16

Construction

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 25. 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.

Building and civil engineering projects typically take much longer from conception to completion than in many other sectors, and often involve a large number of sub-contracting enterprises with various specialisations. Construction projects are often a key factor in urban regeneration, and also in maintaining or developing transport and communication infrastructure. Nevertheless, construction projects impact upon the environment in a number of ways, notably the change in land use, the consumption of materials and fuel, the production of waste, as well as noise and air emissions.

Another characteristic of construction activity is that it is particularly cyclical, influenced by business and consumer confidence, interest rates and government programmes. The level of confidence among construction enterprises, according to the European Commission's Directorate-General for Economic and Financial Affairs [1] is presented in terms of a balance of positive compared with negative responses. This measure turned positive in July 2006 for the first time since June 1990, peaked in September 2006 and then became negative again in November 2007. During 2008, the fall in construction confidence accelerated and fell particularly strongly in the final quarter of 2008, such that by December 2008 the balance was down to -32.3 %. At the time of writing, with overall economic activity declining in many Member States, major public sector funding for infrastructure projects has been proposed by a number of governments as one means of stimulating activity and creating jobs.

Structural profile

The construction sector (NACE Section F) had around 2.9 million enterprises that together generated a combined value added of EUR 510.0 billion in the EU-27 in 2006 and employed 14.1 million persons, equivalent to 9.0 % of the non-financial business economy's (NACE Sections C to I and K) value added and 10.9 % of its employment. Among this workforce the proportion of paid employees was 82.2 % in the EU-27 in 2006, below the non-financial business economy average of 86.5 %, which reflected the relatively high levels of self-employment in certain areas within this sector.

(1) For more information, see: http://ec.europa.eu/economy_finance/db_indicators/surveys10811_en.htm.

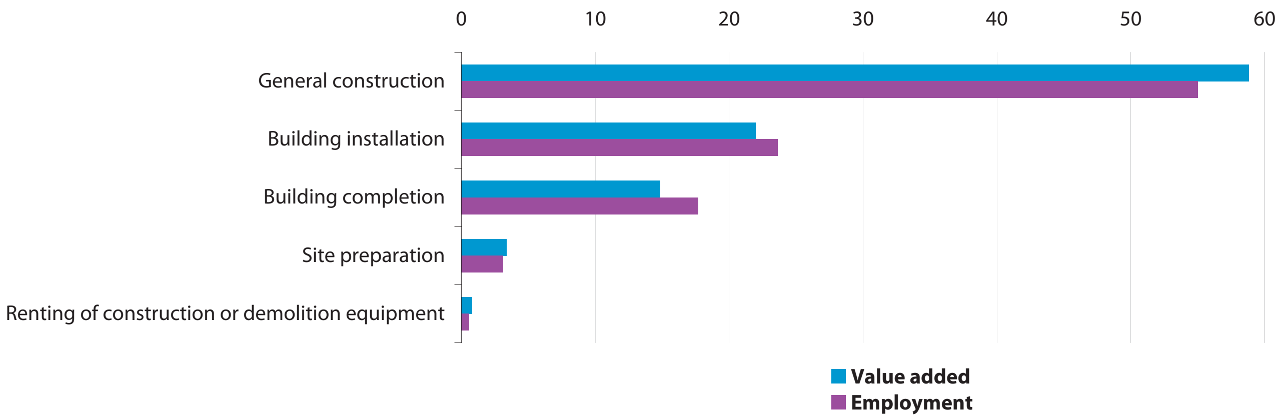
Table 16.1: Construction (NACE Section F)
Structural profile, EU-27, 2006

	Enterprises		Turnover		Value added		Persons employed	
	(thousand)	(% of total)	(EUR million)	(% of total)	(EUR million)	(% of total)	(thousand)	(% of total)
Construction	2 902.4	100.0	1 553 232	100.0	510 016	100.0	14 093.2	100.0
Site preparation (1)	107.8	3.7	50 000	3.2	15 793	3.4	420.0	3.1
General construction	1 186.6	40.9	1 020 772	65.7	300 000	58.8	7 749.0	55.0
Building installation	720.0	24.8	292 000	18.8	112 000	22.0	3 330.0	23.6
Building completion	873.1	30.1	180 058	11.6	75 791	14.9	2 489.8	17.7
Renting of construction or demolition equipment (2)	14.6	0.5	8 080	0.6	4 000	0.8	80.0	0.6

(1) Value added and employment, 2005.
(2) Turnover, 2005.

Source: Eurostat (SBS)

Figure 16.1: Construction (NACE Section F)
Share of construction, EU-27, 2006 (%)



Source: Eurostat (SBS)

Table 16.2: Construction (NACE Section F)
Structural profile: ranking of top five Member States, 2006

	Highest value added (1)			Largest number of persons employed (1)			Most specialised: share in the non-financial business economy (%)	
	Country	(EUR million)	(% of EU-27)	Country	(thousand)	(% of EU-27)	Value added (2)	Persons employed (3)
1	United Kingdom	97 624	19.1	Spain	2 797.5	19.9	Spain (17.6)	Spain (20.1)
2	Spain	94 262	18.5	Italy	1 844.9	13.1	Cyprus (15.4)	Cyprus (17.3)
3	France	69 552	13.6	France	1 651.5	11.7	Lithuania (12.6)	Luxembourg (17.0)
4	Italy	63 258	12.4	Germany	1 498.8	10.6	Portugal (12.0)	Portugal (15.0)
5	Germany	55 442	10.9	United Kingdom	1 393.5	9.9	Latvia (11.2)	Lithuania (13.4)

(1) Malta, not available; Poland, 2005.
(2) Malta and the Netherlands, not available; Bulgaria, Cyprus, Poland and Romania, 2005.
(3) Malta, not available; Bulgaria, Cyprus, the Netherlands, Poland and Romania, 2005.

