Construction

Building and civil engineering projects typically take much longer from conception to completion than in many other sectors. Furthermore, as with other large scale projects (such as aircraft or ship-building), the construction of many projects often involves a large number of sub-contracting enterprises with various specialisations, organised by a project co-ordinating enterprise or lead developer.

One issue that has gained greater visibility in recent years has been the energy efficiency of buildings, both residential and non-residential. In 2002 the energy performance of buildings directive [1] was adopted, and had to be transposed by January 2006. This directive includes a framework to calculate energy performance and minimum standards. The implementation of this directive has been delayed in a number of Member States.

The European Construction Industry Federation [2] provides a project-based breakdown of construction output. According to their EU [3] estimates for 2006 and 2007, production in real terms was rising at its fastest pace for private non-residential building and for new house building, while the slowest growth was recorded for public non-residential and renovation and maintenance.

(1) Directive 2002/91/EC of the European Parliament and of the Council of 16 December 2002 on the energy performance of buildings; Official Journal L65 p. 1, of 4 January 2003.
(2) FIEC (The European Construction Industry Federation), more information at: http://www.fiec.eu.
(3) EU-27 excluding Estonia, Greece, Cyprus, Latvia, Lithuania, Luxembourg, Malta, Poland and Slovenia.

STRUCTURAL PROFILE

The construction sector (NACE Section F) had close to 2.7 million enterprises that together generated a combined value added of EUR 433.5 billion in the EU-27 in 2004 and employed 13.2 million persons, equivalent to 8.5 % of the non-financial business economy's (NACE Sections C to I and K) value added and 10.5 % of its employment (see Table 15.1). The United Kingdom had the largest construction sector in the EU-27 with a 19.0 % share of the EU-27 total in 2004 (see Table 15.2). Spain had the second largest sector in value added terms, with a 17.3 % share, which was close to double its 9.0 % share of value added in the EU-27's non-financial business economy. Unsurprisingly, therefore, Spain was the most specialised Member State [4] in the construction sector in 2004 as 16.3 % of its non-financial business economy value added was generated in this sector, far ahead of the next most specialised countries, namely Luxembourg (11.4 %; 2003) and Portugal (11.0 %). Slovakia, Germany, Hungary and Poland reported the lowest relative shares, as the construction sector accounted for less than 5.5 % of the value added generated in their respective non-financial business economies.

(4) Luxembourg, 2003; Ireland, Greece, Cyprus and Malta, not available.

The statistical classification of economic activities covers construction activities within NACE Section F which is the same as NACE Division 45. Some technical activities related to the construction sector, although not formally part of it, such as architectural services or landscaping, are covered within Chapter 22. Some providers of real estate services, such as property developers, are closely related to construction and these are covered in Subchapter 23.1.

Within NACE, construction is defined according to chronological stages of the construction process, starting with demolition and site preparation (NACE Group 45.1), passing through general construction activities (NACE Group 45.2), and ending with installation (NACE Group 45.3) and completion work (NACE Group 45.4). One final construction activity covers the renting with an operator of construction equipment (NACE Group 45.5). Each of these five groups is treated in a separate subchapter.

NACE
45: construction;
45.1: site preparation;
45.2: building of complete constructions or parts thereof; civil engineering;
45.3: building installation;
45.4: building completion;
45.5: renting of construction or demolition equipment with operator.

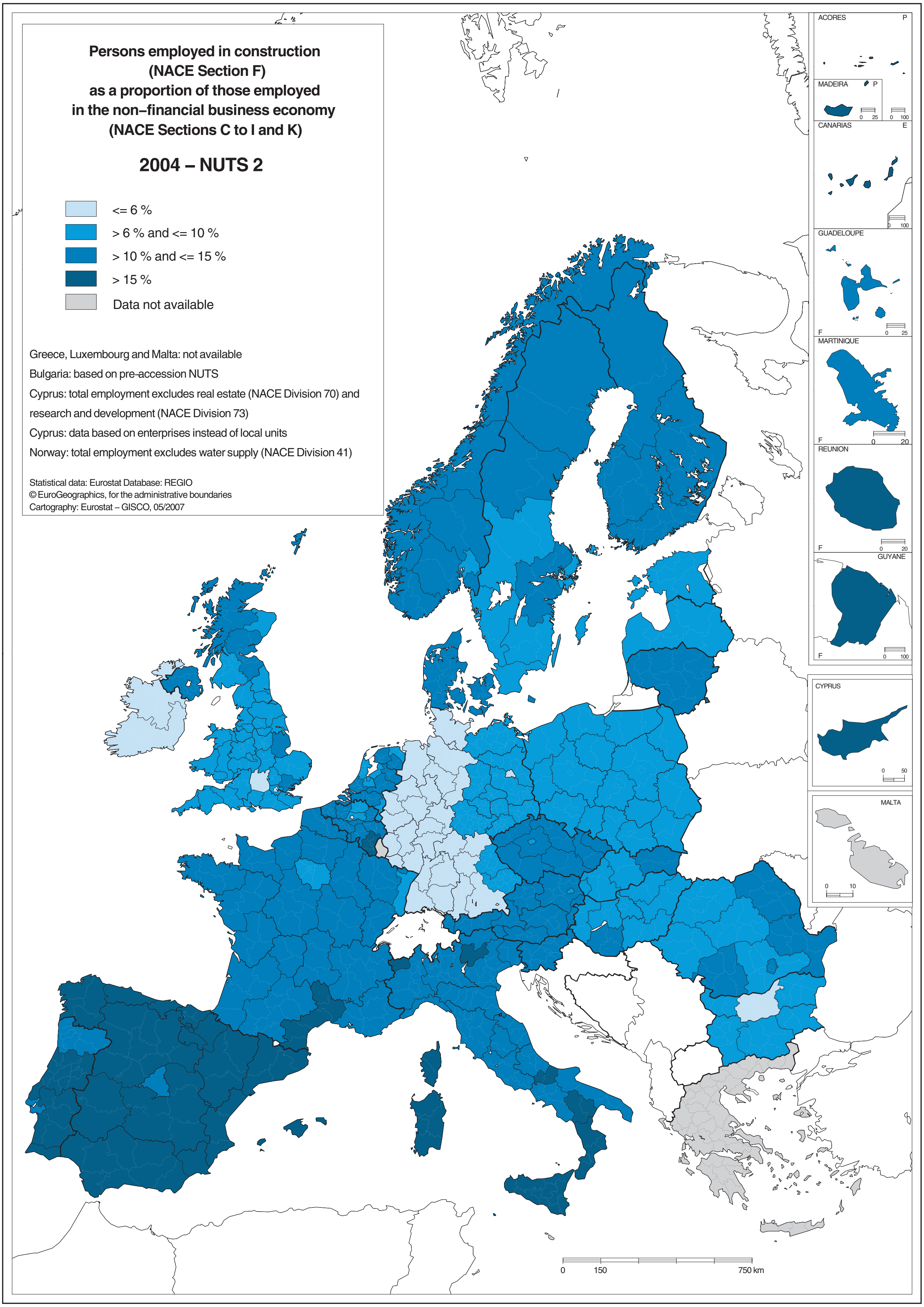

Persons employed in construction
(NACE Section F)
as a proportion of those employed
in the non–financial business economy
(NACE Sections C to I and K)
2004 – NUTS 2
<= 6 %
> 6 % and <= 10 %
> 10 % and <= 15 %
> 15 %
Data not available
Greece, Luxembourg and Malta: not available
Bulgaria: based on pre-accession NUTS
Cyprus: total employment excludes real estate (NACE Division 70) and research and development (NACE Division 73)
Cyprus: data based on enterprises instead of local units
Norway: total employment excludes water supply (NACE Division 41)
Statistical data: Eurostat Database: REGIO
© EuroGeographics, for the administrative boundaries
Cartography: Eurostat – GISCO, 05/2007
ACORES
MADEIRA
CANARIAS
GUADELOUPE
MARTINIQUE
REUNION
GUYANE
CYPRUS
MALTA
0
150
750 km

