labor supply shift in 2014-15, a rightward labor supply shift in 2015-16,

3. Both numbers indicate that businesses were quite small by European Commission (2020) standards.

4. It may also be attributed to the break in the time series.

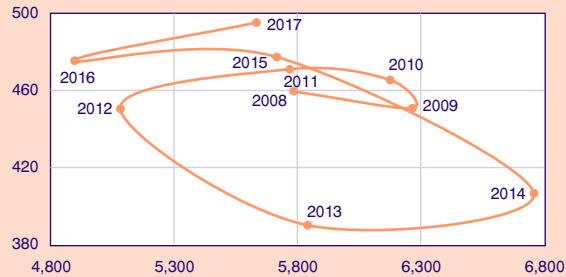
5. If the new method of calculating the data after the break is consistent with the initial method (i.e., if the result does not differ much from the result of the initial method), then the market probably ended up at a lower level of employment and a higher average wage compared to the beginning of the period.

6. If the new method of calculating the data after the break is consistent with the initial method (i.e., if the result does not differ much from the result of the initial method), then the market probably ended up at a lower level of employment and a lower average wage compared to the beginning of the period.

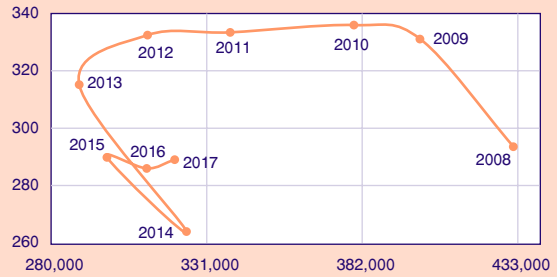
FIGURES 5

The evolution of the number of employed people and of the average weekly wages in euro (on the horizontal and the vertical axis, respectively): Greece, 2008-17

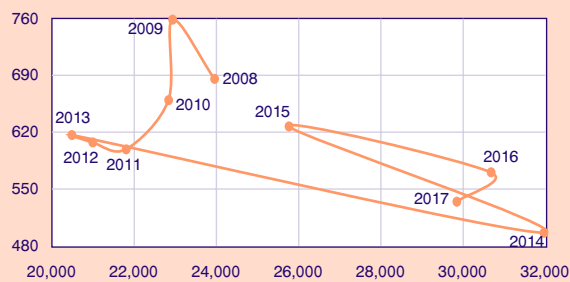
1. Mining-quarrying



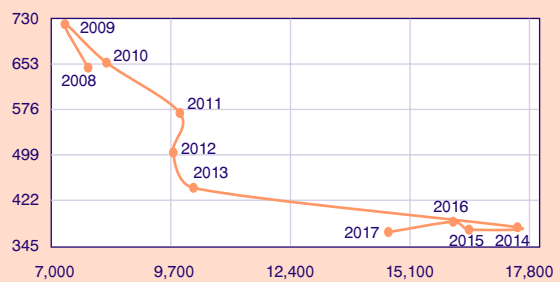
2. Manufacturing



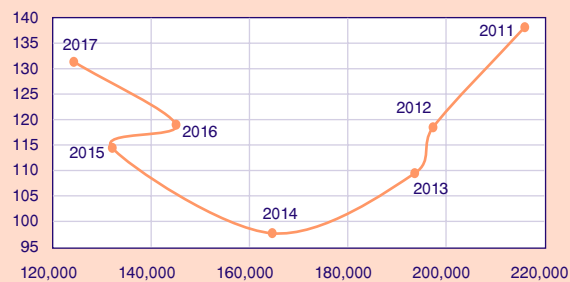
3. Electricity etc.



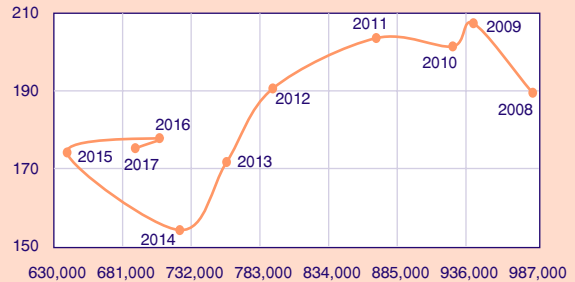
4. Water supply etc.



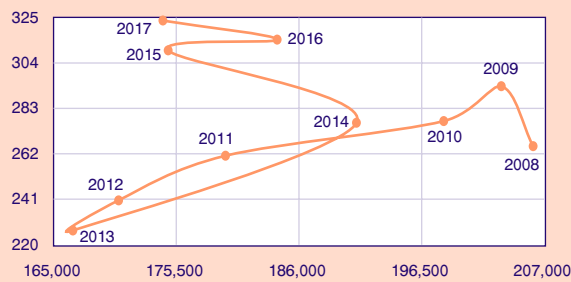
5. Construction



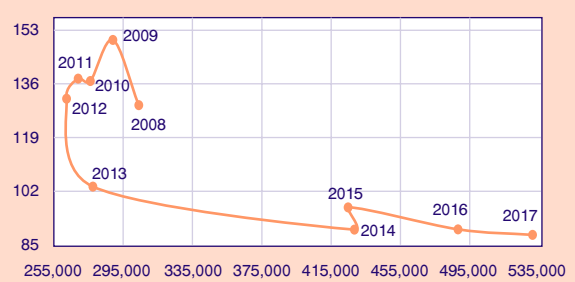
6. Trade-repair of motor vehicles



7. Transportation-storage

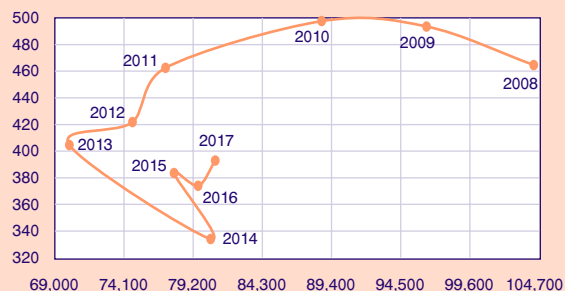


8. Accommodation-food service

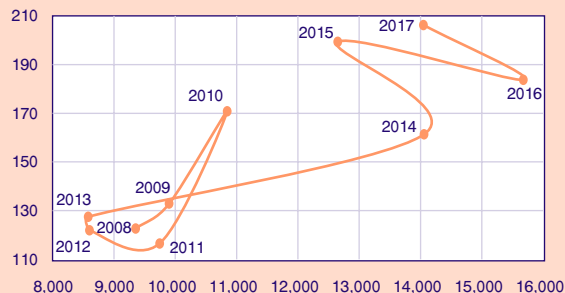


FIGURES 5 (continued)

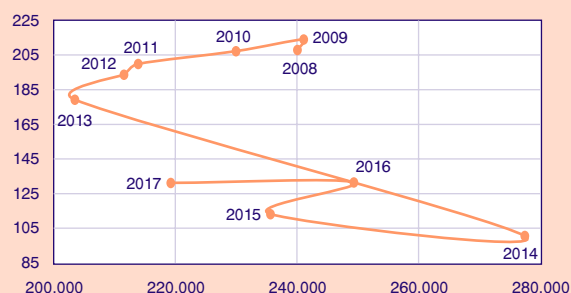
9. Information-communication



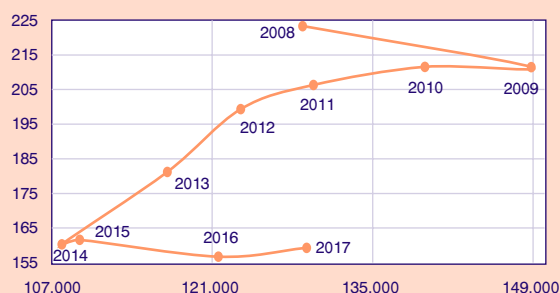
10. Real estate



11. Professional activities etc.



12. Administrative activities etc.



Source: See Figure 2.

and another leftward labor demand shift in 2016-17.⁷ (d) In water supply etc., a leftward labor supply shift in 2008-09 was followed by a rightward labor supply shift in 2009-11, a leftward labor demand shift in 2011-12, a rightward labor supply shift in 2012-13 and, possibly, in 2013-14,⁴ a new leftward labor demand shift in 2014-15, a leftward labor supply shift in 2015-16, and another leftward labor demand shift in 2016-17.⁷ (e) In construction (the data are available from 2011 on), a leftward labor demand shift in 2011-13 and, possibly, in 2013-14,⁴ was followed by a leftward labor supply shift in 2014-15, a rightward labor demand shift in 2015-16, and a new leftward labor supply shift in 2016-17.⁶ (f) In trade etc., a leftward labor supply shift in 2008-09 was followed by a leftward labor demand shift in 2009-10, a new leftward labor supply shift in 2010-11, a leftward labor demand shift in 2011-13 and, possibly, in 2013-14,⁴ a leftward labor supply shift in 2014-15, a rightward labor demand shift in 2015-16, and another

leftward labor demand shift in 2016-17.⁶ (g) In transportation etc., a leftward labor supply shift in 2008-09 was followed by a leftward labor demand shift and/or a binding reduction of a wage ceiling in 2009-13, possibly a rightward labor demand shift in 2013-14,⁴ a new leftward labor supply shift in 2014-15, a rightward labor demand shift in 2015-16, and another leftward labor supply shift in 2016-17.⁵ (h) In accommodation etc., a leftward labor supply shift in 2008-09 was followed by a leftward labor demand shift in 2009-10, a new leftward labor supply shift in 2010-11, a leftward labor demand shift in 2011-12, a rightward labor supply shift in 2012-13 and, possibly, in 2013-14,⁴ another leftward labor supply shift in 2014-15, and a rightward labor supply shift in 2015-17.⁷ (i) In information etc., a leftward labor supply shift in 2008-10 was followed by a leftward labor demand shift in 2010-13, possibly a rightward labor supply shift in 2013-14,⁴ a new leftward labor supply shift in 2014-15, a rightward labor