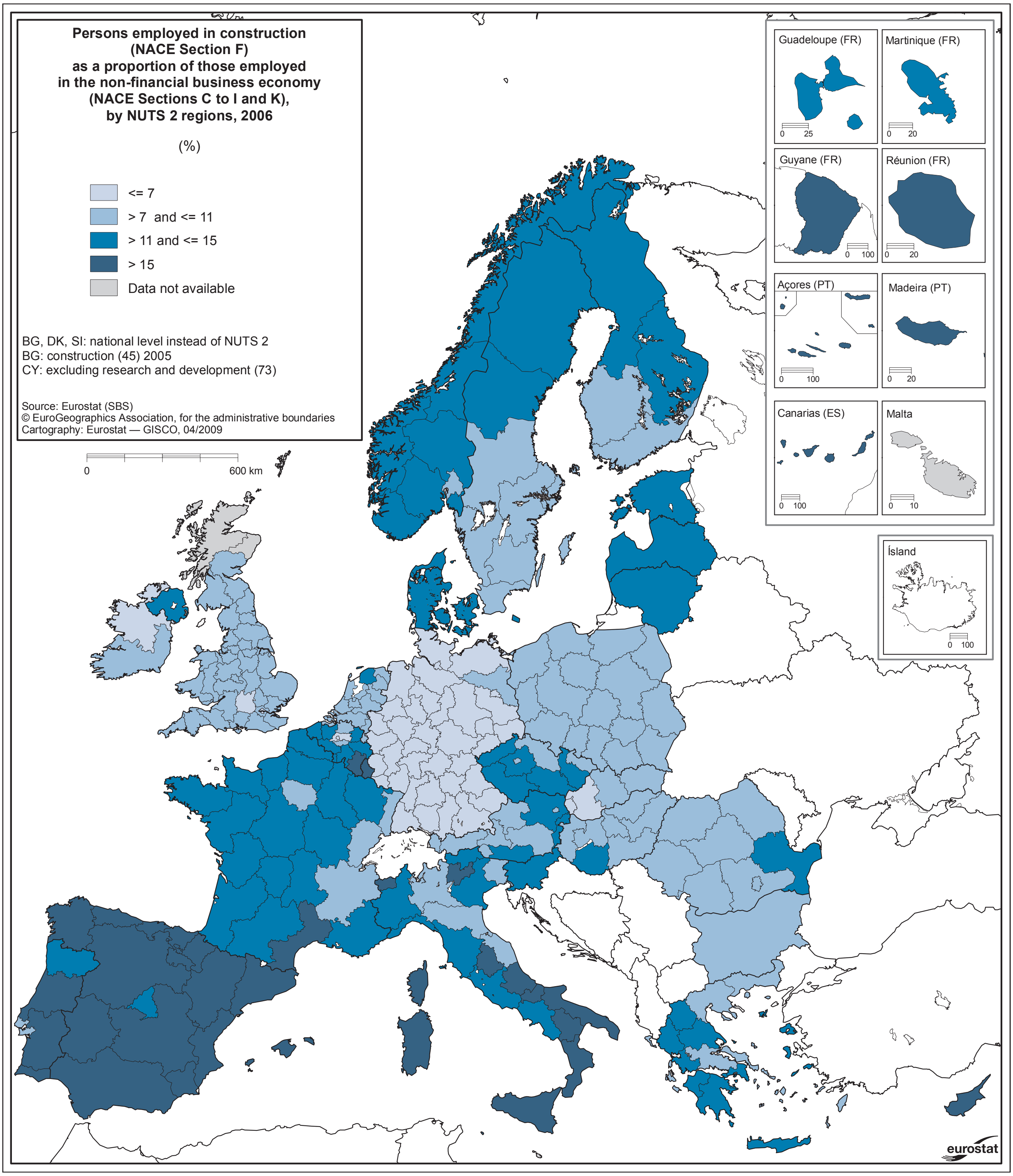
Source: Eurostat (SBS)

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 (58.8 %) and employment (55.0 %) in the EU-27's construction sector in 2006. Building installation (NACE Group 45.3) and building completion (NACE Group 45.4) were the next largest subsectors, with 22.0 % and 14.9 % 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 3.4 % and 0.8 % of the construction sector's value added in the EU-27 in 2006.

In value added terms, the United Kingdom had the largest construction sector in the EU-27 with a 19.1 % share of the EU-27 total in 2006. The Spanish construction sector was also significant, with the second highest contribution to value added (18.5 % of the EU-27 total) and the largest workforce, some 2.8 million persons employed (19.9 % of the EU-27 total). The construction sector contributed 17.6 % to Spanish value added in the non-financial business economy and 20.1 % of its employment, making Spain the most specialised Member State. In value added terms, the next most specialised [2] countries were Cyprus, Lithuania and Portugal, while the least specialised included Germany, Slovakia, Hungary and Poland (2005) – which all reported that the construction sector accounted for less than 6.0 % of the value added generated in their respective non-financial business economies.

(2) Bulgaria, Cyprus, Poland and Romania, 2005; Malta and the Netherlands, not available.

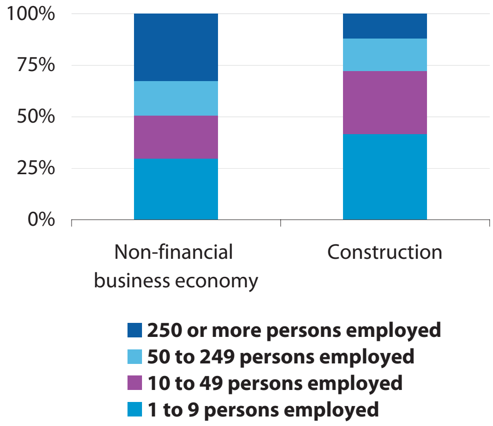
Map 16.1: Construction (NACE Section F)
Persons employed in construction (NACE Section F) as a proportion of those employed in the non-financial business economy (NACE Sections C to I and K) (%)



Source: Eurostat (SBS)

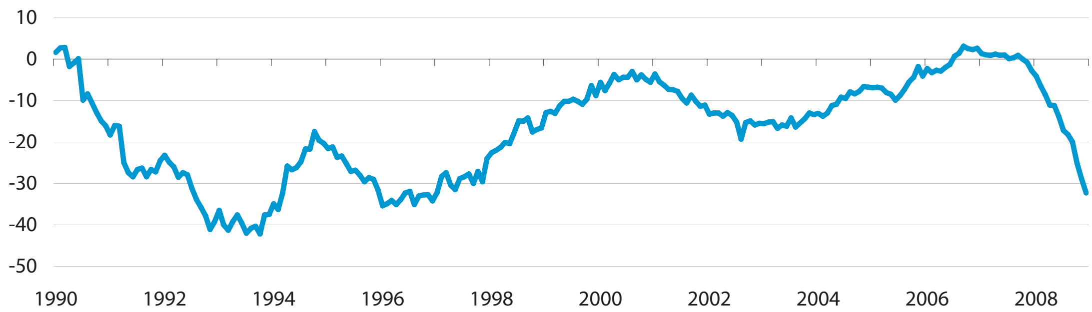
The contribution of the construction sector to regional employment within the non-financial business economy is shown in the map. The importance of construction in several southern and south-western Member States is clear. Spanish regions occupied 14 of the top 15 places in a ranking of the most specialised regions, and many regions in southern France, Italy and Portugal, as well as the island of Cyprus registered 15.0 % or more of their non-financial business economy employment within the construction sector. The only regions outside of southern Europe to record such a high degree of specialisation were Luxembourg, and the neighbouring Belgian province of Luxembourg. In contrast 36 of the 40 regions where less than 6.0 % of non-financial business economy employment was in construction were German.

Figure 16.2: Construction (NACE Section F)
Share of employment by enterprise size class, EU-27, 2006



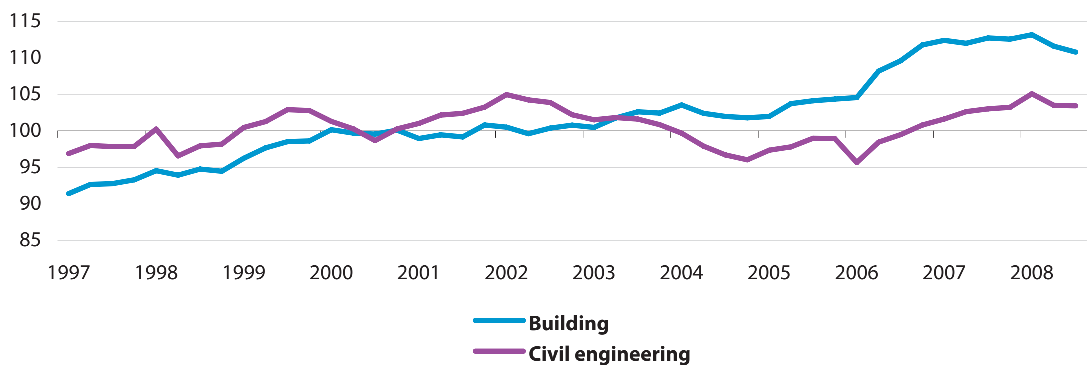
Source: Eurostat (SBS)