Table 15.1

Construction (NACE Section F)
Structural profile, EU-27, 2004

	No. of enterprises		Turnover		Value added		Employment	
	(thousands)	(% of total)	(EUR million)	(% of total)	(EUR million)	(% of total)	(thousands)	(% of total)
Construction	2 694.9	100.0	1 289 494	100.0	433 505	100.0	13 153.3	100.0
Site preparation (1)	102.0	3.8	44 400	3.4	15 700	3.6	420.0	3.2
General construction	1 096.9	40.7	832 346	64.5	251 338	58.0	7 166.7	54.5
Building installation	674.3	25.0	249 582	19.4	96 945	22.4	3 125.1	23.8
Building completion	807.9	30.0	156 233	12.1	66 261	15.3	2 371.5	18.0
Renting of construction or demolition equipment with operator (1)	13.3	0.5	6 880	0.5	3 260	0.8	74.0	0.6

(1) Rounded estimates based on non-confidential data.
Source: Eurostat (SBS)

Table 15.2

Construction (NACE Section F)
Structural profile: ranking of top five Member States, 2004

			Share of non-financial business economy			
Rank	Value added (EUR million) (1)	Employment (thousands) (1)	No. of enterprises (2)	Turnover (2)	Value added (2)	Employment (2)
1	United Kingdom (82 281)	Spain (2 455.7)	Portugal (19.4 %)	Spain (12.7 %)	Spain (16.3 %)	Spain (19.1 %)
2	Spain (74 871)	Italy (1 748.4)	Finland (17.5 %)	Portugal (10.8 %)	Luxembourg (11.4 %)	Luxembourg (16.2 %)
3	France (59 979)	Germany (1 624.0)	France (17.1 %)	Estonia (8.3 %)	Portugal (11.0 %)	Portugal (15.6 %)
4	Germany (56 563)	France (1 547.6)	Czech Republic (17.1 %)	Latvia (8.0 %)	Austria (9.5 %)	Italy (11.9 %)
5	Italy (52 870)	United Kingdom (1 347.4)	Spain (15.4 %)	Czech Republic (7.8 %)	Netherlands (9.5 %)	Slovenia (11.3 %)

(1) Greece and Malta, not available; Luxembourg, 2003.
(2) Ireland, Greece, Cyprus and Malta, not available; Luxembourg, 2003.
Source: Eurostat (SBS)

The situation with respect to employment was somewhat different. The Spanish construction sector was the largest by this measure with 2.5 million persons employed, 18.7 % of the EU-27 total, ahead of Italy (13.3 %), Germany (12.3 %) and France (11.8 %). The United Kingdom, which contributed the largest share of EU-27 value added in construction, had only the fifth largest workforce, with just 10.2 % of the EU-27 total. The map on page 258 shows the contribution of the construction sector to employment within the non-financial business economy (NACE Sections C to I and K) of each region. The importance of this activity in several southern and south-western Member States is clear, with Spanish and Portuguese regions occupying the top 11 places in a ranking of the most specialised regions. Of the regions of the Member States that joined the EU in 2004 or 2007 only Cyprus (considered as a single region in the map) figured among the regions most specialised in construction in terms of employment.

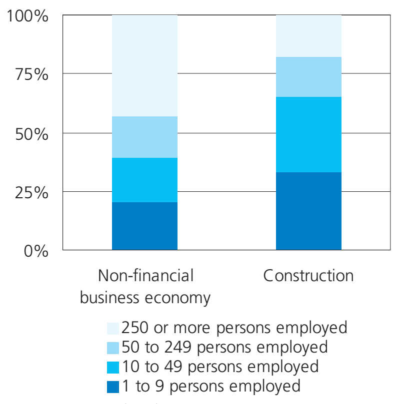
The largest of the five subsectors (NACE groups) in the EU-27, both in employment and value added terms, was the building of complete constructions or parts thereof and civil engineering (NACE Group 45.2, hereafter referred to as general construction). This subsector alone accounted for more than half of the value added (58.0 %) and employment (54.5 %) in the EU-27's construction sector. Building installation work (NACE Group 45.3) and building completion work (NACE Group 45.4) were the next largest subsectors, with 22.4 % and 15.3 % respectively of the EU-27's value added in construction, and slightly larger shares of employment. The two smallest subsectors were site preparation (NACE Group 45.1) and the renting of construction or demolition equipment with an operator (NACE Group 45.5) which contributed respectively 3.6 % and 0.8 % of construction value added in the EU-27 in 2004.

The construction sector is characterised by a large number of small enterprises, and relatively few large ones - see Figure 15.1 - with most enterprises serving a relatively small geographical market. Micro and small enterprises (with less than 50 persons employed) together generated 65.0 % of the EU-27's value added in the construction sector in 2004, a higher share than in the activities covered by any of the other chapters in this publication: the average for the non-financial business economy was just 39.1 %. Large enterprises (with more than 250 persons employed) generated less than one fifth of the EU-27's value added (17.5 %) in construction, compared with a non-financial business economy average of 43.0 %. Most Member States [5] displayed a similar pattern, as in 2004 the combination of micro and small enterprises generated at least two fifths of the construction sector's value added in all Member States except Lithuania. The largest contribution of micro and small enterprises was in the Italian construction sector where these enterprises generated 84.2 % of construction value added.

(5) Luxembourg, 2003; Ireland and Malta, incomplete or not available.

Figure 15.1

Construction (NACE Section F)
Share of value added by enterprise size class, EU-27, 2004



Source: Eurostat (SBS)

DEVELOPMENTS IN OUTPUT, CONFIDENCE, COSTS AND PRICES

Construction is considered to be cyclical, influenced by business and consumer confidence, interest rates and government programmes. Figures 15.2 and 15.3 show the development of construction output in the EU-27 and some of the larger Member States based on the 'classification of constructions' (rather than NACE). It can be seen that building work has been on an upward trend in recent years, with several periods of strong growth, with the strongest growth in any individual year coming in the latest period, 6.4 % in 2006. The development for civil engineering was somewhat different, with short cyclical movements since the mid-1990s. The latest growth, 1.1 % in 2006, came after three consecutive years of falling civil engineering output in the EU-27.

Figure 15.3 shows the contrasting development in construction output in five of the larger Member States. Spain recorded uninterrupted growth in construction output over the period shown (1996 to 2006), while France and the United Kingdom also showed a strong upward trend, with only one or two years of contraction in output during this ten year period. In contrast construction in Germany showed the opposite situation with a sustained downward trend punctuated by only two years of expansion, most notably a 6.5 % increase in the latest year, 2006. The time-series for Poland shows very rapid growth between the beginning of the series and 1999, followed by a period of contraction from 2000 to 2004, since when strong growth has again been recorded, 9.3 % in 2005 and 14.9 % in 2006.