7. If the new method of calculating the data after the break is consistent with the initial method (i.e., if the result does not differ much from the result of the initial method), then the market probably ended up at a higher level of employment and a lower average wage compared to the beginning of the period.

supply shift in 2015-16, and a rightward labor demand shift in 2016-17.⁶ (j) In real estate, a rightward labor demand shift in 2008-10 was followed by a leftward labor demand shift in 2010-11, a leftward labor supply shift in 2011-13, possibly a rightward labor demand shift in 2013-14,⁴ a new leftward labor supply shift in 2014-15, a rightward labor supply shift in 2015-16, and a leftward labor supply shift in 2016-17.⁸ (k) In professional activities etc., a rightward labor demand shift in 2008-09 was followed by a leftward labor demand shift in 2009-13, possibly a rightward labor supply shift in 2013-14,⁴ a leftward labor supply shift in 2014-15, a new rightward labor demand shift in 2015-16, and a leftward labor demand shift in 2016-17.⁶ (l) In administrative activities etc., a rightward labor supply shift in 2008-09 was followed by a leftward labor supply shift in 2009-10, a leftward labor demand shift in 2010-13 and, possibly, in 2013-14,⁴ a rightward labor demand shift in 2014-15, a new rightward labor supply shift in 2015-16, and a rightward labor demand shift in 2016-17.⁷

Overall: (a) 2008-09 saw rightward labor demand shifts in real estate and professional activities etc., rightward labor supply shifts in mining etc. and administrative activities etc., and leftward labor supply shifts in the other sectors, resulting in an overall fall in employment (see Figure 2). (b) 2009-10 saw the continuation of a rightward labor demand shift in real estate and of leftward labor supply shifts in manufacturing and information etc., as well as a rightward labor supply shift in water supply etc., leftward labor supply shifts in mining etc. and administrative activities etc., and leftward labor demand shifts or binding reductions of wage ceilings in the other sectors, all resulting in an overall fall in employment. (c) 2010-11 saw the continuation of a rightward labor supply shift in water supply etc. and of a leftward labor supply shift in mining etc., as well as leftward labor supply shifts in trade etc. and accommodation, etc., and leftward labor demand shifts in the other sectors, all resulting in an overall fall in employment. (d) 2011-12 saw leftward labor supply shifts in electricity etc. and real estate, and leftward labor demand shifts in the other sectors. It was the only year in which employment fell in all twelve sectors. (e) 2012-13 saw the continuation of leftward labor supply shifts in electricity etc. and real estate, as well as rightward labor supply shifts in mining etc., water supply

etc., accommodation etc., and leftward labor demand shifts in the other sectors, all resulting in an overall fall in employment. (f) 2013-14 may have seen rightward labor demand shifts in mining etc., transportation etc., and real estate, leftward labor demand shifts in construction, trade etc., administrative activities etc., and rightward labor supply shifts in the other sectors, all resulting in an overall rise in employment.⁴ (g) 2014-15 saw a rightward labor demand shift in administrative activities etc., a leftward labor demand in water supply etc., and leftward labor supply shifts in the other sectors, all resulting in an overall fall in employment. (h) 2015-16 saw rightward labor demand shifts in construction, transportation etc., trade etc. professional activities etc., a leftward labor demand shift in mining etc., a leftward labor supply shift in water supply etc., and rightward labor supply shifts in the other sectors, all resulting in an overall rise in employment. (i) 2016-17 saw the continuation of a rightward labor supply shift in accommodation etc., as well as leftward labor supply shifts in construction, transportation etc., and real estate activities, rightward labor demand shifts in mining etc., manufacturing, information etc., and administrative activities etc., and leftward labor demand shifts in the other sectors, all resulting in an overall fall in employment.

In addition, the 2008-13 and 2014-17 statistics show that: (i) The largest rises in employment occurred in sectors with both high and medium-to-low employment at the beginning of the period under consideration: primarily in accommodation etc., secondarily in administrative activities etc. (ii) The largest falls in employment occurred in the sectors with the highest employment at the beginning of the period under consideration: primarily in trade etc., secondarily in manufacturing.

4. Developments in business numbers and size in the twelve sectors

According to the sectoral business figures (Figures 6: 1-12), the number of businesses: (a) In mining etc. decreased in 2008-13 (down 28%, marginally in 2008-09), possibly increased in 2013-14,⁴ and decreased again in 2014-17 (down 30%, marginally in 2015-16).⁹ In conjunction with the evolution of the number of people

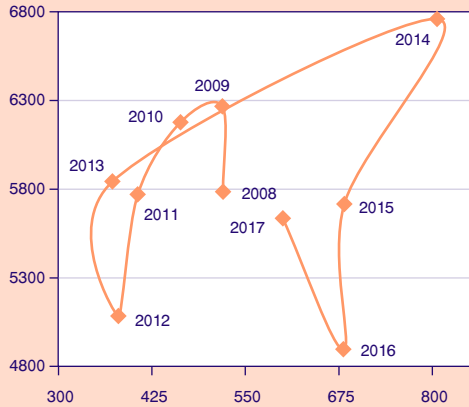
8. If the new method of calculating the data after the break is consistent with the initial method (i.e., if the result does not differ much from the result of the initial method), then the market probably ended up at a higher level of employment and a higher average wage compared to the beginning of the period.

9. If the new method of calculating the data after the break is consistent with the initial method (i.e., if the result does not differ much from the result of the initial method), then the sector ended up with more businesses compared to the beginning of the period.

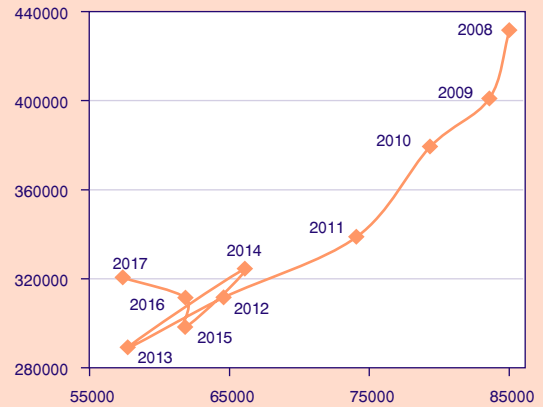
FIGURES 6

The evolution of the number of businesses and of the number of employed people (on the horizontal and the vertical axis, respectively): Greece, 2008-17

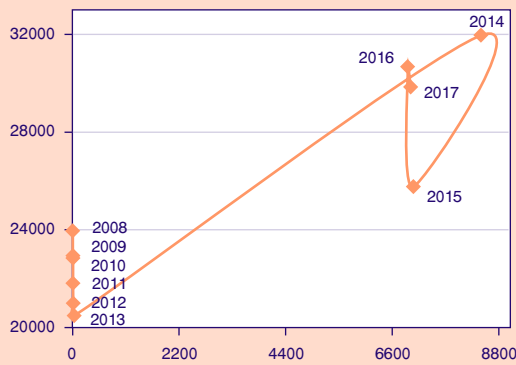
1. Mining-quarrying



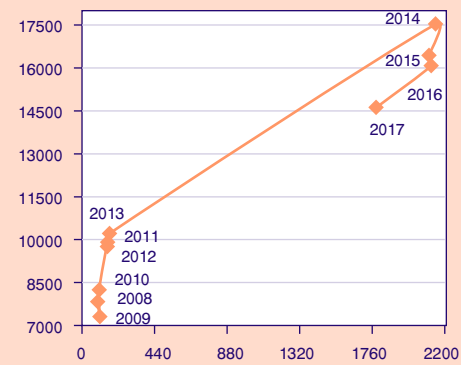
2. Manufacturing



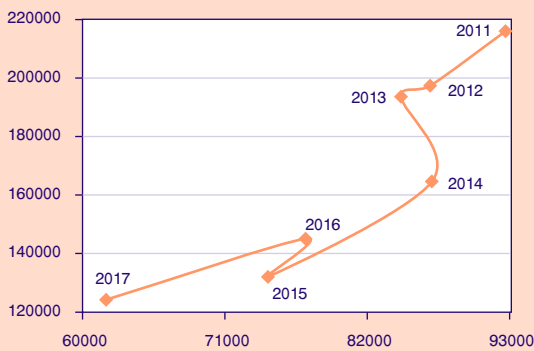
3. Electricity etc.