Figure 16.3: Construction
Construction confidence, seasonally adjusted, EU-27
(balance of the percentage of positive and negative responses)



Source: Directorate-General for Economic and Financial Affairs

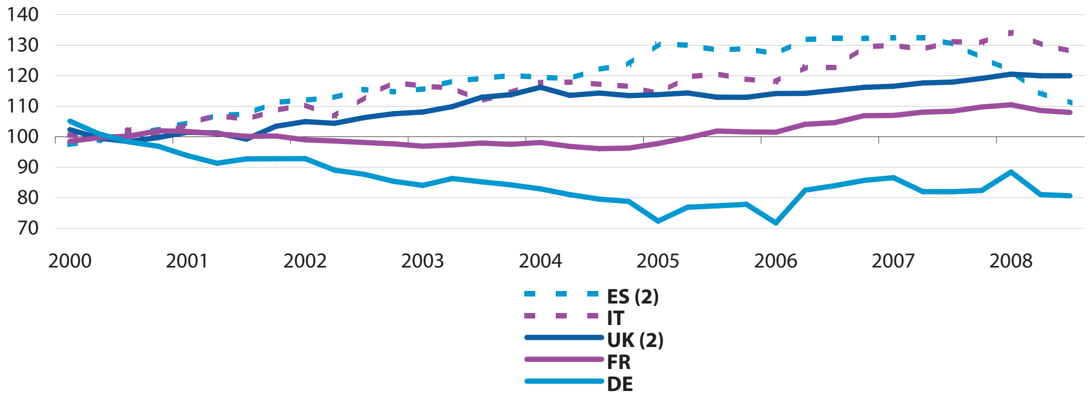
Figure 16.4: Construction
Production indices: building and civil engineering, EU-27, quarterly data (2000=100) (1)



(1) Seasonally adjusted data.

Source: Eurostat (STS)

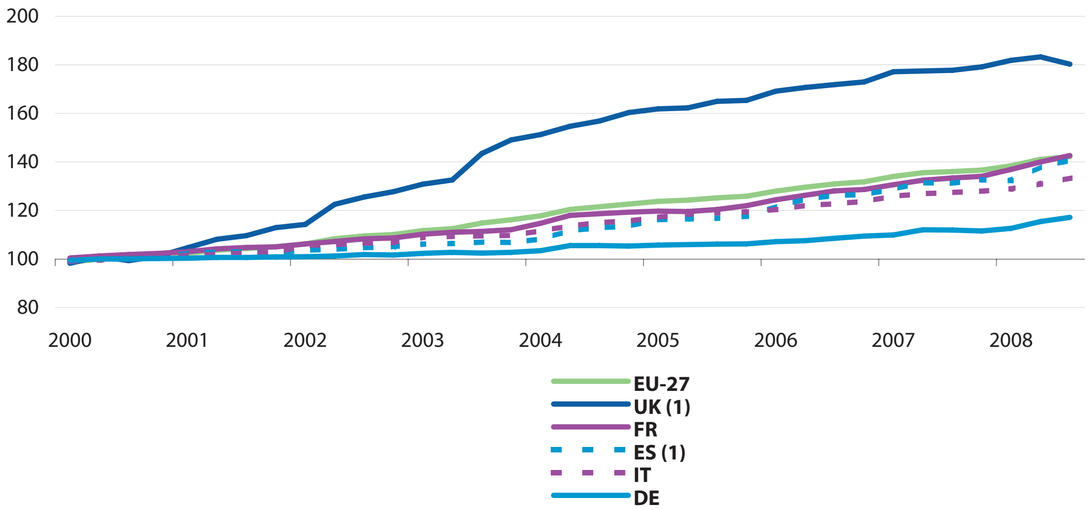
Figure 16.5: Construction
Production indices for construction, quarterly data (2000=100) (1)



(1) Seasonally adjusted data.
(2) Data for the latest quarters are provisional.

Source: Eurostat (STS)

Figure 16.6: Construction
Construction cost indices for residential buildings, quarterly data (2000=100)



(1) Data for the latest quarters are provisional.

Source: Eurostat (STS)

Most construction enterprises serve a local market and, consequently, the construction sector is characterised by a large number of small enterprises, and relatively few large ones. Micro and small enterprises (with less than 50 persons employed) together employed 72.1 % of the EU-27's workforce in the construction sector in 2006, 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 50.4 %. Large enterprises (with more than 250 persons employed) employed just over one tenth of the EU-27's workforce (12.0 %) in construction, compared with a non-financial business economy average of one third (32.6 %). Most Member States [3] displayed a similar pattern, as in 2006 the combination of micro and small enterprises employed at least two fifths of the construction sector's workforce in all Member States, and more than half of the workforce in the majority of them. The largest contribution by large enterprises was 25.4 % of the workforce in Romania.

(3) Poland, 2005; Ireland and Malta, incomplete or not available.

Developments in output, costs and prices

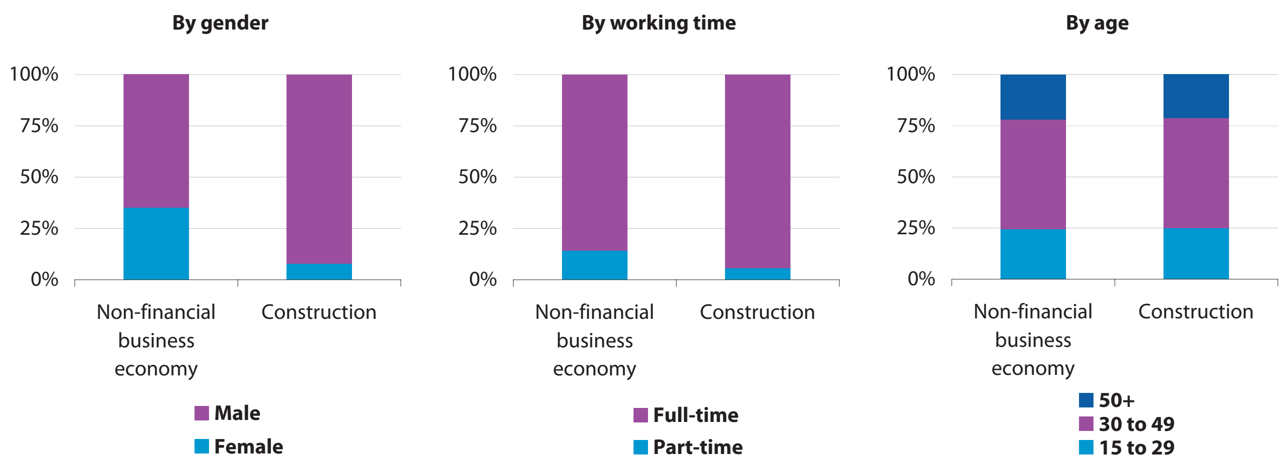
The development of construction output in the EU-27 and some of the larger Member States – based on the 'classification of constructions' (rather than NACE) shows that building work followed an upward trend for several years through to the first quarter of 2008. The most recent data (at the time of writing) shows a sharp fall in output, with building production down 1.4 % in the second quarter and by a further 0.7 % in the third quarter of 2008. The fall in the second quarter of 2008 was the biggest quarter on quarter reduction in EU-27 output in more than a decade.