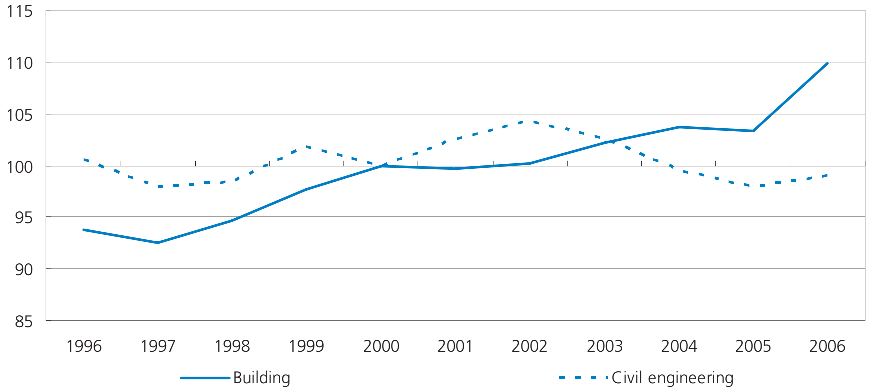
Declining construction activity in Germany as indicated by the construction production indices was reflected also in the output price indices for residential buildings shown in Figure 15.4, as the German index remained more or less unchanged throughout the period shown. Nevertheless, 2006 was the fourth consecutive year of price increases, with the growth in 2006 reaching 2.2 %. Of the six Member States shown in the figure, the United Kingdom recorded the fastest increase in output prices since 1996 (Poland only available since 2000; France until 2003, Italy until 2005), with prices increasing on average by 8.4 % per annum. Spain recorded output prices increasing on average by 3.4 % per annum over the same period just below the EU-27 average of 3.6 %.

According to the Directorate-General for Economic and Financial Affairs survey of construction confidence [6], the EU-27 balance (as measured by the percentage of positive responses minus the percentage of negative responses, seasonally adjusted) turned positive in July 2006 for the first time since June 1990: during this 16 year period its lowest level was -42.2 % in October 1993. The balance rose to a high of +2.9 % in September 2006, before falling back to +1.0 % in the latest period for which information was available at time of writing (April 2007).

[6] For more information, see: http://ec.europa.eu/economy_finance/indicators/businessandconsumersurveys_en.htm.

Figure 15.2

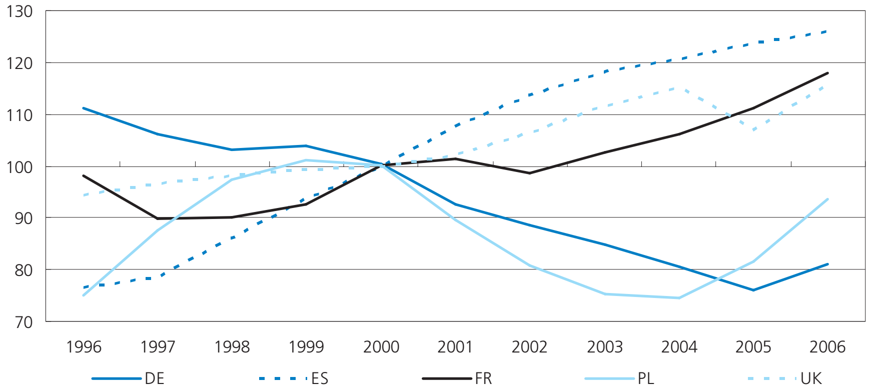
Production indices: building and civil engineering, EU-27 (2000=100) (1)



(1) Working-day adjusted data.
Source: Eurostat (STS)

Figure 15.3

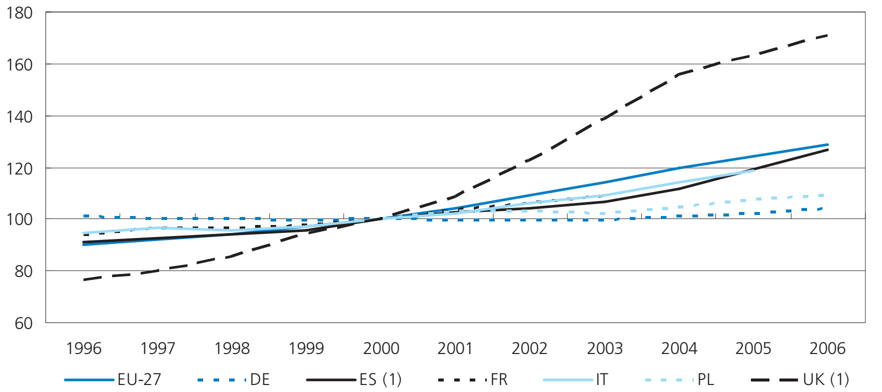
Production indices for construction (2000=100) (1)



(1) Working-day adjusted data.
Source: Eurostat (STS)

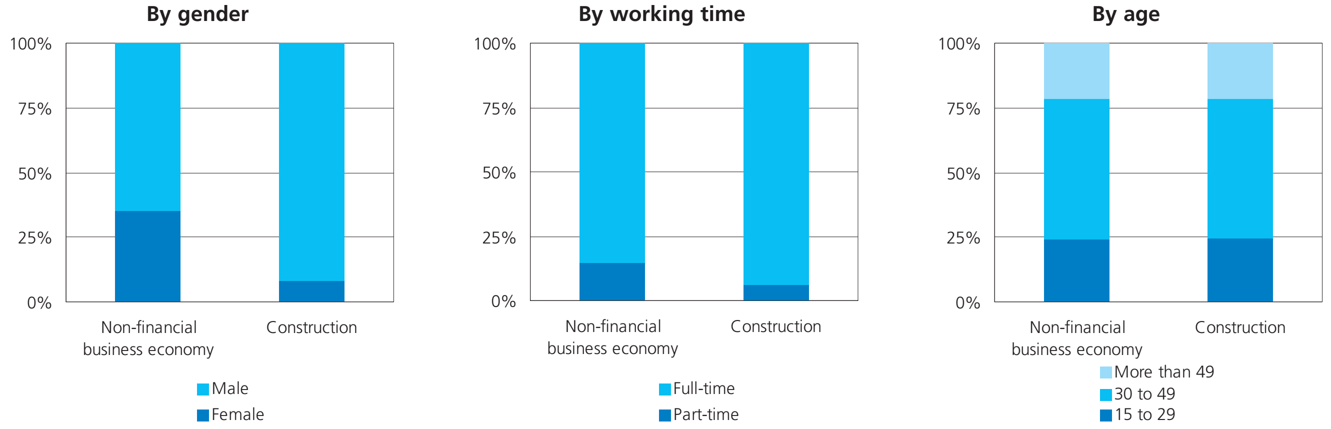
Figure 15.4

Output price indices for residential buildings (2000=100)



(1) 2005 and 2006, provisional.
Source: Eurostat (STS)

Figure 15.5
Construction (NACE Section F)
Labour force characteristics, EU-27, 2006



Source: Eurostat (LFS)

EMPLOYMENT CHARACTERISTICS

The high importance of micro and small enterprises in the construction sector (NACE Section F) is reflected by the importance of self-employment. The proportion of paid employees in the construction workforce was 81.0 % in the EU-27 in 2004 according to structural business statistics, below the non-financial business economy average of 86.2 %. For most of the subsectors this share was around 80 %, the exception being building completion work (NACE Group 45.4) where the share was just 67.9 % for the EU-27: in Italy (33.6 %), the Czech Republic (31.3 %) and Poland (41.7 %) the share in this subsector was well below 50 % (indicating a majority of working proprietors and unpaid family workers), while in Ireland, the Baltic Member States, Romania and Slovakia the share was in excess of 90 %.