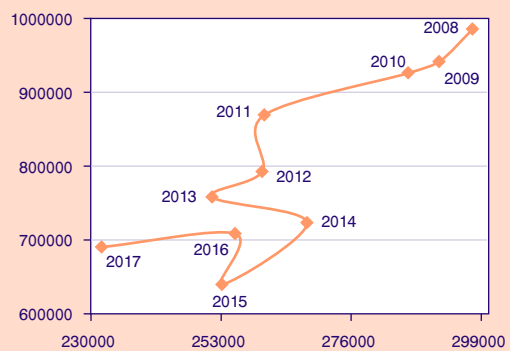
4. Water supply etc.



5. Construction

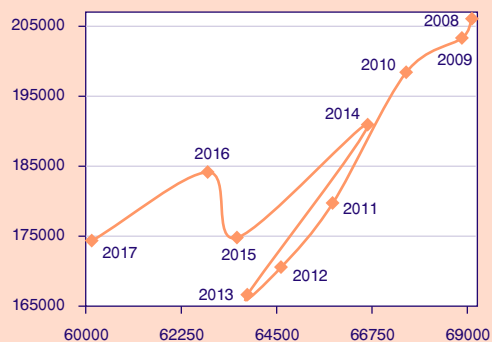


6. Trade-repair of motor vehicles

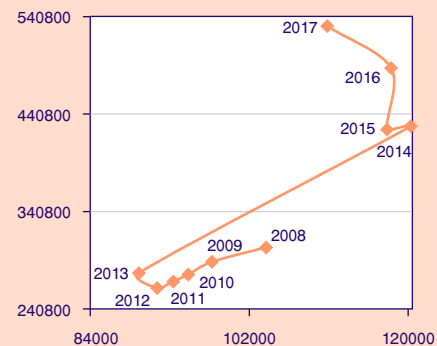


FIGURES 6 (continued)

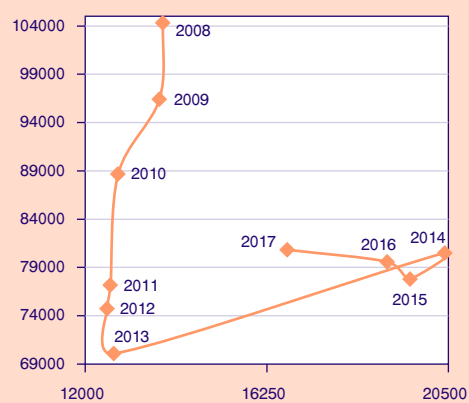
7. Transportation-storage



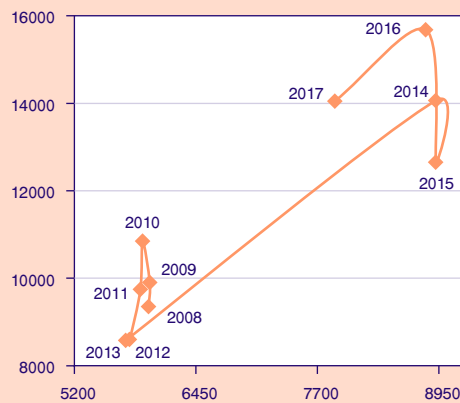
8. Accommodation-food service



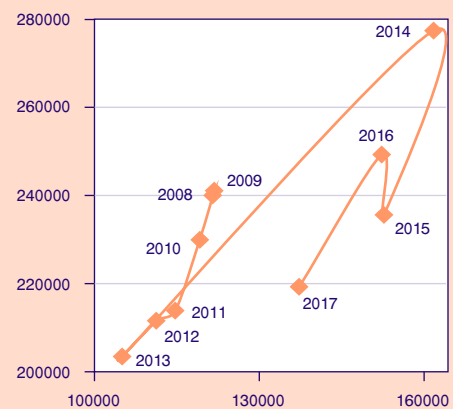
9. Information-communication



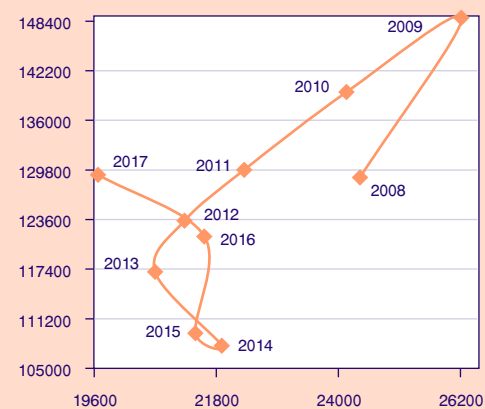
10. Real estate



11. Professional activities etc.



12. Administrative activities etc.



Source: See Figure 2.

employed, it turns out that, on average, the business size in terms of staff increased from 11 to 16 people in 2008-13, and from 8 to 9 people in 2014-17. (b) In manufacturing decreased in 2008-13 (down 32%), possibly increased in 2013-14,⁴ decreased again in 2014-15, increased in 2015-16, and decreased once again in 2016-17 (down 14% between 2014-17).¹⁰ In addition, it turns out that, on average, the business size in terms of staff remained stable at 5 people in 2008-13, and increased from 5 to 6 people in 2014-17. (c) In electricity etc. increased in 2008-10 (marginally in 2008-09) in the context of the market's opening up to competition, remained stable in 2010-11, increased again in 2011-13 and, possibly, in 2013-14⁴ (up 540% in 2008-13), decreased in 2014-16 and increased once again in 2016-17 (down 21% in 2014-17).⁹ In addition, it turns out that, on average, the business size in terms of staff decreased from 4.8 thousand to 640 people in 2008-13, and remained stable at 4 people in 2014-17. (d) In water supply etc. increased in 2008-2009, decreased in 2009-10, increased again in 2010-11, decreased marginally in 2011-12, increased in 2012-13 and, possibly, in 2013-14⁴ (up 75% in 2008-13), decreased in 2014-15, increased once again in 2015-16, and decreased in 2016-17 (down 17% in 2014-17).⁹ In addition, it turns out that, on average, the business size in terms of staff decreased from 82 to 62 in 2008-13, and remained stable at 8 people in 2014-17. (e) In construction decreased in 2011-13 (down 9%), possibly increased in 2013-14,⁴ decreased again in 2014-15, increased in 2015-16, and decreased once again in 2016-17 (down 34% in 2014-17).¹⁰ In addition, it turns out that, on average, the business size in terms of staff remained stable at 2 people. (f) In trade etc. decreased in 2008-13 (down 15%), possibly increased in 2013-14,⁴ decreased again in 2014-15, increased in 2015-16, and decreased once again in 2016-17 (down 14% in 2014-17).¹⁰ In addition, it turns out that, on average, the business size in terms of staff remained stable at 3 people. (g) In transportation etc. decreased in 2008-13 (down 8%), possibly increased in 2013-14,⁴ and decreased again in 2014-17 (down 10%).¹⁰ In addition, it turns out that, on average, the business size in terms of staff remained stable at 3 people. (h) In accommodation etc. decreased in 2008-13 (down 14%), possibly increased in 2013-14,⁴ decreased again in 2014-15, increased in 2015-16, and decreased once again in 2014-17 (down 8% in 2014-17).⁹ In addition, it turns out that, on average,

the business size in terms of staff remained stable at 3 people in 2008-13, and increased from 4 to 5 people in 2014-17. (i) In information etc. decreased in 2008-12, increased in 2012-13 and, possibly, in 2013-14⁴ (down 8% in 2008-13), and decreased again in 2014-17 (down 19%).⁹ In addition, it turns out that, on average, the business size in terms of staff decreased from 8 to 6 people in 2008-13, and increased from 4 to 5 people in 2014-17. (j) In real estate increased in 2008-09, decreased in 2009-13 (down 4% in 2008-13), possibly increased in 2013-14,⁴ increased marginally in 2014-15, and decreased again in 2015-17 (down 12% in 2014-17).⁹ In addition, it turns out that, on average, the business size in terms of staff decreased from 2 people to 1 person in 2008-13, and ranged between 1 person and 2 people in 2014-16, ending up at 2 people in 2017. (k) In professional activities etc. increased in 2008-09, decreased in 2009-13 (down 14% in 2008-13), possibly increased in 2013-14,⁴ and decreased again in 2014-17 (down 16% 2014-17).⁹ In addition, it turns out that, on average, the business size in terms of staff remained stable at 2 people. (l) In administrative activities etc. increased in 2008-09, decreased in 2009-13 (down 15% in 2008-13), possibly increased in 2013-14,⁴ decreased again in 2014-15, increased in 2015-16, and decreased once again in 2016-17 (down 10% in 2014-17).¹⁰ In addition, it turns out that, on average, the business size in terms of staff increased from 5 to 6 people in 2008-13, and from 5 to 7 people in 2014-17.