The long-term development for civil engineering in the EU-27 was somewhat different, with short cyclical movements since the mid-1990s. However, between the first quarters of 2006 and 2008 there was a period of sustained growth, with output increasing overall by 9.8 %. After the first quarter of 2008 the situation reversed and negative rates of change were recorded for civil engineering, -1.5 % in the second quarter of 2008 and -0.1 % in the third quarter.

There were contrasting developments in construction output in the five largest Member States. Spain recorded almost uninterrupted quarter on quarter growth in construction output until the second quarter of 2007, since when output contracted by 16.1 % overall in the ensuing five quarters. Between 2000 and 2007, Italy recorded a relatively similar level of overall growth as Spain, with short periods of strong growth followed by periods of more gentle contraction. Although Italian construction output also recorded a fall in the second and third quarters of 2008 this was considerably less than that seen in Spain. The United Kingdom also showed a clear upward trend in construction output from the turn of the century, less pronounced than in Spain or Italy, but more regular. In contrast to the other large economies, construction output in the United Kingdom was stable in the middle half of 2008 rather than contracting. After several years of gently falling output, French construction activity grew steadily from the end of 2004 to the beginning of 2008. In the second and third quarters of 2008 French construction output fell, although less sharply than in Italy or Spain. Over much of the previous decade, German construction activity also recorded sustained periods of falling output, often more severe than in France. Nevertheless, between the second quarter of 2006 and the first quarter of 2008 German construction output increased every quarter except one, before it too recorded a contraction in the second and third quarters of 2008.

Construction cost indices for residential buildings for the same Member States show that growth was lowest in Germany and highest in the United Kingdom between 2000 and the middle of 2008, with the other three economies recording cost increases that were slightly below the EU-27 average.

Figure 16.7: Construction (NACE Section F)
Employment characteristics, 2007



Source: Eurostat (LFS)

Employment characteristics

An analysis of the EU-27's construction workforce, based on Labour Force Survey data, shows that the male proportion of the construction sector's workforce was relatively high, at 92.1 % in the EU-27 in 2007. This share was 27.2 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 22 percentage points higher than the national non-financial business economy average.

In the construction sector, 94.3 % of persons were employed on a full-time basis in the EU-27 in 2007 compared with 85.7 % in the non-financial business economy as a whole. Only in Romania was the part-time employment rate for construction lower than the national non-financial business economy average.

Expenditure, productivity and profitability

The level of tangible investment made by the construction sector in 2006 reached EUR 47.8 billion in the EU-27, equivalent to 4.6 % of all tangible investment made in the non-financial business economy. The investment rate shows the ratio between investment and value added: in 2006 this was 9.4 % for the EU-27's construction sector, approximately half the average for the non-financial business economy (18.4 %). Building installation and completion recorded the lowest investment rate among the construction subsectors. The capital-intensive subsector of renting of construction or demolition equipment had, unsurprisingly, the highest investment rate, reaching 32.8 %.

Turning from capital to operating expenditure, the share of personnel costs was relatively high in the construction sector, 22.8 % in the EU-27 in 2006. This high share reflected the labour-intensive nature of these activities, and was around 40 % above the non-financial business economy average of 16.1 %. Furthermore, each of the five construction subsectors recorded a share above the non-financial business economy average, with general construction (19.5 %) appearing as the least labour-intensive.

Apparent labour productivity in the EU-27's construction sector in 2006 was EUR 36.2 thousand per person employed and average personnel costs were EUR 27.9 thousand per employee. Both of these were below the equivalent averages for the non-financial business economy, particularly the apparent labour productivity. The relatively low levels of these two ratios in the construction sector are all the more notable given the small proportion of part-time employment within this sector (part-time employment has the effect of making these ratios lower). Indeed, most of the other activities that recorded particularly low values for these two indicators, for example, retail trade or accommodation and food services, were characterised by considerably higher levels of part-time employment.

Table 16.3: Construction (NACE Section F)
Expenditure, productivity and profitability, EU-27, 2006

	(EUR million)			(EUR thousand per person)		(%)	
	Personnel costs	Purchases of goods & services	Investment in tangible goods	Apparent labour productivity	Average personnel costs	Wage adjusted labour productivity	Gross operating rate
Construction	323 256	1 094 638	47 826	36.2	27.9	129.7	12.0
Site preparation (1)	9 701	30 263	3 521	37.6	29.1	129.2	13.2
General construction	187 542	772 842	32 000	38.7	27.7	139.7	11.0
Building installation	77 000	180 000	5 598	33.6	28.5	117.9	12.0
Building completion	45 986	104 343	5 019	30.4	27.2	112.1	16.6
Renting of construction or demolition equipment (2)	2 000	4 260	1 313	50.0	28.6	175.0	23.2

(1) 2005, except for investment.
(2) Purchases of goods and services and gross operating rate, 2005.

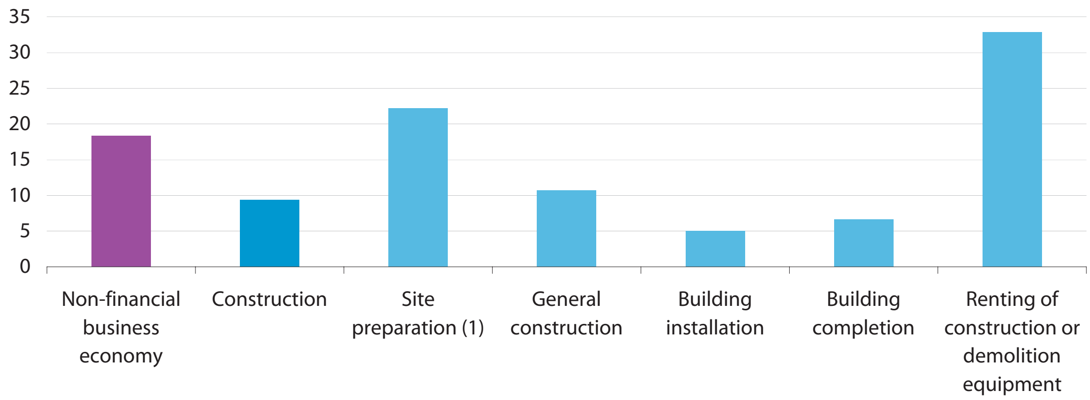
Source: Eurostat (SBS)

Figure 16.8: Construction (NACE Section F)
Analysis of operating expenditure, EU-27, 2006 (%)

(1) 2005.

Source: Eurostat (SBS)

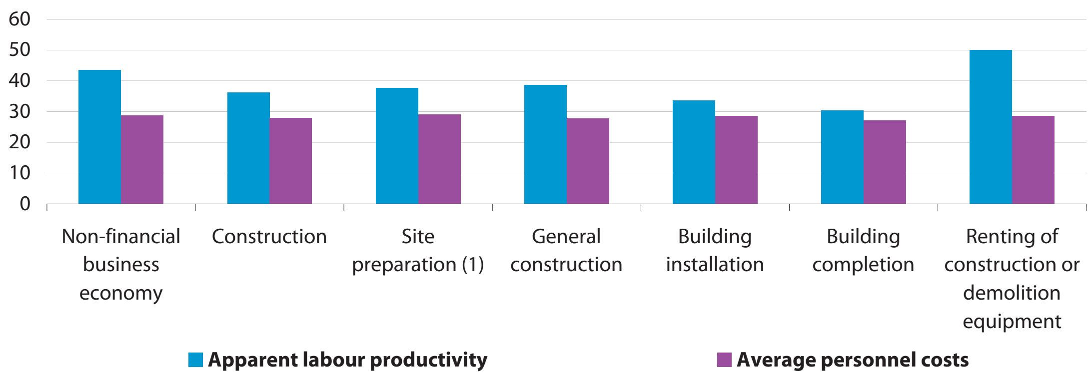
Figure 16.9: Construction (NACE Section F)
Investment rate, EU-27, 2006 (%)



(1) 2005.