An analysis based on Labour Force Survey data of the EU-27's construction workforce shows that the age profile was quite similar to the average for the whole of the non-financial business economy in 2006. The youngest age group, namely persons aged 15 to 29 made up 24.6 % of the construction labour force, and the oldest age group, aged 50 or over, accounted for 21.6 % of the total, both less than half a percentage point different from the non-financial business economy averages.

The male proportion of the labour force in the construction sector was relatively high, at 91.9 % in the EU-27 in 2006 - see Figure 15.5. This was 26.9 percentage points higher than the non-financial business economy average, and the highest of all of the non-financial business economy NACE divisions for which data are available. In all Member States the proportion of men in the construction labour force was at least 20 percentage points higher than the national non-financial business economy average.

Full-time employment was also high in the construction sector, as 94.1 % of persons were employed on this basis in the EU-27 in 2006 compared with 85.6 % in the non-financial business economy as a whole. Only in Romania was the part-time rate in construction lower than the national non-financial business economy average.

COSTS, PRODUCTIVITY AND PROFITABILITY

An analysis of the construction sector's expenditure on tangible investment, personnel, and goods and services shows that gross tangible investment was equivalent to 3.3 % of total expenditure (gross operating and tangible investment expenditure). This relatively low share of investment was observed in three of the construction subsectors, namely general construction, building installation, and building completion activities - see Figure 15.6. For site preparation a ratio of 7.7 % was recorded, while for the renting of construction or demolition equipment with an operator the highest ratio among the construction NACE groups was recorded, 17.4 %. The share of personnel costs in total expenditure was high in the construction sector as a whole, 23.3 %, and above the non-financial business economy average of 16.4 % in each of the five construction subsectors: it was highest in building completion activities at 30.8 % and lowest in general construction activities at 20.7 %.

Apparent labour productivity in the EU-27's construction sector in 2004 was EUR 33 000 per person employed, well below the non-financial business economy average of EUR 40 900. Average personnel costs were EUR 26 600 per employee, just below the non-financial business economy average of EUR 27 600. The relatively low levels of apparent labour productivity and average personnel costs were particularly notable given the small proportion of part-time employment within this sector (part-time employment has the effect of bringing these ratios lower): most of the other activities that recorded low values for these two indicators, for example, distributive trades or hotels and restaurants, were characterised by considerably higher levels of part-time employment.

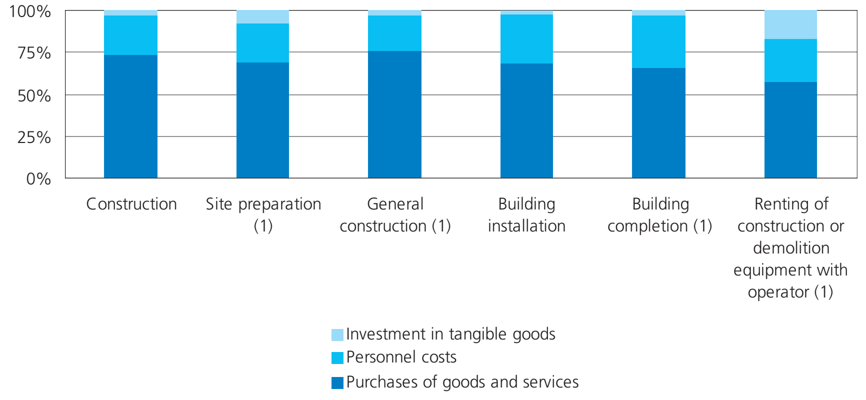
The wage adjusted labour productivity ratio provides a measure of the extent to which value added per person employed covers average personnel costs per employee, and as such is less affected by issues of part-time employment or hours worked. In the construction sector in 2004 this ratio was 123.7 % for the EU-27, indicating that value added per person employed was 23.7 % higher than average personnel costs per employee. Again this was lower than the average for the non-financial business economy which was 148.0 %. Among the five NACE groups that make up the construction sector the wage adjusted labour productivity ratio in the EU-27 ranged from 107.0 % for building completion activities to 170.0 % for the renting of construction or demolition equipment with an operator.

In contrast, the gross operating rate (the relation between the gross operating surplus and turnover) in the construction sector was 11.6 % in the EU-27 in 2004, slightly above the 11.0 % average for the non-financial business economy. This is partly an effect of the relatively high share of self-employment in construction, since the gross operating surplus (value added minus personnel costs) is positively correlated with the share of self employment (as working owners and other unpaid persons employed contribute to the value added but are recompensed through a share of profits but not in the form of personnel costs). The gross operating rate in the EU-27's construction subsectors ranged from 10.6 % for general construction activities to 16.0 % for building completion activities, with the renting of construction or demolition equipment with an operator posting a gross operating rate well above this range, at 24.0 %.

Figure 15.6

Construction (NACE Section F)

Structure of total expenditure, EU-27, 2004



(1) Rounded estimates based on non-confidential data.
Source: Eurostat (SBS)

15.1: SITE PREPARATION

Site preparation (NACE Group 45.1) includes relatively diverse activities, ranging from test drilling and boring to determine ground conditions, through demolition of existing buildings and structures, site clearance, ground stabilisation, excavation, to earth moving and trench digging.

STRUCTURAL PROFILE

Site preparation (NACE Group 45.1) was the main activity of 102 000 enterprises in the EU-27 in 2004. Together the enterprises in this sector generated EUR 15.7 billion of value added in the EU-27 in 2004 and employed 420 000 persons, equivalent to 3.6 % of value added in the construction sector (NACE Section F) and 3.2 % of employment. As such this was the second smallest NACE group within the construction sector, larger only than the renting of equipment with an operator (NACE Group 45.5). The demolition and wrecking of buildings, and earth moving subsector (NACE Class 45.11) dominated the sector with over 92 % of the sector's value added and employment, with the remainder accounted for by the test drilling and boring subsector (NACE Class 45.12).

The largest site preparation sector in the EU-27, in value added terms, was in France which accounted for close to one quarter (24.2 %) of the EU-27 total in 2004, followed by Spain (19.3 %) - see Table 15.3. In the majority of the Member States (7), site preparation accounted for less than 5 % of the value added generated in the construction sector, with Finland (11.0 %), Sweden (9.8 %), France (6.3 %) and the Czech Republic (5.6 %) the only Member States above this share. As such, it was not surprising to find that Finland and Sweden had the highest relative value added specialisation ratios in 2004, followed by Spain (where almost all construction activities were relatively important); these were the only three Member States where the relative weight of the site preparation sector (in national non-financial business economy value added) was more than twice the EU-27 average.

(7) Luxembourg, 2003; Greece, Cyprus and Malta, not available.