Overall, the number of businesses in: (a) 2008-09 went up in five sectors (water supply, real estate, professional activities etc., administrative activities etc., marginally in electricity etc.), down in the other sectors (marginally in mining etc.), and down overall. (b) 2009-10 went slightly up in electricity etc., down in the other sectors, and down overall. (c) 2010-11 went slightly up in water supply etc., remained stable in electricity etc., went down in the other sectors, and down overall. (d) 2011-12 went up in electricity etc., down in the other sectors (marginally in water supply etc.), and down overall. (e) 2012-13 went up in three sectors (water supply etc., electricity etc., information etc.), down in the other sectors, and down overall. (f) 2013-14 may have gone up in all sectors.⁴ (g) 2014-15 went marginally up in real estate, down in the other sectors, and down overall. (h) 2015-16 went up in six sectors (manufacturing, water supply etc., construction, trade etc.,

10. If the new method of calculating the data after the break is consistent with the initial method (i.e., if the result does not differ much from the result of the initial method), then the sector ended up with fewer businesses compared to the beginning of the period.

TABLE 1 The cases in which the labor markets were dominated by rightward demand shifts: Greece, 2008-13 and 2014-17

	Number of businesses	Average business size	Labor productivity, profitability	Sectors	Year
1	↑	↑	↓	Construction	2015-16
2	↑	↑	↓	Trade etc.	2015-16
3	↑	↑	↓	Professional activities etc.	2008-09
4	↓	↑	↓	Transportation etc.	2015-16
5	↓	↑	↓	Information etc.	2016-17
6	↓	↑	↓	Real estate	2009-10
7	↓	↑	↓	Professional activities etc.	2015-16
8	↓	↑	↓	Administrative activities etc.	2016-17
9	↓	↑	↑	Mining-quarrying	2016-17
10	↓	↑	↑	Manufacturing	2016-17
11	↓	↑	↑	Administrative activities etc.	2014-15
12	↑	↑	↑	Real estate	2008-09

Source: See Figure 2.

accommodation etc., administrative activities etc.), down in the other sectors (marginally in mining etc.), and up overall. (i) 2016-17 went up in electricity etc., down in the other sectors, and down overall.

The average size of businesses in terms of staff, generally: (i) Decreased considerably in two sectors (electricity etc., water supply etc.), decreased slightly or marginally in five sectors (manufacturing, trade etc., transportation etc., information etc., real estate), and increased slightly or marginally in the other five sectors during 2008-13. (ii) May have decreased considerably in two of the sectors mentioned above (electricity etc., water supply etc.), decreased slightly or marginally in seven sectors, and increased slightly or marginally in the other three sectors (transportation etc., accommodation etc., real estate) in 2013-14.⁴ (iii) Decreased marginally in professional activities etc., and increased marginally in the other eleven sectors during 2014-17.

In addition, the 2008-13 and 2014-17 statistics show that: (i) The smallest drops in the number of businesses occurred in sectors with relatively few businesses at the beginning of the period in question: primarily in water supply etc., secondarily in mining etc. (ii) The largest drops in the number of businesses occurred

in sectors with relatively many businesses at the beginning of the period: primarily in trade etc., secondarily in professional activities etc. (iii) The largest rises in the average size of businesses occurred in sectors that featured relatively large and medium-sized businesses in terms of staff at the beginning of the period: primarily in mining etc., secondarily in administrative activities etc. (iv) The largest falls in the average size of business occurred in the sectors that featured the largest businesses in terms of staff at the beginning of the period: primarily in electricity etc., secondarily in water supply etc. It also turns out that in all twelve times that the labor market was dominated by a rightward demand shift, in the same year, the average size of businesses in the sector grew in terms of staff. (See Table 1.)

5. Developments in labor productivity and profitability in the twelve sectors

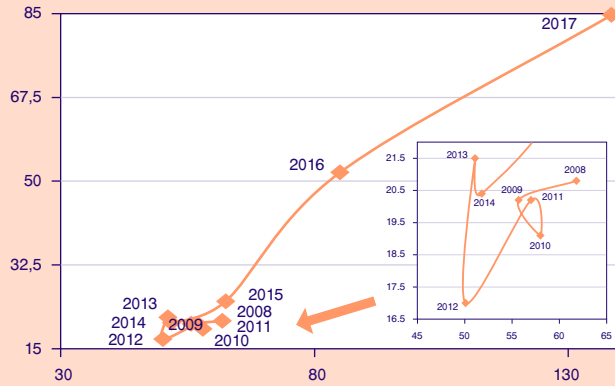
The business performance data (Figures 7: 1-12) show that labor productivity: (a) In mining etc. decreased in 2008-2009, increased in 2009-10, decreased again in 2010-12, increased in 2012-13 and, possibly, in 2013-

FIGURES 7

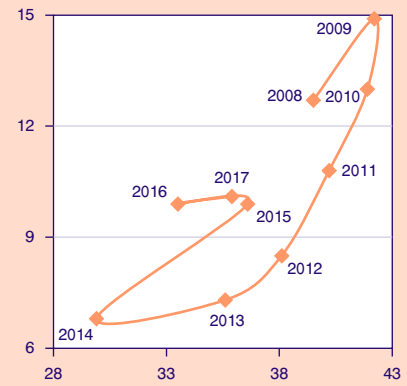
The evolution of labor productivity and of the profitability measure

(on the horizontal and the vertical axis, respectively; both in %): Greece, 2008-17

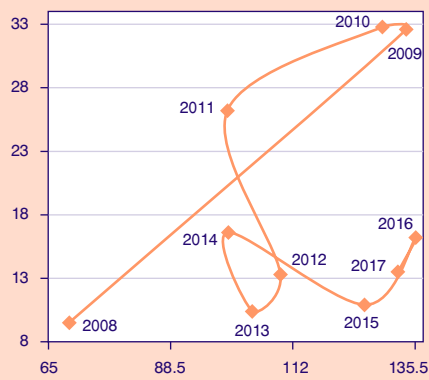
1. Mining-quarrying



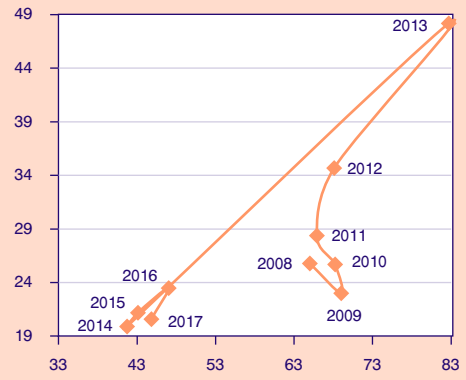
2. Manufacturing



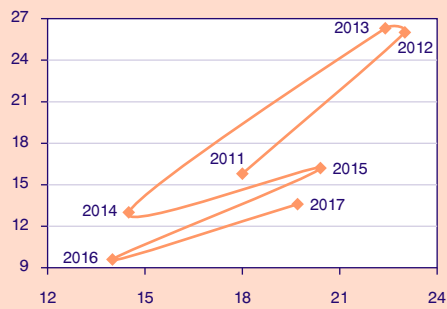
3. Electricity etc.



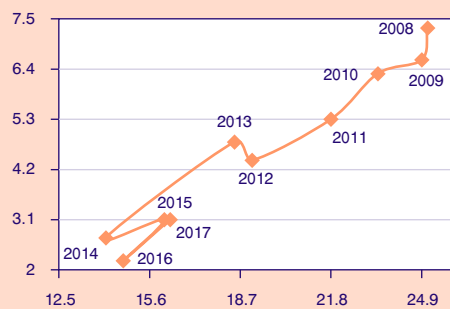
4. Water supply etc.