Source: Eurostat (SBS)

Figure 16.10: Construction (NACE Section F)
Labour output and costs, EU-27, 2006 (EUR thousand per capita)



(1) 2005.

Source: Eurostat (SBS)

The wage adjusted labour productivity ratio combines the two previous ratios, and shows the extent to which value added per person employed covers average personnel costs per employee. This composite indicator is less affected by issues of part-time employment and so facilitates analysis between activities. In the EU-27's construction sector in 2006, this ratio was 129.7 %, indicating that value added per person employed was 29.7 % higher than average personnel costs per employee. This was conspicuously lower than the average for the non-financial business economy which was 151.1 %. Four of the five NACE groups that make up the construction sector recorded a wage adjusted labour productivity ratio in the EU-27 below the average for the non-financial business economy. The exception was the renting of construction or demolition equipment, which recorded a ratio of 175.0 %.

Unlike the productivity indicators, the gross operating rate (the relation between the gross operating surplus and turnover) in the construction sector in the EU-27 in 2006 was above the average for the non-financial business economy. This is partly an effect of the relatively high share of self-employment in construction, 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, so boosting the gross operating surplus. The gross operating rate in the EU-27's construction sector was 12.0 % in 2006, ranging from 11.0 % for general construction activities to 16.6 % for building completion, with the renting of construction or demolition equipment with an operator posting a gross operating rate well above this range, at 23.2 % (in 2005).

16.1: 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

By many measures, the site preparation sector (NACE Group 45.1) was the second smallest NACE group within the construction sector, larger only than the renting of construction or demolition equipment with an operator (NACE Group 45.5). In the EU-27, there were 107.8 thousand enterprises classified to the activity of site preparation in 2006. Together, these enterprises generated an estimated EUR 50.0 billion of turnover resulting in EUR 15.8 billion of value added (equivalent to 3.4 % of the construction total).

The demolition and wrecking of buildings and earth moving subsector (NACE Class 45.11) dominated the sector, accounting for 93.6 % of value added, the remainder being accounted for by the test drilling and boring subsector (NACE Class 45.12). The site preparation sector employed 420.0 thousand persons in the EU-27 in 2006, equivalent to 3.1 % of the construction sector's workforce.

France had the largest site preparation sector in the EU-27 with EUR 4.2 billion of value added generated in 2006 and a workforce of 87.7 thousand persons. In the majority of the Member States (4), site preparation accounted for a small proportion of the value added generated in the non-financial business economy, with Sweden, Spain and France showing the highest shares. In Spain, this largely reflected the high importance of all construction activities in the economy, while for Sweden and France it resulted from a specialisation in site preparation – as site preparation accounted for just over 10 % of the value added of the construction sector in Sweden and 6 % in France.

(4) Bulgaria, Poland and Romania, 2005; Cyprus, Malta, the Netherlands and Finland, not available.

Table 16.4: Site preparation (NACE Group 45.1)
Structural profile, EU-27, 2006

	Enterprises (thousand)	Turnover (EUR million)	Value added (EUR million)	Persons employed (thousand)	Share in total (%) Value added	Share in total (%) Persons employed
Site preparation	107.8	50 000	15 793	420.0	100.0	100.0
Demolition and wrecking of buildings; earth moving	104.0	47 779	16 932	416.7	93.6	94.5
Test drilling and boring	3.9	3 394	1 011	23.2	6.4	5.5

Source: Eurostat (SBS)

Table 16.5: Site preparation (NACE Group 45.1)
Structural profile: ranking of top five Member States in terms of value added and persons employed, 2006

	Highest value added (1)		Largest number of persons employed (1)		Most specialised: share in non-financial business economy (%) (2)	
	Country	(EUR million)	Country	(thousand)	Country	Value added
1	France	4 172	France	87.7	Sweden	0.8
2	Spain	2 989	Spain	75.1	Spain	0.6
3	Italy	2 131	Italy	47.7	France	0.5
4	United Kingdom	1 830	Germany	33.2	Greece	0.5
5	Germany	1 466	Czech Republic	28.1	Czech Republic	0.4

(1) Malta and Finland, not available; Poland, 2005.
(2) Cyprus, Malta, the Netherlands and Finland, not available; Bulgaria, Poland and Romania, 2005.
Source: Eurostat (SBS)

Expenditure and productivity

Tangible investment made by the EU-27's site preparation sector was EUR 3.5 billion in 2006, equivalent to 7.4 % of the tangible investment made in construction as a whole, a higher share than the sector contributed in terms of value added or employment. The investment rate in 2005 was 22.2 %, more than double the rate for construction as a whole, and also above the non-financial business economy average.

In 2005, 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 37.6 thousand per person employed and average personnel costs EUR 29.1 thousand per employee, resulting in a wage adjusted labour productivity ratio of 129.2 % (just above the construction average of 127.9 %).

16.2: 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 this 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 (NACE Group 45.2) was the largest NACE group within construction (NACE Section F), larger than all of the other construction activities combined in terms of turnover, value added and employment, but not in terms of a simple count of the number of enterprises. Close to 1.2 million enterprises were active in this sector in 2006, around two fifths of the construction total. These enterprises generated around EUR 300 billion of value added in the EU-27 in 2006, and employed 7.7 million persons.

A more detailed analysis of the EU-27's general construction sector in 2006 shows that the construction of buildings and civil engineering work (NACE Class 45.21) dominated the sector, with 70.5 % of value added and 71.6 % of employment. Other construction work involving special trades (NACE Class 45.25) was the second largest NACE class with 11.7 % of value added and 11.2 % of employment, larger than the specialised civil engineering activity of road building and the construction of airfields and sports facilities (NACE Class 45.23), and the erection of roof coverings

Table 16.6: General construction (NACE Group 45.2)
Structural profile, EU-27, 2006

	Enterprises (thousand)	Turnover (EUR million)	Value added (EUR million)	Persons employed (thousand)	Share in total (%) Value added	Persons employed
General construction	1 186.6	1 020 772	300 000	7 749.0	100.0	100.0
General construction of buildings and civil engineering works	855.2	764 958	211 646	5 545.8	70.5	71.6
Erection of roof covering and frames	107.7	47 482	19 862	526.5	6.6	6.8
Construction of motorways, roads, airfields and sport facilities	30.9	107 681	29 030	691.4	9.7	8.9
Construction of water projects	5.6	9 100	3 000	110.0	1.1	1.4
Other construction work involving special trades	187.0	88 000	35 100	870.0	11.7	11.2

Source: Eurostat (SBS)

Table 16.7: General construction (NACE Group 45.2)
Structural profile: ranking of top five Member States in terms of value added and persons employed, 2006

	Highest value added (1)			Largest number of persons employed (1)			Most specialised: share in non-financial business economy (%) (2)	
	Country	(EUR million)	(% of EU-27)	Country	(thousand)	(% of EU-27)	Country	Value added
1	Spain	62 691	20.9	Spain	1 695.4	21.9	Cyprus	12.7
2	United Kingdom	58 354	19.5	Italy	959.6	12.4	Spain	11.7
3	Italy	38 953	13.0	United Kingdom	740.3	9.6	Lithuania	9.5
4	France	31 254	10.4	France	709.2	9.2	Portugal	9.3
5	Germany	28 874	9.6	Germany	668.4	8.6	Ireland	8.3

(1) Malta, not available; Poland, 2005.
(2) Malta and the Netherlands, not available; Bulgaria, Cyprus, Poland and Romania, 2005.