COSTS, PRODUCTIVITY AND PROFITABILITY

Gross tangible investment accounted for 7.7 % of total expenditure (gross operating and tangible investment expenditure) in this sector in the EU-27 in 2004, the second highest such share among the construction NACE groups. Finland, Austria, Portugal and Sweden all recorded notably higher shares, all in excess of 14 %.

In 2004 the EU-27's site preparation sector reported higher apparent labour productivity, average personnel costs, and wage adjusted labour productivity than the construction average. Apparent labour productivity was EUR 37 800 per person employed in 2004, EUR 4 800 higher than the construction average. Average personnel costs were EUR 29 200 per employee, some EUR 2 600 higher than the construction average. The combination of higher apparent labour productivity and average personnel costs resulted in a wage adjusted labour productivity ratio of 129 %, again higher than the construction average of 123.7 %. In both Romania (214.8 %) and Estonia (212.2 %) this ratio exceeded 200, meaning that value added per head was more than twice as high as the average personnel costs. The EU-27's gross operating rate (the gross operating surplus as a percentage of turnover) was 13.8 % in 2004 in this sector, above the construction average. Austria recorded a particularly high gross operating rate in this sector, 27.1 %, twice the EU-27 average rate.

Table 15.3
Site preparation (NACE Group 45.1)
Structural profile: ranking of top five Member States, 2004

Rank	Share of EU-27 value added (%) (1)	Share of EU-27 employment (%) (1)	Value added specialisation ratio (EU-27=100) (2)	Employment specialisation ratio (EU-27=100) (2)
1	France (24.2)	France (20.1)	Finland (299.0)	Finland (300.2)
2	Spain (19.3)	Spain (18.8)	Sweden (222.6)	Sweden (249.1)
3	Italy (10.7)	Italy (10.5)	Spain (214.9)	Czech Republic (206.7)
4	Germany (10.7)	Germany (9.0)	France (171.8)	Spain (183.4)
5	United Kingdom (6.9)	Czech Republic (5.9)	Czech Republic (141.2)	France (175.5)

(1) Greece, Cyprus and Malta, not available; Luxembourg, 2003.
(2) Ireland, Greece, Cyprus and Malta, not available; Luxembourg, 2003.
Source: Eurostat (SBS)

15.2: GENERAL CONSTRUCTION

The building of complete constructions (or parts thereof) and civil engineering (NACE Group 45.2), hereafter referred to as general construction, constitute the core activities of the construction sector. These two activities are the first stages of most construction activities, following on from the activities of architects, structural engineers and landscape designers. At the four-digit level of NACE there are five parts to the activity: general construction of buildings and civil engineering (NACE Class 45.21) which includes most building work as well as engineering projects such as bridges, tunnels, and cable and pipe networks; the erection of roof covering and frames (NACE Class 45.22); the construction of motorways, roads, airfields and sports facilities (NACE Class 45.23); the construction of water projects (NACE Class 45.24) including waterways, locks and ports, as well as dredging work; and other special trades construction work (NACE Class 45.25) including for example foundations work, pile-driving and scaffolding.

STRUCTURAL PROFILE

General construction activities (NACE Group 45.2) was the main activity of close to 1.1 million enterprises which generated EUR 251.3 billion of value added in the EU-27 in 2004, and employed 7.2 million persons, in both cases more than half of the construction sector's (NACE Section F) total. A more detailed analysis of the EU-27's general construction sector in 2004 shows that the general construction of buildings and civil engineering work (NACE Class 45.21) was by far the largest part of the general construction activities sector, with 70.4 % of value added and 71.2 % of employment. Other construction work involving special trades (NACE Class 45.25) was the second largest class with 11.5 % of value added and 11.3 % of employment, slightly larger than the main specialised civil engineering activity of road building and the construction of airfields and sports facilities (NACE Class 45.23) which had 10.7 % of value added and 9.8 % of employment. The erection of roof coverings and frames (NACE Class 45.22) accounted for 6.1 % of value added while the smallest activity within general construction activities was the construction of water projects (NACE Class 45.24) which had just 1.3 % of value added.

The largest contributor to EU-27 value added in the general construction sector was the United Kingdom with EUR 51.4 billion of value added, 20.5 % of the EU-27 total, only slightly more than the Spanish general construction sector's share of 19.6 % - see Table 15.5 - Italy, Germany and France all contributed at least 10 % of the EU-27 value added. In employment terms the Spanish general construction sector's workforce was by far the largest, its 1.5 million strong workforce constituted 20.4 % of the EU-27 total. In comparison, the workforce of this sector in the United Kingdom represented just 10.4 % of the EU-27 total, less than in Italy and only slightly more than in Germany.

Table 15.4
General construction (building of complete constructions or parts thereof; civil engineering) (NACE Group 45.2)
Structural profile, EU-27, 2004

	No. of enterprises (thousands)	Turnover (EUR million)	Value added (EUR million)	Employment (thousands)
General construction	1 096.9	832 346	251 338	7 166.7
General construction of buildings and civil engineering works (1)	776.0	621 000	177 000	5 100.0
Erection of roof covering and frames (1)	105.0	39 000	15 400	480.0
Construction of motorways, roads, airfields and sport facilities (1)	39.0	90 000	27 000	700.0
Construction of water projects (1)	12.0	9 100	3 150	:
Other construction work involving special trades (1)	165.0	73 000	29 000	810.0

(1) Rounded estimates based on non-confidential data.
Source: Eurostat (SBS)

Table 15.5

General construction (building of complete constructions or parts thereof; civil engineering) (NACE Group 45.2)
Structural profile: ranking of top five Member States, 2004

Rank	Share of EU-27 value added (%) (1)	Share of EU-27 employment (%) (1)	Value added specialisation ratio (EU-27=100) (2)	Employment specialisation ratio (EU-27=100) (2)
1	United Kingdom (20.5)	Spain (20.4)	Spain (218.0)	Spain (198.8)
2	Spain (19.6)	Italy (12.6)	Portugal (162.2)	Portugal (190.0)
3	Italy (12.5)	United Kingdom (10.4)	Lithuania (134.8)	Luxembourg (151.7)
4	Germany (11.4)	Germany (10.2)	Luxembourg (124.6)	Lithuania (136.3)
5	France (10.5)	France (9.2)	Estonia (119.5)	Slovenia (123.2)

(1) Greece and Malta, not available; Luxembourg, 2003.
(2) Ireland, Greece, Cyprus and Malta, not available; Luxembourg, 2003.
Source: Eurostat (SBS)

In most of the Member States [8] general construction activities generated half or more of the construction sector's value added, although Sweden (44.7 %), France (43.9 %) and Denmark (42.4 %) were all below this level. The highest value added and employment specialisation ratios for general construction were recorded for Spain and Portugal; indeed, Spain was the only Member State to report that the share of non-financial business economy value added that was derived from general construction activities was more than twice the EU-27 average.

At a more detailed level, particular specialisation among various general construction subsectors was notable within the construction of water projects in Romania, the Netherlands, Latvia and Belgium where this subsector contributed more than three times as much to general construction value added than the average for the EU-27 as a whole, while Germany and Austria both recorded a particularly high share of their value added in this sector being derived from the erection of roof coverings and frames.

[8] Luxembourg, 2003; Greece and Malta, not available.