5. Construction

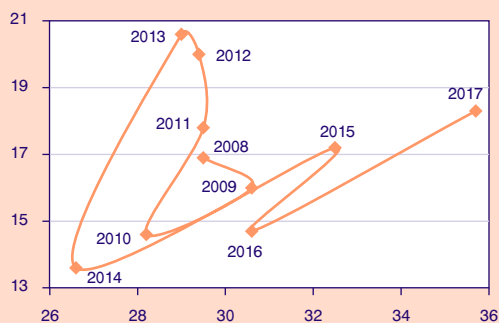


6. Trade-repair of motor vehicles

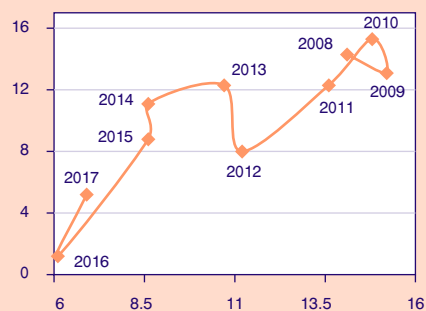


FIGURES 7 (continued)

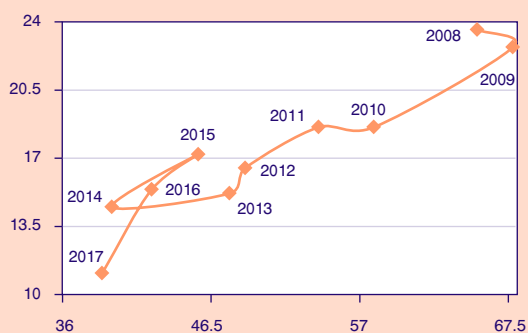
7. Transportation-storage



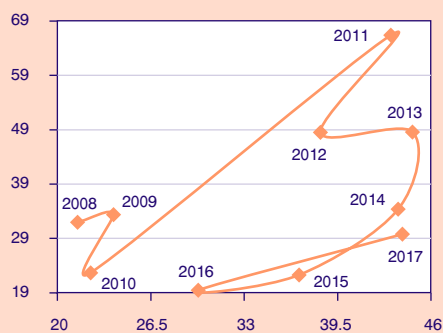
8. Accommodation-food service



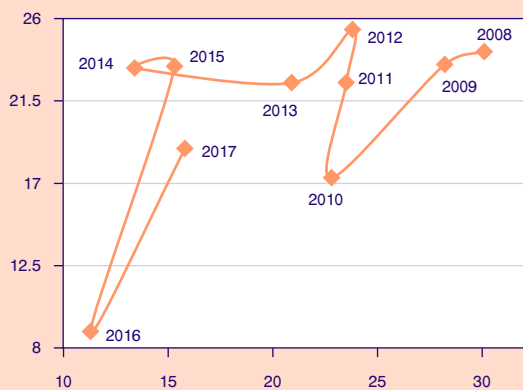
9. Information-communication



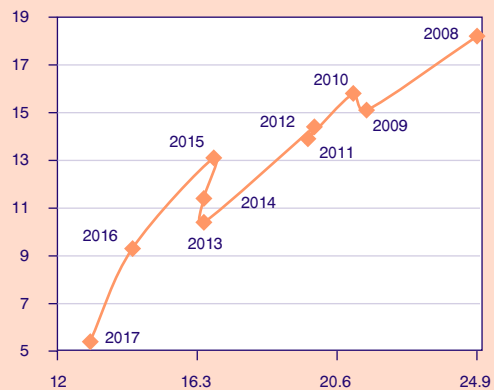
10. Real estate



11. Professional activities etc.



12. Administrative activities etc.



Source: See Figure 2.

14⁴ (down 17% in 2008-13), and increased in 2014-17 (up 167%).¹¹ (b) In manufacturing increased in 2008-09, decreased in 2009-13 (marginally in 2009-10) and, possibly, in 2013-14⁴ (down 10% in 2008-13), increased again in 2014-15, decreased in 2015-16, and increased once again in 2016-17 (up 20% in 2014-17).¹² (c) In electricity etc. increased in 2008-09, decreased in 2009-11, increased again in 2011-12, decreased in 2012-13 and, possibly, in 2013-14⁴ (up 51% in 2008-13), increased once again in 2014-16, and decreased in 2016-17 (up 33% in 2014-17).¹¹ (d) In water supply etc. increased in 2008-2009, decreased in 2009-11, increased again in 2011-13 (up 27% in 2008-13), possibly decreased in 2013-14,⁴ increased once again in 2014-16, and decreased in 2016-17 (up 7% in 2014-17).¹² (e) In construction increased in 2011-12, decreased in 2012-13 and, possibly, in 2013-14⁴ (up 24% in 2011-13), increased again in 2014-15, decreased in 2015-16, and increased once again in 2016-17 (up 36% in 2014-17).¹¹ (f) In trade etc. decreased in 2008-13 (marginally in 2008-09) and, possibly, in 2013-14⁴ (down 26% in 2008-13), increased in 2014-15, decreased again in 2015-16, and increased in 2016-17 (up 16% in 2014-17).¹² (g) In transportation etc. increased in 2008-09, decreased in 2009-10, increased again in 2010-11, decreased in 2011-13 (marginally in both years) and, possibly, in 2013-14⁴ (down 2% in 2008-13), increased in 2014-15, decreased in 2015-16, and increased once again in 2016-17 (up 34% in 2014-17).¹¹ (h) In accommodation etc. increased in 2008-09, decreased in 2009-13 (marginally in 2009-10) and, possibly, in 2013-14⁴ (down 24% in 2008-13), remained stable in 2014-15, decreased again in 2015-16, and increased in 2016-17 (down 20% in 2014-17).¹² (i) In information etc. increased in 2008-09, decreased in 2009-13 and, possibly, in 2013-14⁴ (down 27% in 2008-13), increased again in 2014-15, and decreased in 2015-17 (down 2% in 2014-17).¹² (j) In real estate increased in 2008-09, decreased in 2009-10, increased again in 2010-11, decreased in 2011-12, increased in 2012-13 (up 109% in 2008-13), possibly decreased in 2013-14,⁴ decreased in 2014-16, and increased once again in 2016-17 (up marginally in 2014-17).¹¹ (k) In professional activities etc. decreased in 2008-10, increased

in 2010-12 (marginally in 2011-12), decreased again in 2012-13 and, possibly, in 2013-14⁴ (down 31% in 2008-13), increased in 2014-15, decreased once again in 2015-16, and increased in 2016-17 (up 18% in 2014-17).¹² (l) In administrative activities etc. decreased in 2008-11 (marginally in 2009-10), increased marginally in 2011-12, decreased again in 2012-13 (down 34% in 2008-13), possibly remained stable in 2013-14,⁴ increased marginally in 2014-15, and decreased once again in 2015-17 (down 21% in 2014-17).¹²

It turns out that labor productivity in: (a) 2008-09 went down in four sectors (mining etc., professional activities etc., administrative activities etc., marginally in trade etc.) and up in seven sectors. (b) 2009-10 went down in ten sectors (marginally in manufacturing, accommodation etc., administrative activities etc.) and up in mining etc. (c) 2010-11 went down in eight sectors and up in three sectors (transportation etc., real estate, professional activities etc.). (d) 2011-12 went down in seven sectors (marginally in transportation etc.) and up in five sectors (electricity etc., water supply etc., construction and, marginally, in professional etc., and administrative activities etc.). (e) 2012-13 went down in nine sectors (marginally in transportation etc.) and up in three sectors (mining etc., water supply etc., real estate). (f) 2013-14 may have gone down in ten sectors, may have remained stable in administrative activities etc., and may have gone up in mining etc.⁴ (g) 2014-15 went down in real estate, remained stable in accommodation etc., and went up in ten sectors (marginally in administrative activities etc.). (h) 2015-16 went down in nine sectors and up in three sectors (mining etc., electricity etc., water supply etc.). (i) 2016-17 went down in four sectors (electricity etc., water supply etc., information etc., administrative activities etc.) and up in eight sectors.

The profitability measure: (a) In mining etc. decreased in 2008-2010, increased in 2010-11, decreased again in 2011-12, increased in 2012-13, possibly decreased in 2013-14⁴ (up 3% in 2008-13), and increased in 2014-17 (up 315%).¹³ (b) In manufacturing increased in 2008-09, decreased in 2009-13 (down 43% in 2008-13), possibly decreased in 2013-14,⁴ increased again in 2014-15, remained stable in 2015-16, and increased

11. If the new method of calculating the data after the break is consistent with the initial method (i.e., if the result does not differ much from the result of the initial method), then the sector ended up at a higher level of productivity compared to the beginning of the period.

12. If the new method of calculating the data after the break is consistent with the initial method (i.e., if the result does not differ much from the result of the initial method), then the sector ended up at a lower level of productivity compared to the beginning of the period.