Source: Eurostat (SBS)

and frames (NACE Class 45.22). By far the smallest activity within general construction activities was the construction of water projects (NACE Class 45.24).

The largest general construction sector in the EU-27 was in Spain; it generated EUR 62.7 billion of value added and employed 1.7 million workers, accounting for a little more than one fifth (20.9 %) of the EU-27's value added and 21.9 % of its workforce. The United Kingdom's general construction sector was only slightly smaller than the Spanish one in terms of value added, but the workforce was much smaller. The general construction sector in Italy contributed a further 13 % of EU-27 value added, with both France and Germany contributing about 10 % each. The very large Spanish general construction sector was reflected in its high specialisation in this activity, as this single NACE group alone contributed 11.7 % of total value added in the Spanish non-financial business economy, although this was lower than the 12.7 % recorded in Cyprus.

In most of the Member States, general construction activities generated half or more of the construction sector's value added, although Sweden (45.3 %), France (44.9 %) and Denmark (44.4 %) were all below this level. Particular specialisations among other subsectors can be noted: the construction of water projects in Romania and the Netherlands; the erection of roof coverings and frames in Germany, Austria and France; road building and the construction of airfields and sports facilities in Hungary and Slovenia.

Expenditure and productivity

Tangible investment made by the EU-27's general construction sector was EUR 32 billion in 2006, around two thirds of the tangible investment made in construction as a whole, which was a higher share than the sector contributed in terms of either value added or employment. This sector's investment rate in the EU-27 was 10.7 % in 2006, only marginally above the average rate for construction as a whole, and well below the non-financial business economy average. In 2006, only Belgium and Italy [5] recorded an investment rate in general construction that was above the national non-financial business economy average.

General construction recorded the lowest share of personnel costs in operating expenditure (19.5 % in the EU-27 in 2006) among the NACE groups covered by construction, although this was still above the average for the non-financial business economy. Apparent labour productivity in this sector averaged EUR 38.7 thousand per person employed, some EUR 2.5 thousand higher than the construction average. In contrast, average personnel costs were EUR 27.7 thousand per employee, slightly 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 139.7 %, some 10.0 percentage points higher than the construction average, but 11.4 percentage points below the non-financial business economy average.

(5) Bulgaria, Cyprus, Poland and Romania 2005; Ireland, Malta and the Netherlands, not available.

Table 16.8: General construction (NACE Group 45.2)
Expenditure and productivity, EU-27, 2006

	(EUR million)			(EUR thousand per person)	
	Personnel costs	Purchases of goods & services	Investment in tangible goods	Apparent labour productivity	Average personnel costs
General construction	772 842	187 542	32 000	38.7	27.7
General construction of buildings and civil engineering works	597 770	128 713	23 000	38.2	26.8
Erection of roof covering and frames	28 919	12 437	1 016	37.7	28.4
Construction of motorways, roads, airfields and sport facilities	82 120	20 348	4 000	42.0	30.6
Construction of water projects	10 000	2 900	965	34.0	26.4
Other construction work involving special trades	54 000	23 000	2 873	40.3	30.7

Source: Eurostat (SBS)

16.3: Building installation

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 (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 (NACE Group 45.3) consisted of 720.0 thousand enterprises, which employed 3.3 million persons and generated EUR 112 billion of value added in the EU-27 in 2006. As such, building installation made up more than one fifth of the construction sector (NACE Section F), contributing 23.6 % of the workforce and 22.0 % 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), which alone generated almost half of the sectoral total, and plumbing (NACE Class 45.33) that contributed just under two fifths of the total.

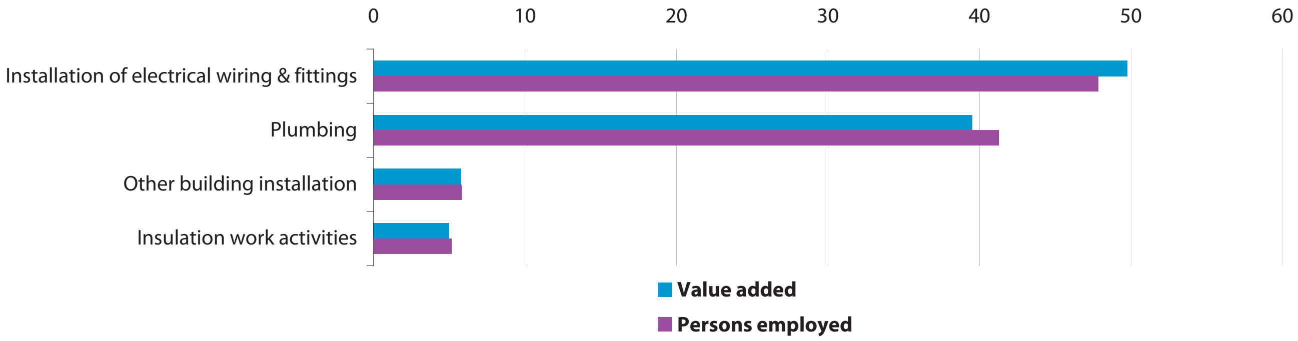
The United Kingdom had the largest building installation sector in the EU-27 in value added terms, contributing 19.1 % of EU-27 total. In employment terms, Spain had the largest workforce (16.2 % of

Table 16.9: Building installation (NACE Group 45.3)
Structural profile, EU-27, 2006

	Enterprises (thousand)	Turnover (EUR million)	Value added (EUR million)	Persons employed (thousand)	Share in total (%) Value added	Share in total (%) Persons employed
Building installation	720.0	292 000	112 000	3 330.0	100.0	100.0
Installation of electrical wiring & fittings	312.3	139 943	55 704	1 592.4	49.7	47.8
Insulation work activities	28.9	14 339	5 586	170.8	5.0	5.1
Plumbing	332.7	120 522	44 265	1 374.1	39.5	41.3
Other building installation	46.5	17 700	6 470	193	5.8	5.8

Source: Eurostat (SBS)

Figure 16.11: Building installation (NACE Group 45.3)
Relative weight within building installation, EU-27, 2006 (%)



Source: Eurostat (SBS)

Table 16.10: Building installation (NACE Group 45.3)
Structural profile: ranking of top five Member States in terms of value added and persons employed, 2006

	Highest value added (1) Country	(EUR million)	(% of EU-27)	Largest number of persons employed (1) Country	(thousand)	(% of EU-27)	Most specialised: share in non-financial business economy (%) (2) Country	Value added
1	United Kingdom	21 357	19.1	Spain	540.4	16.2	Spain	3.0
2	France	17 172	15.3	Italy	487.1	14.6	Luxembourg	2.9
3	Spain	16 024	14.3	Germany	460.8	13.8	Italy	2.3
4	Germany	15 388	13.7	France	410.7	12.3	Austria	2.3
5	Italy	14 633	13.1	United Kingdom	382.5	11.5	Sweden	2.3

(1) Malta, not available; Cyprus and Poland, 2005.
(2) Malta and the Netherlands, not available; Bulgaria, Cyprus, Poland and Romania, 2005.