COSTS, PRODUCTIVITY AND PROFITABILITY

Investment by the EU-27's general construction sector represented 3.3 % of total expenditure (gross operating and tangible investment expenditure) in 2004, the same share as the average for the construction sector as a whole. The share of purchases of goods and services represented 76.0 % of total expenditure, the highest of the construction NACE groups.

The EU-27's general construction activity reported apparent labour productivity of EUR 35 100 per person employed in 2004, EUR 2 100 higher than the construction average. Average personnel costs in this activity were EUR 26 500 per employee, only marginally below the construction average. The combination of a higher apparent labour productivity and average personnel costs that were typical for the construction sector as a whole, led to a wage adjusted labour productivity ratio of 132.5 %, some 8.8 percentage points higher than the construction average. Despite this, this sector's gross operating rate in 2004 was 10.6 %, the lowest of the construction NACE groups.

Table 15.6

General construction (building of complete constructions or parts thereof; civil engineering) (NACE Group 45.2)
Productivity and profitability, EU-27, 2004

	Apparent labour productivity (EUR thousand)	Average personnel costs (EUR thousand)	Wage adjusted labour productivity (%)	Gross operating rate (%)
General construction	35.1	26.5	132.5	10.6
General construction of buildings and civil engineering works (1)	35.0	25.6	137.0	10.7
Erection of roof covering and frames (1)	32.3	28.0	114.0	11.3
Construction of motorways, roads, airfields and sport facilities (1)	38.0	29.0	130.0	8.1
Construction of water projects (1)	:	:	:	12.0
Other construction work involving special trades (1)	35.5	29.2	122.0	11.9

(1) Rounded estimates based on non-confidential data.
Source: Eurostat (SBS)

15.3: BUILDING INSTALLATION ACTIVITIES

Installation work is divided into four classes at the NACE four-digit level: installation of electrical wiring and fittings (NACE Class 45.31); insulation (NACE Class 45.32); plumbing (NACE Class 45.33) including all water and gas supply, drainage, heating and ventilation work; and other building installation activities (NACE Class 45.34). Note that the installation of industrial equipment (for example, the installation of industrial furnaces and turbines) is excluded.

Building installation includes activities such as plumbing, installation of heating and air-conditioning systems, aerials, alarm systems and other electrical work, sprinkler systems, elevators and escalators. Also included are insulation work (water, heat, and sound) and the installation of illumination and signalling systems for roads, railways, airports, harbours, etc.

STRUCTURAL PROFILE

Building installation activities (NACE Group 45.3) consisted of 674 000 enterprises which employed 3.1 million persons and generated EUR 96.9 billion of value added in the EU-27 in 2004. As such, building installation activities made up more than one fifth of the construction sector (NACE Section F), contributing 23.8 % of the workforce and 22.4 % of the value added. At the NACE class level the largest activities in value added terms were the installation of electrical wiring and fittings (NACE Class 45.31) and plumbing (NACE Class 45.33) each with more than two fifths of the total, 40.4 % for plumbing and 48.7 % for electrical wiring and fittings. The two remaining classes, namely insulation (NACE Class 45.32) and other building installation activities (NACE Class 45.34) were much smaller, with 5.0 % and 5.8 % of the total respectively.

The United Kingdom, Germany and France had the three largest building installation sectors in the EU-27, each contributing more than 15 % of EU-27 value added within this sector. In employment terms Germany had the largest workforce (15.2 % of the EU-27 total), and the Spanish and Italian workforces were larger than in both France and the United Kingdom. Within the construction sector the building installation sector (9) was most important in value added terms in Sweden where it contributed 31.1 % of construction value added and in Denmark (28.0 %) and Germany (27.7 %). In contrast, this sector contributed just 10.0 % of construction value added in Cyprus.

(9) Luxembourg, 2003; Greece and Malta, not available.

Table 15.7

Building installation (NACE Group 45.3)
Structural profile, EU-27, 2004

	No. of enterprises (thousands)	Turnover (EUR million)	Value added (EUR million)	Employment (thousands)
Building installation	674.3	249 582	96 945	3 125.1
Installation of electrical wiring and fittings (1)	294.0	116 000	47 200	1 480.0
Insulation work activities (1)	27.8	12 700	4 890	156.0
Plumbing (1)	308.0	104 000	39 200	1 310.0
Other building installation (1)	44.0	17 000	5 630	182.0

(1) Rounded estimates based on non-confidential data.
Source: Eurostat (SBS)

Table 15.8

Building installation (NACE Group 45.3)
Structural profile: ranking of top five Member States, 2004

Rank	Share of EU-27 value added (%) (1)	Share of EU-27 employment (%) (1)	Value added specialisation ratio (EU-27=100) (2)	Employment specialisation ratio (EU-27=100) (2)
1	United Kingdom (18.0)	Spain (15.3)	Luxembourg (163.1)	Luxembourg (169.8)
2	Germany (16.2)	Germany (15.2)	Spain (148.0)	Spain (149.2)
3	France (15.3)	Italy (15.0)	Austria (133.5)	Italy (127.9)
4	Spain (13.3)	France (12.4)	Netherlands (118.1)	Austria (122.5)
5	Italy (12.7)	United Kingdom (10.8)	Denmark (116.1)	Sweden (120.1)

(1) Greece and Malta, not available; Luxembourg, 2003.
(2) Ireland, Greece, Cyprus and Malta, not available; Luxembourg, 2003.
Source: Eurostat (SBS)

Table 15.9

Building installation (NACE Group 45.3)
Productivity and profitability, EU-27, 2004

	Apparent labour productivity (EUR thousand)	Average personnel costs (EUR thousand)	Wage adjusted labour productivity (%)	Gross operating rate (%)
Building installation	31.0	27.1	114.6	11.9
Installation of electrical wiring and fittings (1)	32.0	27.8	115.0	11.7
Insulation work activities (1)	31.2	27.4	114.0	10.2
Plumbing (1)	29.9	26.5	113.0	12.0
Other building installation (1)	31.0	24.4	127.0	13.6

(1) Rounded estimates based on non-confidential data.
Source: Eurostat (SBS)

COSTS, PRODUCTIVITY AND PROFITABILITY

In the EU-27's building installation activities tangible investment represented just 2.5 % of total expenditure (gross operating and tangible investment expenditure) in 2004, the lowest share among the construction NACE groups. This share reached its highest in Latvia (7.9 %), Romania (7.0 %) and Bulgaria (6.8 %). The share of personnel costs in total expenditure was 29.5 %, higher than all construction NACE groups except for building completion activities (NACE Group 45.4).

The building installation sector recorded apparent labour productivity of EUR 31 000 per person employed in the EU-27 in 2004. This was higher than in building completion activities, but otherwise was the lowest among the construction NACE groups. Average personnel costs were EUR 27 100 per employee slightly above the construction average. The low apparent labour productivity resulted in a wage adjusted labour productivity ratio for building installation activities of just 114.6 %, well below the construction average of 123.7 %, and again higher only than the building completion sector among construction NACE groups. In Latvia, the building installation sector recorded a wage adjusted labour productivity ratio (203.1 %) that indicated that added value per person employed was just over double the average personnel costs per employee, and Romania and Bulgaria also recorded quite high ratios, but in none of the Member States [10] did this ratio for the building installation sector exceed that for the non-financial business economy as a whole.

At 11.9 %, the EU-27's gross operating rate for the building installation activities was lower than most of the construction NACE groups, but above that for general construction activities (NACE Group 45.2) and slightly above the construction average of 11.6 %.