13. If the new method of calculating the data after the break is consistent with the initial method (i.e., if the result does not differ much from the result of the initial method), then the sector ended up at a higher level of the profitability measure employed compared to the beginning of the period.

marginally in 2016-17 (up 49% in 2014-17).¹⁴ (c) In electricity etc. increased in 2008-10 (marginally in 2009-10), decreased in 2010-13 (up 9% in 2008-13), possibly increased in 2013-14,⁴ decreased again in 2014-15, increased in 2015-16, and decreased once again in 2016-17 (down 19% in 2014-17).¹³ (d) In water supply etc. decreased in 2008-2009, increased in 2009-13 (up 87% in 2008-13), possibly decreased in 2013-14,⁴ increased again in 2014-16, and decreased in 2016-17 (up 4% in 2014-17).¹⁴ (e) In construction increased in 2011-13 (up 66%, marginally in 2012-13), possibly decreased in 2013-14,⁴ increased again in 2014-15, decreased in 2015-16, and increased once again in 2016-17 (up 5% in 2014-17).¹⁴ (f) In trade etc. decreased in 2008-12 (marginally in 2009-10), increased marginally in 2012-13 (down 34% in 2008-13), possibly decreased in 2013-14,⁴ increased marginally again in 2014-15, decreased in 2015-16, and increased once again in 2016-17 (up 15% in 2014-17).¹⁴ (g) In transportation etc. decreased in 2008-10 (marginally in 2008-09), increased in 2010-13 (marginally in 2012-13), possibly decreased in 2013-14⁴ (up 22% in 2008-13), increased again in 2014-15, decreased in 2015-16, and increased once again in 2016-17 (up 35% in 2014-17).¹³ (h) In accommodation etc. decreased in 2008-09, increased in 2009-10, decreased again in 2010-12, increased in 2012-13 (down 14% in 2008-13), possibly decreased in 2013-14,⁴ decreased once again in 2014-16, and increased in 2016-17 (down 53% in 2014-17).¹⁴ (i) In information etc. decreased in 2008-10, remained stable in 2010-11, decreased again in 2011-13 and, possibly in 2013-14⁴ (down 36% in 2008-13), increased in 2014-15, and decreased once again in 2015-17 (down 23% in 2014-17).¹⁴ (j) In real estate increased in 2008-09, decreased in 2009-10, increased again in 2010-11, decreased in 2011-12, increased marginally in 2012-13 (up 52% in 2008-13), possibly decreased in 2013-14,⁴ decreased in 2014-16, and increased once again in 2016-17 (down 13% in 2014-17).¹⁴ (k) In professional activities etc. decreased in 2008-10, increased in 2010-12, decreased again in 2012-13 (down 7% in 2008-13), possibly increased in 2013-14,⁴ increased marginally in 2014-15, decreased once again in 2015-16, and increased in 2016-17 (down 19% in 2014-17).¹⁴ (l) In administrative activities etc. decreased in 2008-09, increased in 2009-10, decreased again in 2010-11, increased in 2011-12, decreased in 2012-13, possibly increased in 2013-14⁴ (down 43% in 2008-13), increased in 2014-15, and decreased once again in 2015-17 (down 53% in 2014-17).¹⁴

It turns out that the measure of profitability in: (a) 2008-09 went down in eight sectors and up in three sectors (manufacturing, electricity etc., real estate). (b) 2009-10 went down in seven sectors (marginally in trade etc.) and up in four sectors (water supply, accommodation etc., administrative activities etc., and, marginally, in electricity etc.). (c) 2010-11 went down in six sectors, up in four sectors (mining etc., water supply etc., transportation etc., real estate), and remained stable in information etc. (d) 2011-12 went down in seven sectors and up in five sectors (construction, water supply etc., transportation etc., professional activities etc., administrative activities etc.). (e) 2012-13 went down in five sectors and up in seven sectors (mining etc., water supply etc., accommodation etc. and, marginally, in construction, trade etc., transportation etc., real estate). (f) 2013-14 may have gone down in nine sectors and may have gone up in three sectors (electricity etc., professional activities etc., administrative activities etc.).⁴ (g) 2014-15 went down in three sectors (electricity etc., accommodation etc., real estate) and up in nine sectors (marginally in trade etc. and professional activities etc.). (h) 2015-16 went down in eight sectors, up in three sectors (mining etc., electricity etc., water supply etc.) and remained stable in manufacturing. (i) 2016-17 went down in four sectors (electricity etc., water supply etc., information etc., administrative activities etc.) and up in eight sectors (marginally in manufacturing).

Overall, the 2008-13 and 2014-17 statistics show that: (i) The largest increases in labor productivity occurred in sectors with the highest or very high productivity at the beginning of the period under consideration: primarily in mining etc., secondarily in electricity etc. (ii) The largest decreases in labor productivity occurred in sectors with very high or very low labor productivity at the beginning of the period: primarily in information etc., secondarily in administrative activities etc. (iii) The largest increases in profitability occurred in sectors with low profitability or no profitability at the beginning of the period: primarily in electricity etc., secondarily in construction. (iv) The largest decreases in profitability occurred in sectors with very high or average profitability at the beginning of the period: primarily in accommodation etc., secondarily in manufacturing.

In addition, it turns out that in all cases, in which that the labor market was dominated by a leftward demand shift or a binding reduction of a wage ceiling, and (i) sectoral profitability fell, then labor productivity also fell (19 cases, see Table 2), (ii) sectoral labor productivity

14. If the new method of calculating the data after the break is consistent with the initial method (i.e., if the result does not differ much from the result of the initial method), then the sector ended up at a lower level of the profitability measure employed compared to the beginning of the period.

TABLE 2 The cases in which the labor markets were dominated by leftward demand shifts and/or binding reductions of wage ceilings: Greece, 2008-13 and 2014-17

	Labor productivity	Profitability	Sectors	Years
1	↓	↓	Mining-quarrying	2011-12
2-4	↓	↓	Manufacturing	2010-11, 2011-12, 2012-13
5-6	↓	↓	Electricity etc.	2010-11, 2016-17
7	↓	↓	Water supply etc.	2016-17
8	↓	↓	Construction	2012-13
9-10	↓	↓	Trade etc.	2009-10,* 2011-12
11	↓	↓	Transportation etc.	2009-10*
12	↓	↓	Accommodation etc.	2011-12
13-15	↓	↓	Information etc.	2010-11,* 2011-12, 2012-13
16-17	↓	↓	Professional activities etc.	2009-10,* 2012-13
18-19	↓	↓	Administrative activities etc.	2010-11, 2012-13
20	↓	↑	Electricity etc.	2009-10*
21	↓	↑	Trade etc.	2012-13
22	↓	↑	Accommodation etc.	2009-10*
23-24	↓	↑	Transportation etc.	2011-12, 2012-13
25	↑	↑	Mining-quarrying	2015-16
26-27	↑	↑	Water supply etc.	2011-12, 2014-15
28	↑	↑	Construction	2011-12
29	↑	↑	Trade etc.	2016-17
30	↑	↑	Transportation etc.	2010-11
31	↑	↑	Real estate	2010-11
32-34	↑	↑	Professional activities etc.	2010-11, 2011-12, 2016-17
35	↑	↑	Administrative activities etc.	2011-12

Source: See Figure 2.

* Pay cuts in the form of wage ceilings were applied in state-controlled enterprises in 2010.

TABLE 3 The cases in which the labor markets were dominated by leftward supply shifts: Greece, 2008-13 and 2014-17

	Labor productivity	Profitability	Sectors	Years
1	↓	↓	Mining-quarrying	2010-11
2	↓	↓	Manufacturing	2009-10
3	↓	↓	Electricity etc.	2012-13
4-5	↓	↓	Trade etc.	2008-09, 2010-11
6	↓	↓	Accommodation etc.	2010-11
7	↓	↓	Information etc.	2009-10
8-9	↓	↓	Real estate	2011-12, 2014-15
10	↓	↓	Administrative activities etc.	2009-10
11	↑	↓	Manufacturing	2008-09
12	↑	↓	Electricity etc.	2011-12
13	↑	↓	Water supply etc.	2008-09
14	↑	↓	Transportation etc.	2008-09
15	↑	↓	Accommodation etc.	2008-09
16	↑	↓	Information etc.	2008-09
17	↑	↓	Professional activities etc.	2014-15
18-19	↑	↑	Mining-quarrying	2009-10, 2014-15
20	↑	↑	Manufacturing	2014-15
21-22	↑	↑	Electricity etc.	2008-09, 2014-15
23	↑	↑	Water supply etc.	2015-16
24-25	↑	↑	Construction	2014-15, 2016-17
26	↑	↑	Trade etc.	2014-15
27-28	↑	↑	Transportation etc.	2014-15, 2016-17
29	↑	↑	Information etc.	2014-15
30-31	↑	↑	Real estate	2012-13, 2016-17
32	–	↓	Accommodation etc.	2014-15

Source: See Figure 2.