Source: Eurostat (SBS)

the EU-27 total) with over half a million workers. Furthermore, the workforce in the United Kingdom only accounted for 11.5 % of the EU-27 total (7.6 percentage points less than its value added share). Spain and Luxembourg were the Member States most specialised in terms of the contribution made by building installation to the value added of the non-financial business economy.

Within the construction sector, the building installation sector [6] was most important (in value added terms) in Sweden where it contributed 29.6 % of construction value added, while in Germany, Denmark, Luxembourg and Austria it also contributed more than one quarter of construction value added.

[6] Cyprus and Poland, 2005; Malta, not available.

In all of the Member States, the two main subsectors (namely the installation of electrical wiring and fittings, and plumbing) together accounted for at least three quarters of sectoral value added. The contribution of the other building installation subsector was greatest in Portugal where it accounted for 17.1 % of building installation value added, and its share was also over 15 % in Hungary and Bulgaria. The specialist insulation subsector only exceeded 8 % of building installation value added in the Czech Republic and Slovakia.

Expenditure and productivity

In the EU-27's building installation sector, tangible investment was EUR 5.6 billion in 2006, which equated to 11.7 % of the construction total, around half this sector's share of value added and employment. The investment rate, in other words the relation between investment and value added, was just 5.0 %, the lowest among the construction NACE groups, and only slightly more than half the average recorded for construction as a whole. This was the fourth lowest investment rate of any NACE group (with 2005 or 2006 data available) within the non-financial business economy, higher only than three of the groups from within business services.

The share of personnel costs in total operating expenditure was 30.0 %, above the average for construction, but lower than for building completion or the renting of construction or demolition equipment (NACE Groups 45.4 and 45.5). The building installation sector recorded apparent labour productivity of EUR 33.6 thousand per person employed in the EU-27 in 2006. This was higher than for building completion, but otherwise was the lowest among the construction NACE groups. Average personnel costs were EUR 28.5 thousand per employee, which stood above the construction average. This combination of relatively low apparent labour productivity and slightly above average personnel costs resulted in a wage adjusted labour productivity ratio for building installation of just 117.9 %, well below the construction average of 129.7 %, and again higher only than the ratio for the building completion sector (among construction NACE groups). The wage adjusted labour productivity ratio for building installation was, across the Member States, generally below the average ratio for the construction sector, other than in Slovakia, the Netherlands, Poland, Lithuania and Austria [7].

[7] Ireland, Cyprus and Poland, 2005; Malta, not available.

Table 16.11: Building installation (NACE Group 45.3)
Expenditure and productivity, EU-27, 2006

	(EUR million)			(EUR thousand per person)	
	Personnel costs	Purchases of goods & services	Investment in tangible goods	Apparent labour productivity	Average personnel costs
Building installation	77 000	180 000	5 598	33.6	28.5
Installation of electrical wiring and fittings	38 775	84 405	2 545	35.0	29.1
Insulation work activities	4 266	8 708	235	32.7	29.6
Plumbing	30 000	75 578	2 430	32.2	27.9
Other building installation	4 000	10 900	371	33.5	26.7

Source: Eurostat (SBS)

16.4: Building completion

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 (NACE Class 45.45).

As well as work on new structures, the renovation, repair and maintenance markets are also important for building completion enterprises.

Structural profile

Building completion (NACE Group 45.4) was the main activity for around 873.1 thousand enterprises in the EU-27 in 2006. Together, these enterprises employed 2.5 million persons, equivalent to 17.7 % of the construction (NACE Section F) total. The share of paid employees in the workforce was just 68.0 % for the EU-27, well below the construction sector average of 82.2 %, indicating a particularly high proportion of self-employed workers.

From a turnover of EUR 180.1 billion, the building completion sector generated EUR 75.8 billion of value added in the EU-27, some 14.9 % of the construction sector total. Joinery installation (NACE Class 45.42) was the largest building completion subsector, contributing 29.8 % of the sector's value added, followed by painting and glazing (NACE Class 45.44) with 28.0 %. These two subsectors also had the largest share of the building completion workforce. Floor and wall covering work (NACE Class 45.43) was the third largest subsector with 18.1 % of value added and one fifth (20.0 %) of employment. Other building completion work (NACE Class 45.45) and plastering (NACE Class 45.41) each contributed between 10 % and 15 % of the sector's employment and value added.

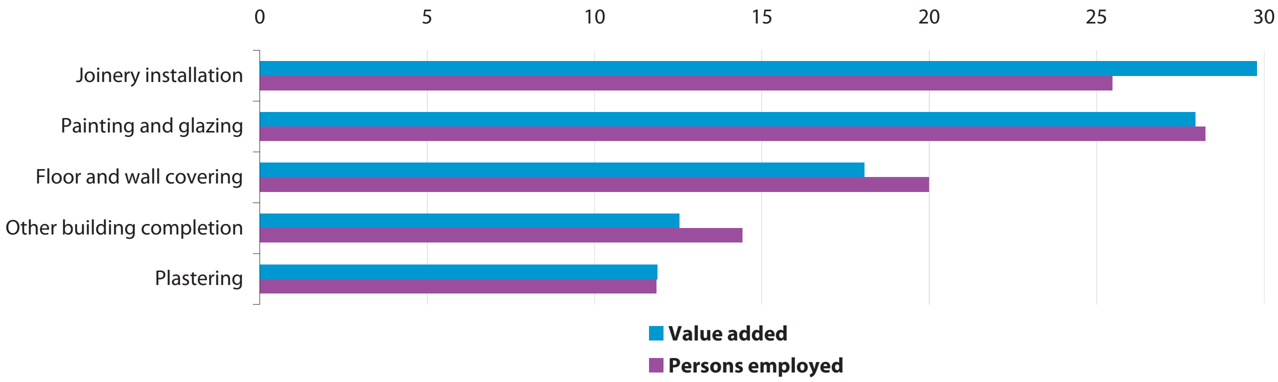
France had the largest building completion sector in value added terms, contributing over 22.0 % of the EU-27 total in 2006. The United Kingdom had the second largest contribution (19.4 %). In terms of employment, Spain and France had the largest building completion workforces, both with well

Table 16.12: Building completion (NACE Group 45.4)
Structural profile, EU-27, 2006

	Enterprises (thousand)	Turnover (EUR million)	Value added (EUR million)	Persons employed (thousand)	Share in total (%)	
					Value added	Persons employed
Building completion	873.1	180 058	75 791	2 489.8	100.0	100.0
Plastering	96.9	19 300	9 000	295.0	11.9	11.8
Joinery installation	219.4	58 353	22 579	634.0	29.8	25.5
Floor and wall covering	172.9	35 810	13 694	497.8	18.1	20.0
Painting and glazing	221.0	43 866	21 186	704	28.0	28.3
Other building completion	162.8	22 700	9 500	359	12.5	14.4

Source: Eurostat (SBS)

Figure 16.12: Building completion (NACE Group 45.4)
Relative weight within building completion, EU-27, 2006 (%)



Source: Eurostat (SBS)

Table 16.13: Building completion (NACE Group 45.4)
Structural profile: ranking of top five Member States in terms of value added and persons employed, 2006

	Highest value added (1)			Largest number of persons employed (1)			Most specialised: share in non-financial business economy (%) (2)	
	Country	(EUR million)	(% of EU-27)	Country	(thousand)	(% of EU-27)	Country	Value added
1	France	16 697	22.0	Spain	475.6	19.1	Spain	2.2
2	United Kingdom	14 681	19.4	France	439.2	17.6	Denmark	2.2
3	Spain	11 965	15.8	Italy	347.1	13.9	France	2.1
4	Germany	9 568	12.6	Germany	333.4	13.4	Luxembourg	1.8
5	Italy	7 416	9.8	United Kingdom	231.2	9.3	United Kingdom	1.4

(1) Malta, not available; Poland, 2005.
(2) Malta and the Netherlands, not available; Bulgaria, Cyprus, Poland and Romania, 2005.