(10) Luxembourg, 2003; Ireland, Greece, Cyprus and Malta, not available.

15.4: BUILDING COMPLETION ACTIVITIES

Completion work is divided into five classes at the NACE four-digit level: plastering (NACE Class 45.41); joinery installation (NACE Class 45.42); floor and wall covering (NACE Class 45.43); painting and glazing (NACE Class 45.44); and other building completion activities (NACE Class 45.45).

Building completion encompasses activities that contribute to the completion or finishing of a construction, such as glazing, plastering, painting and decorating, floor and wall tiling or covering with other materials like parquet, carpets or wallpaper. As well as work on new structures, the renovation, repair and maintenance markets are also important for enterprises in these activities.

Table 15.10

Building completion (NACE Group 45.4)
Structural profile, EU-27, 2004

	No. of enterprises (thousands)	Turnover (EUR million)	Value added (EUR million)	Employment (thousands)
Building completion	807.9	156 233	66 261	2 371.5
Plastering (1)	94.6	16 800	7 720	285.0
Joinery installation (1)	200.0	50 100	18 700	601.0
Floor and wall covering (1)	162.0	28 400	11 100	459.0
Painting and glazing (1)	213.0	39 900	19 700	704.0
Other building completion (1)	139.0	21 000	8 990	323.0

(1) Rounded estimates based on non-confidential data.
Source: Eurostat (SBS)

STRUCTURAL PROFILE

Building completion (NACE Group 45.4) was the main activity for around 808 000 enterprises in the EU-27 in 2004. Together these enterprises employed 2.4 million persons, around three quarters of a million fewer than building installation (NACE Group 45.3), thus making it the third largest NACE group within the construction sector (NACE Section F) with an 18.0 % share of the construction workforce. The value added generated by this workforce was EUR 66.3 billion in the EU-27, some 15.3 % of the construction sector total. The largest parts of building completion were painting and glazing (NACE Class 45.44), with 29.7 % of the sector's value added and employment, and joinery installation (NACE Class 45.42) with 28.2 % of the sector's value added and 25.3 % of its employment. Floor and wall covering work (NACE Class 45.43) was the third largest subsector with 16.8 % of value added but nearly one fifth (19.4 %) of employment. Other building completion work (NACE Class 45.45) contributed 13.6 % of the sector's value added and employment, while plastering (NACE Class 45.41) was the smallest building completion activity with 11.7 % of value added and 12.0 % of employment.

Spain and France had the largest workforces in the building completion sector, with 427 200 and 415 600 persons employed, equivalent to 18.0 % and 17.5 % of the EU-27 total. In value added terms, Spain's contribution was only the fourth largest (14.1 % of the EU-27 total), behind France (22.2 %), the United Kingdom (16.4 %) and Germany (15.9 %).

The relative importance of the building completion sector was particularly high in Denmark, France and Spain, with value added specialisation ratios in excess of 150 %, denoting that these activities had a share of national non-financial business economy value added that was at least 50 % higher than the EU-27 average [11]. In contrast, building completion activities contributed less than 5 % of total construction value added in Estonia, Romania, Cyprus and Slovakia. A number of specialisations among the building completion activities can be noted in particular Member States, notably the importance of floor and wall covering work in Latvia and Lithuania where it accounted for 92.1 % and 65.8 % respectively of building completion value added.

(11) Luxembourg, 2003; Ireland, Greece, Cyprus and Malta, not available.

Table 15.11

Building completion (NACE Group 45.4)
Structural profile: ranking of top five Member States, 2004

Rank	Share of EU-27 value added (%) (1)	Share of EU-27 employment (%) (1)	Value added specialisation ratio (EU-27=100) (2)	Employment specialisation ratio (EU-27=100) (2)
1	France (22.2)	Spain (18.0)	Denmark (161.8)	Denmark (176.6)
2	United Kingdom (16.4)	France (17.5)	France (158.0)	Spain (175.4)
3	Germany (15.9)	Germany (15.9)	Spain (156.5)	France (153.3)
4	Spain (14.1)	Italy (13.9)	Luxembourg (141.6)	Luxembourg (152.1)
5	Italy (11.2)	United Kingdom (9.6)	Belgium (111.8)	Belgium (131.0)

(1) Greece and Malta, not available; Luxembourg, 2003.
(2) Ireland, Greece, Cyprus and Malta, not available; Luxembourg, 2003.
Source: Eurostat (SBS)

COSTS, PRODUCTIVITY AND PROFITABILITY

The share of personnel costs in total expenditure (gross operating and tangible investment expenditure) was 30.8 % in 2004 in the EU-27's building completion sector, the highest share among all of the construction NACE groups. The share of investment in this expenditure figure was just 3.1 %, slightly below the construction average, and second lowest among the construction NACE groups. Generally this investment share was less than 6 % in the Member States, the most notable exception being Romania where tangible investment accounted for 19.7 % of total expenditure, over six times the EU-27 average.

Building completion activities in the EU-27 recorded apparent labour productivity of EUR 27 900 per person employed in 2004, the lowest of the construction NACE groups. Average personnel costs in these activities were EUR 26 000 per employee, again the lowest among the construction NACE groups. The low average personnel costs were not enough to compensate for low apparent labour productivity, and as such wage adjusted labour productivity (which combines the two ratios) was just 107.0 %, some 17 percentage points below the construction average and clearly the lowest of the five construction NACE groups. This ratio shows that the value added per person employed was only 7.0 % higher than average personnel costs. This particularly low ratio for the EU-27 was reflected in the fact that five Member States (12) recorded a wage adjusted labour productivity ratio below 100 % in 2004, indicating that added value was lower than personnel costs (after adjusting for the ratio of persons employed to employees). This was most notably the case in the Czech Republic and the Netherlands where ratios below 90 % were recorded.

(12) Ireland and Luxembourg, 2003; Greece and Malta, not available.

The building completion sector recorded a gross operating rate of 16.0 % in 2004, the second highest among the construction NACE groups, and 4.4 percentage points above the construction average. Italy recorded a gross operating rate in this sector of 32.2 %, approximately twice the rate for the EU-27 as a whole.

15.5: RENTING OF CONSTRUCTION EQUIPMENT

This final section of the construction chapter covers the activities of renting construction or demolition equipment with an operator (NACE Group 45.5), for example, the renting of cranes with an operator. Note that this activity does not cover the simple renting of construction equipment without an operator, which in NACE is classified as Class 71.32 (see Subchapter 23.2 on renting and leasing).

STRUCTURAL PROFILE

Operated construction equipment (NACE Group 45.5) renting was the smallest NACE group within the EU-27 construction sector (NACE Section F) both in terms of its number of enterprises, employment and wealth creation. In 2004 this sector had approximately 13 300 enterprises which generated EUR 3.3 billion of value added from a workforce of 74 000 persons, less than 1 % of the construction sector's total for all indicators. The United Kingdom dominated this sector in the EU-27, with its EUR 1.4 billion of value added equal to 42.5 % of the EU-27 total in 2004, and its workforce accounting for 25.9 % of the EU-27 workforce. The Netherlands was the next largest Member State by both of these measures, with 13.3 % of value added and 12.0 % of employment. However, in terms of the value added specialisation ratio, Slovenia (385.6 %), the Netherlands (289.6 %), Estonia (277.4 %), Romania (251.5 %) and the United Kingdom (224.5 %) all reported that the contribution of the renting of construction equipment to national non-financial business economy value added was more than double the EU-27 average [13].