TABLE 4 The cases in which the number of businesses in a sector decreased: Greece, 2008-13 and 2014-17

	Average size	Labor market	Sectors	Years
1-2	↓	labor demand ↓	Mining-quarrying	2011-12, 2015-16
3-4	↓	labor demand ↓	Manufacturing	2010-11, 2014-15
5	↓	labor demand ↓	Water supply	2011-12
6	↓	labor demand ↓	Construction	2011-12
7-8	↓	labor demand ↓	Trade etc.	2011-13
9-12	↓	labor demand or wage ceilings ↓	Transportation etc.	2009-13*
13-14	↓	labor demand or wage ceilings ↓	Accommodation etc.	2009-10,* 2011-12
15	↓	labor demand ↓	Information etc.	2010-12
16	↓	labor demand ↓	Real estate	2010-11
17-19	↓	labor demand or wage ceilings ↓	Professional activities etc.	2009-11,* 2016-17
20-22	↓	labor demand ↓	Administrative activities etc.	2011-13
23	↓	labor supply ↓	Mining-quarrying	2014-15
24-26	↓	labor supply ↓	Manufacturing	2008-10, 2014-15
27	↓	labor supply ↓	Electricity etc.	2014-15
28	↓	labor supply ↓	Construction	2014-15
29-30	↓	labor supply ↓	Trade etc.	2008-09, 2014-15
31-33	↓	labor supply ↓	Transportation etc.	2008-09, 2014-15, 2016-17
34	↓	labor supply ↓	Accommodation etc.	2010-11
35-36	↓	labor supply ↓	Information etc.	2008-10
37	↓	labor supply ↓	Real estate	2011-12
38	↓	labor supply ↓	Professional activities etc.	2014-15
39	↑	labor demand ↑	Mining-quarrying	2016-17
40	↑	labor demand ↑	Manufacturing	2016-17
41	↑	labor demand ↑	Transportation etc.	2015-16
42	↑	labor demand ↑	Information etc.	2016-17

TABLE 4 (continued)

	Average size	Labor market	Sectors	Years
43	↑	labor demand ↑	Real estate	2009-10
44	↑	labor demand ↑	Professional activities etc.	2015-16
45-46	↑	labor demand ↑	Administrative activities etc.	2014-15, 2016-17
47-48	↑	labor demand ↓	Manufacturing	2011-13
49	↑	labor demand ↓	Water supply etc.	2016-17
50	↑	labor demand ↓	Construction	2012-13
51-52	↑	labor demand or wage ceilings ↓	Trade etc.	2009-10,* 2016-17
53-54	↑	labor demand ↓	Professional activities etc.	2011-13
55	↑	labor demand ↓	Administrative activities etc.	2010-11
56-57	↑	labor supply ↑	Mining-quarrying	2008-09, 2012-13
58	↑	labor supply ↑	Electricity etc.	2015-16
59	↑	labor supply ↑	Water supply etc.	2009-10
60-61	↑	labor supply ↑	Accommodation etc.	2012-13, 2016-17
62	↑	labor supply ↑	Information etc.	2015-16
63	↑	labor supply ↑	Real estate	2015-16
64-65	↑	labor supply ↓	Mining-quarrying	2009-11
66	↑	labor supply ↓	Construction	2016-17
67	↑	labor supply ↓	Trade etc.	2010-11
68-69	↑	labor supply ↓	Accommodation etc.	2008-09, 2014-15
70	↑	labor supply ↓	Information etc.	2014-15
71-72	↑	labor supply ↓	Real estate	2012-13, 2016-17
73	↑	labor supply ↓	Administrative activities etc.	2009-10

Source: See Figure 2.

* Pay cuts in the form of wage ceilings were applied in state-controlled enterprises in 2010.

TABLE 5 The cases in which the sectoral average business size in terms of personnel decreased: Greece, 2008-13 and 2014-17

	Profitability	Labor market	Sectors	Years
1	↓	labor demand ↓	Mining-quarrying	2011-12
2	↓	labor demand ↓	Manufacturing	2010-11
3-4	↓	labor demand ↓	Electricity etc.	2010-11, 2016-17
5	↓	labor demand ↓	Trade etc.	2011-12
6	↓	labor demand or wage ceilings ↓	Transportation etc.	2009-10*
7	↓	labor demand ↓	Accommodation etc.	2011-12
8-10	↓	labor demand ↓	Information etc.	2010-13
11	↓	labor demand or wage ceilings ↓	Professional activities etc.	2009-10*
12	↓	labor demand ↓	Administrative activities etc.	2012-13
13-14	↓	labor supply ↓	Manufacturing	2008-10
15-16	↓	labor supply ↓	Electricity etc.	2011-13
17	↓	labor supply ↓	Water supply etc.	2008-09
18	↓	labor supply ↓	Trade etc.	2008-09
19	↓	labor supply ↓	Transportation etc.	2008-09
20	↓	labor supply ↓	Accommodation etc.	2010-11
21-22	↓	labor supply ↓	Information etc.	2008-10
23-24	↓	labor supply ↓	Real estate	2011-12, 2014-15
25	↓	labor supply ↓	Professional activities etc.	2014-15
26	↑	labor demand ↓	Mining-quarrying	2015-16
27	↑	labor demand or wage ceilings ↓	Electricity etc.	2009-10*
28-29	↑	labor demand ↓	Water supply etc.	2011-12, 2014-15
30	↑	labor demand ↓	Construction	2011-12
31	↑	labor demand ↓	Trade etc.	2012-13
32-34	↑	labor demand ↓	Transportation etc.	2010-13
35	↑	labor demand or wage ceilings ↓	Accommodation etc.	2009-10*
36	↑	labor demand ↓	Real estate	2010-11

TABLE 5 (continued)

	Profitability	Labor market	Sectors	Years
37-38	↑	labor demand ↓	Professional activities etc.	2010-11, 2016-17
39	↑	labor demand ↓	Administrative activities etc.	2011-12
40-41	↑	labor supply ↑	Water supply etc.	2010-11, 2012-13
42	↑	labor supply ↓	Mining-quarrying	2014-15
43	↑	labor supply ↓	Manufacturing	2014-15
44-45	↑	labor supply ↓	Electricity etc.	2008-09, 2014-15
46	↑	labor supply ↓	Water supply etc..	2015-16
47	↑	labor supply ↓	Construction	2014-15
48	↑	labor supply ↓	Trade etc.	2014-15
49-50	↑	labor supply ↓	Transportation etc.	2014-15, 2016-17

Source: See Figure 2.

* Pay cuts in the form of wage ceilings were applied in state-controlled enterprises in 2010.

rose, then profitability also rose (11 cases). In all 14 cases that the labor market was dominated by a leftward supply shift and sectoral profitability rose, labor productivity also rose (see Table 3). In all 38 cases that both the number of businesses and the average size of businesses in a sector fell, the labor market was dominated by a leftward demand shift or a binding reduction of a wage ceiling, and, consequently, by a reduction in employment (see Table 4). In all 25 cases that both the average size of businesses and sectoral profitability fell, the labor market was dominated by a leftward demand shift or a binding reduction of a wage ceiling, and, consequently, by a reduction in employment (see Table 5).

6. Similarities with developments elsewhere in the European Union

It may not be appropriate to attribute the above developments exclusively to the recession or to domestic factors, especially if similarities appear in other EU

countries. That is, economies whose sectors operate under an increasingly converging legal, market competition, financial, export, and macroeconomic framework. The most conspicuous similarities involve the ups and downs in the numbers of businesses and staff numbers (a) in manufacturing in Greece, Spain, Italy, and Croatia, and (b) in trade etc. in Greece and Croatia (Figures 8: 1-2)¹⁵.

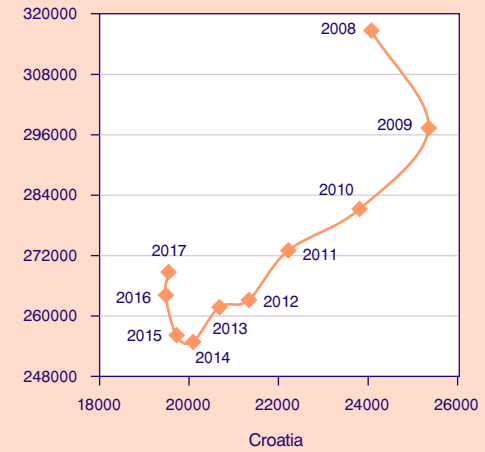
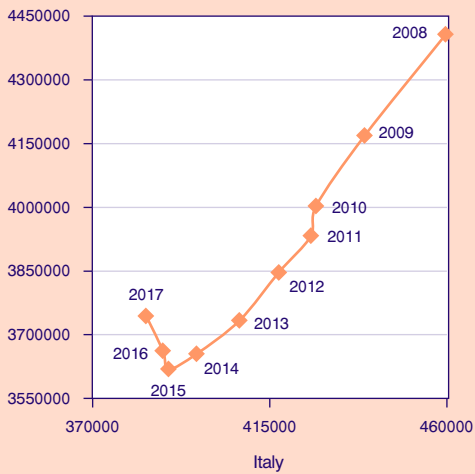
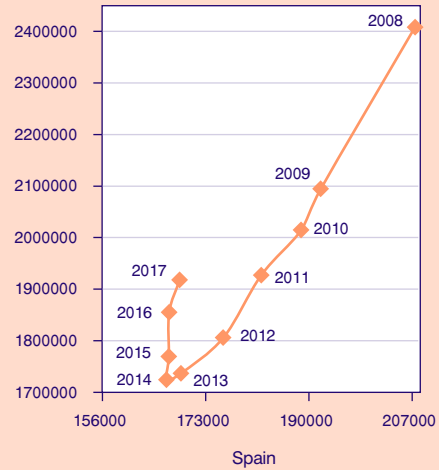
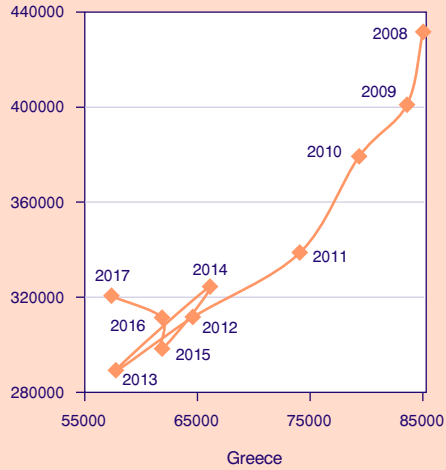
The said similarities go beyond the duration of the downturns in these countries. In Greece, the GDP contracted for eight successive years, in Spain for four years, in Italy for three years, in Croatia for five years; in both Greece and Croatia employment contracted for five matching years, in Spain it contracted for six years, and in Italy for four years. However, the evolution of staff numbers over time in Italian manufacturing differs from the evolution of employment in Italy, and is more similar to the evolution of staff numbers in Greek manufacturing. The evolution of the number of businesses in Italian manufacturing differs from the evolution of the Italian GDP, and is more similar to the

15. The latter sector was the largest in terms of personnel and business numbers at the beginning of the period in Greece, and the former sector was the second largest in terms of personnel at the beginning of the period.