[13] Luxembourg, 2003; Ireland, Greece, Cyprus and Malta, not available.

COSTS, PRODUCTIVITY AND PROFITABILITY

Among the five construction NACE groups the highest share of tangible investment in total expenditure (gross operating and tangible investment expenditure) in 2004 was recorded in the EU-27's operated construction equipment sector, where it reached 17.4 %, some 5.2 times the share in construction as a whole. A slightly higher than average share for personnel costs meant that the share of purchases of goods and services in total expenditure was particularly low in this sector in the EU-27, just 57.3 %, some 16.1 percentage points below the construction average.

The highest productivity and profitability measures among the construction NACE groups in the EU-27 were recorded in 2004 for the operated construction equipment renting activity. To some extent these high measures reflect the nature of the activity which is capital intensive. Financial costs and depreciation charges constitute the main cost elements and these are not considered when calculating gross value added and the gross operating surplus on which these productivity and profitability measures are based. Apparent labour productivity was EUR 43 900 per person employed and the wage adjusted labour productivity ratio was 170.0 %, the latter around 46 percentage points above the construction average. Average personnel costs were slightly below the construction average at EUR 26 000 per employee. The gross operating rate for operated construction equipment renting was 24.0 % in the EU-27 in 2004, the highest of the construction NACE groups, and more than double the construction average (11.0 %).

Table 15.12

Renting of construction or demolition equipment with operator (NACE Group 45.5)
Structural profile: ranking of top five Member States, 2004

Rank	Share of EU-27 value added (%) (1)	Share of EU-27 employment (%) (1)	Value added specialisation ratio (EU-27=100) (2)	Employment specialisation ratio (EU-27=100) (2)
1	United Kingdom (42.5)	United Kingdom (25.9)	Slovenia (385.6)	Slovenia (472.7)
2	Netherlands (13.3)	Netherlands (12.0)	Netherlands (289.6)	Netherlands (324.2)
3	Spain (10.0)	Spain (9.9)	Estonia (277.4)	Estonia (313.7)
4	France (6.9)	Romania (9.6)	Romania (251.5)	Romania (300.2)
5	Sweden (4.5)	Poland (8.1)	United Kingdom (224.5)	Lithuania (280.0)

(1) Greece, Cyprus and Malta, not available; Luxembourg, 2003.
(2) Ireland, Greece, Cyprus and Malta, not available; Luxembourg, 2003.
Source: Eurostat (SBS)

Table 15.13

Construction (NACE Section F)
Main indicators, 2004

	EU-27	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	IT	CY	LV	LT
No. of enterprises (thousands)	2 694.9	58.8	14.3	150.5	28.9	227.1	3.1	0.7	:	377.1	381.5	563.1	5.2	3.5	3.4
Turnover (EUR million)	1 289 494	31 963	2 883	18 659	21 422	142 376	2 118	12 354	:	218 429	168 980	186 354	1 849	1 925	2 261
Production (EUR million)	1 304 987	31 382	2 875	18 356	20 899	140 000	1 313	13 056	:	225 918	166 799	209 777	1 846	1 921	2 182
Value added (EUR million)	433 505	9 898	479	4 081	8 052	56 563	399	5 397	:	74 871	59 979	52 870	973	394	633
Gross operating surplus (EUR million)	149 612	3 259	202	1 819	1 900	10 636	143	3 295	:	24 841	11 883	25 941	336	214	210
Purchases of goods & services (EUR million)	893 047	22 160	2 660	14 805	13 711	85 061	1 727	8 572	:	151 078	108 532	152 329	873	1 576	1 642
Personnel costs (EUR million)	283 893	6 638	277	2 280	6 153	45 928	256	2 102	:	50 031	48 097	26 929	638	180	423
Investment in tangible goods (EUR million)	40 419	1 545	285	396	672	3 156	70	349	:	6 502	4 334	7 002	56	119	113
Employment (thousands)	13 153	245	135	395	176	1 624	37	49	:	2 456	1 548	1 748	33	54	90
Apparent labour prod. (EUR thousand)	33.0	40.4	3.5	10.3	45.7	34.8	10.9	110.8	:	30.5	38.8	30.2	29.4	7.2	7.0
Average personnel costs (EUR thousand)	26.6	36.3	2.2	8.9	39.0	32.1	7.1	43.7	:	24.6	35.2	26.0	21.2	3.4	4.8
Wage adjusted labour productivity (%)	123.7	111.2	158.7	115.8	117.2	108.4	153.2	253.4	:	124.0	110.1	116.5	138.4	211.6	147.9
Gross operating rate (%)	11.6	10.2	7.0	9.7	8.9	7.5	6.8	26.7	:	11.4	7.0	13.9	18.1	11.1	9.3
Investment / employment (EUR thousand)	3.1	6.3	2.1	1.0	3.8	1.9	1.9	7.2	:	2.6	2.8	4.0	1.7	2.2	1.3

	LU (1)	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	NO
No. of enterprises (thousands)	2.0	72.0	:	72.4	24.2	160.0	113.0	25.4	13.5	3.3	32.5	61.0	209.3	36.7
Turnover (EUR million)	3 197	12 001	:	66 555	27 822	20 988	31 062	6 928	4 184	2 763	18 427	30 970	234 048	21 611
Production (EUR million)	2 639	6 698	:	66 076	27 124	17 531	32 491	6 973	4 010	2 725	17 679	30 526	234 350	21 252
Value added (EUR million)	1 288	1 958	:	22 127	11 646	5 709	7 101	1 258	1 083	598	6 065	10 369	82 281	7 660
Gross operating surplus (EUR million)	262	795	:	5 519	3 343	3 211	2 003	347	328	200	1 891	2 468	40 508	2 093
Purchases of goods & services (EUR million)	1 905	9 898	:	44 674	16 407	17 097	25 747	6 083	3 141	2 218	12 806	20 476	154 970	14 063
Personnel costs (EUR million)	1 026	1 163	:	16 608	8 303	2 497	5 098	911	756	398	4 208	7 902	41 773	5 566
Investment in tangible goods (EUR million)	56	438	:	1 152	711	666	1 727	1 110	88	99	688	1 153	7 335	528
Employment (thousands)	32	238	:	455	252	614	459	382	64	63	129	241	1 347	143
Apparent labour prod. (EUR thousand)	40.1	8.2	:	48.6	46.2	9.3	15.5	3.3	16.9	9.5	46.9	43.1	61.1	53.6
Average personnel costs (EUR thousand)	33.1	6.0	:	45.0	35.5	5.8	12.6	2.4	13.9	6.3	35.7	39.2	36.4	45.6
Wage adjusted labour productivity (%)	121.2	136.3	:	108.0	130.3	160.0	122.7	136.2	121.1	149.5	131.5	110.0	167.7	117.4
Gross operating rate (%)	8.2	6.6	:	8.3	12.0	15.3	6.4	5.0	7.8	7.2	10.3	8.0	17.3	9.7
Investment / employment (EUR thousand)	1.7	1.8	:	2.5	2.8	1.1	3.8	2.9	1.4	1.6	5.3	4.8	5.4	3.7

(1) 2003.
Source: Eurostat (SBS)