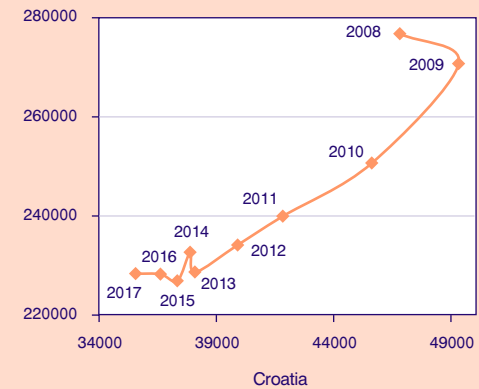
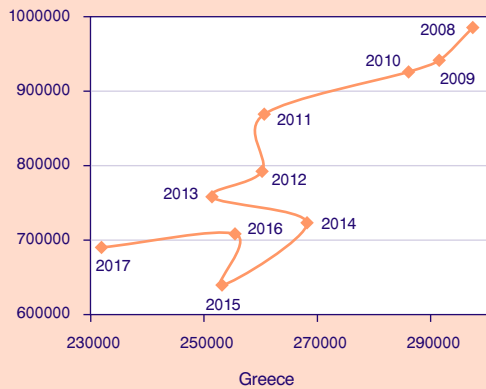
FIGURES 8

Similar patterns in the development of the number of businesses and of the number of employed people (on the horizontal and on the vertical axis, respectively): 2008-17

1. Manufacturing



2. Trade-repair of motor vehicles etc.

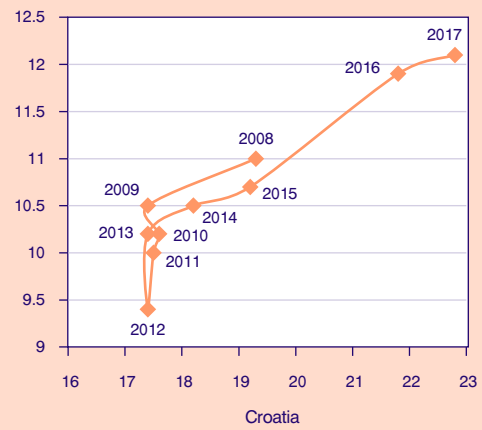
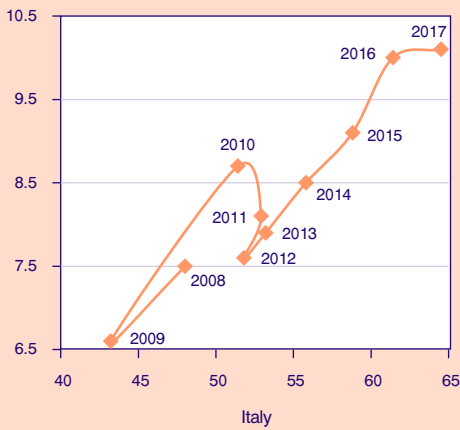
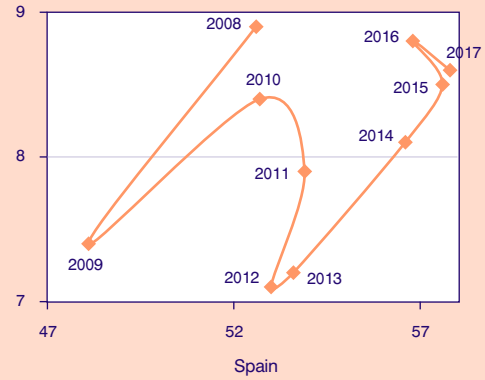
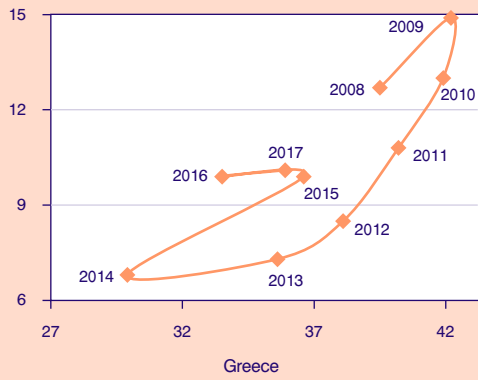


Source: See Figure 2.

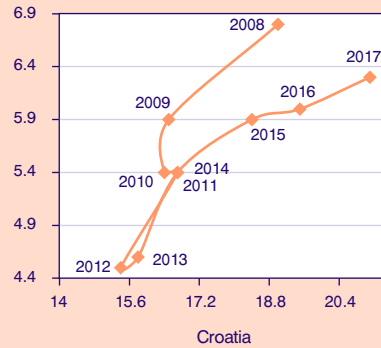
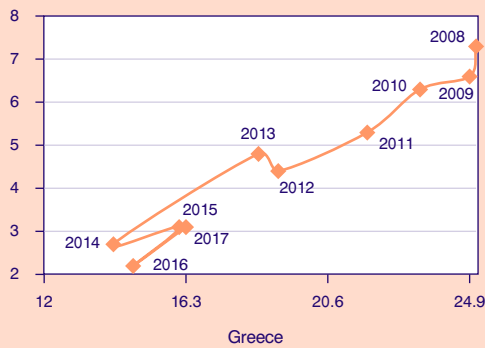
FIGURES 9

Comparison of select labor productivity and profitability patterns (on the horizontal and on the vertical axis, respectively): 2008-17

1. Manufacturing



2. Trade-repair of motor vehicles etc.



Source: See Figure 2.

evolution of the number of businesses in Greek manufacturing. The evolution of the number of businesses in Croatian trade etc. differs from the evolution of the Croatian GDP, and is more similar to the evolution of the number of businesses in Greek trade etc. The evolution of staff numbers in Greek trade etc. differs from the evolution of employment in Greece and is more similar to the evolution of the corresponding number in Croatian trade etc.

At the same time, the profitability measure in Greek manufacturing remained higher than in Italian and Spanish manufacturing, but fell below the profitability measure in Croatian manufacturing. Labor productivity in Greek manufacturing also fell, but remained higher than labor productivity in Croatian manufacturing.¹⁶ Both profitability and labor productivity measures in Greek trade etc. fell compared to Croatia, and in Croatia they recovered after 2012. (See Figures 9.)

7. Conclusions

On the basis of the official 2008-13 and 2014-17 statistics, we deduce that the twelve sectors of Greece's *business economy*, along with their respective labor markets, moved at different paces and/or in different ways during the period in question. For instance, while employment generally decreased in trade etc. and in manufacturing, and in all twelve sectors during 2011-12, by the end of the period, employment had increased in accommodation etc. and in administrative activities etc. While many businesses exited trade and professional activities etc. (which, in turn, may have adversely affected competition in the respective markets), and during 2014-15 numbers fell in all sectors except one, rather few business exited the water supply etc. sector or mining-quarrying. While the average size of businesses in terms of personnel increased in mining-quarrying and in administrative activities etc., it decreased in electricity etc. and in water supply etc. While labor productivity increased in mining etc. and in electricity etc., it fell in information etc. and in administrative activities etc. While the profitability measure increased in electricity etc. and in construction, it decreased in accommodation etc. and in manufacturing.

In addition, we find that: (a) whenever the labor market was dominated by a leftward demand shift or a binding reduction of a wage ceiling, and profitability fell, labor productivity also fell. (b) Whenever both the

number and the average size of businesses in a sector fell, the respective labor market was or had been dominated by a leftward demand shift or a binding reduction of a binding wage ceiling, and, consequently, by a reduction in employment. (c) Whenever both the average size of businesses and sectoral profitability fell, the labor market was or had been dominated by a leftward demand shift or a binding reduction of a wage ceiling, and, hence, by a reduction in employment. (d) The developments in the number of businesses and employees in manufacturing and trade etc. resemble (are similar to the) patterns in other EU Member States.

When more data become available about the sectoral responses and reactions to the pandemic, to the steps taken by the authorities, and to the Recovery and Resilience or other expansionary interventions, we will revisit the issue and report our findings on the operation of the *business economy* in general.

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16. For more on manufacturing across the EU, see Prodromidis et al., 2020.

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