Source: Eurostat (SBS)

over 400 thousand workers each. The relative importance of the building completion sector was particularly high in Spain, Denmark and France, with this sector contributing more than 2.0 % of non-financial business economy value added in all three of these Member States. In terms of this sector's importance within the construction sector, this was most pronounced in Denmark and France where it contributed 26.0 % and 24.0 % respectively to value added within construction. In contrast, building completion contributed less than 5 % of total construction value added in Slovakia, Romania, Ireland, Estonia and Bulgaria [8].

A number of specialisations among the building completion subsectors can be noted in particular Member States notably: joinery installation contributed 63.9 % of building completion value added in Denmark; painting and glazing contributed more than 50 % of value added in Cyprus, Finland and Sweden; floor and wall covering work contributed 89.8 % of value added in Lithuania; and other building work contributed more than 40 % of value added in Italy and Slovenia.

Expenditure and productivity

The EU-27's building completion sector made EUR 5.0 billion worth of tangible investment in 2006, 10.5 % of the construction total, lower than this sector's share of value added and employment. The investment rate was 6.6 %, which was the second lowest among the construction NACE groups, just above that for building installation. Only in Slovakia and Latvia was the investment rate in this sector higher than the average for construction as a whole [9].

For building completion, the share of personnel costs in total operating expenditure was 30.6 %, the second highest share among construction NACE groups behind the renting of construction or demolition equipment (NACE Group 45.5).

Building completion in the EU-27 recorded apparent labour productivity of EUR 30.4 thousand per person employed in 2006, the lowest of the construction NACE groups and EUR 5.7 thousand lower than the construction average. Average personnel costs in these activities were EUR 27.2 thousand per employee, again the lowest among

(8) Poland, 2005; Malta, not available.
(9) The Netherlands and Poland, 2005; Ireland and Malta, not available.

Table 16.14: Building completion (NACE Group 45.4)
Expenditure and productivity, EU-27, 2006

	(EUR million)			(EUR thousand per person)	
	Personnel costs	Purchases of goods & services	Investment in tangible goods	Apparent labour productivity	Average personnel costs
Building completion	45 986	104 343	5 019	30.4	27.2
Plastering	5 400	10 400	375	30.5	26.1
Joinery installation	13 143	35 938	1 630	35.6	29.4
Floor and wall covering	8 288	22 095	977	27.5	24.8
Painting and glazing	14 787	22 275	1 098	30.1	28.6
Other building completion	4 400	13 600	935	26.5	23.5

Source: Eurostat (SBS)

the construction NACE groups, but just EUR 0.7 thousand per employee lower than the construction average. The low average personnel costs were not enough to compensate for low apparent labour productivity, and as such the wage adjusted labour productivity ratio was just 112.1 %, clearly the lowest of the five construction NACE groups. Indeed, this was the third lowest wage adjusted labour productivity ratio among all of the non-financial business economy NACE groups (with 2005 or 2006 data available), higher only than for two retail trade and repair groups.

This particularly low ratio for the EU-27 reflected the fact that six Member States [10] recorded wage adjusted labour productivity ratios that were below 100 % in 2006, indicating that average personnel costs were higher than apparent labour productivity. This was most notably the case in the Netherlands and Greece where ratios below 90 % were recorded. In contrast, in the United Kingdom and Latvia the wage adjusted labour productivity ratio for building completion exceeded the national average for the whole of the non-financial business economy.

(10) Ireland and Poland, 2005; Malta, not available.

16.5: Renting of construction equipment

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

Structural profile

Renting of construction or demolition equipment (NACE Group 45.5) was the smallest NACE group within the EU-27 construction sector (NACE Section F) in terms of the number of enterprises in the sector, as well as its employment, turnover and value added; this sector contributed less than 1 % to the construction total for each of these measures.

Within the EU-27, the United Kingdom dominated this small sector, with its EUR 1.4 billion of value added equal to 35.0 % of the EU-27 total in 2006, and its workforce accounting for 22.0 % of the EU-27 total. Spain and the Netherlands were the next largest Member States by both of these measures. In terms of value added, however, Estonia and Slovenia were the only Member States where this activity contributed 0.3 % or more to the non-financial business economy total [11].

Expenditure and productivity

Although small in terms of output and employment, this sector recorded a relatively substantial level of tangible investment. Tangible investment in this sector was valued at EUR 1.3 billion in the EU-27 in 2006, which equated to 2.7 % of the total for the construction sector, some 3.5 times as high as its contribution in value added terms. The investment rate, which relates investment to value added, was 32.8 % for the renting of construction or demolition equipment, well above the non-financial business economy average of 18.4 %. Indeed, the investment rate was the sixth highest among the 149 non-financial business economy NACE groups with 2005 or 2006 data available. To some extent these high investment indicators reflect the nature of this capital-intensive activity.

EU-27 personnel costs accounted for 32.1 % of operating expenditure in this sector in 2005, the highest share among the construction NACE groups. At EUR 28.6 thousand per employee in 2006, average personnel costs were also above the construction average, but were lower than for site preparation (2005). Apparent labour productivity was EUR 50.0 thousand per person employed, by far the highest level in construction, and this resulted in a particularly high wage adjusted labour productivity ratio of 175.0 %. It should be noted that financial costs and depreciation charges constitute the main cost elements (other than personnel costs) in this activity and these are not considered when calculating gross value added on which these productivity measures are based.

(11) Bulgaria, Poland, Romania and Finland, 2005; Cyprus, Malta and the Netherlands, not available.

Table 16.15: Renting of construction or demolition equipment with operator (NACE Group 45.5)
Structural profile: ranking of top five Member States in terms of value added and persons employed, 2006

	Highest value added (1)			Largest number of persons employed (1)			Most specialised: share in non-financial business economy (%) (2)	
	Country	(EUR million)	(% of EU-27)	Country	(thousand)	(% of EU-27)	Country	Value added
1	United Kingdom	1 401	35.0	United Kingdom	17.6	22.0	Estonia	0.3
2	Spain	593	14.8	Spain	10.9	13.6	Slovenia	0.3
3	Netherlands	533	13.3	Netherlands	7.9	9.9	Lithuania	0.2
4	France	258	6.4	Poland	7.5	8.9	Finland	0.2
5	Sweden	217	5.4	Romania	6.1	7.6	Ireland	0.1

(1) Cyprus and Malta, not available; Poland and Finland, 2005.
(2) Cyprus, Malta and the Netherlands, not available; Bulgaria, Poland, Romania and Finland, 2005.

Source: Eurostat (SBS)

Table 16.16: Construction (NACE Section F)
Main indicators, 2006 (1)

	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	IT	CY	LV	LT
Enterprises	62.9	14.6	145.8	33.7	202.5	4.8	1.3	109.0	427.3	410.8	594.7	6.2	4.9	17.6
Persons employed	262.8	185.3	393.2	202.9	1 498.8	50.0	72.5	309.7	2 797.5	1 651.5	1 844.9	34.4	73.2	124.8
Turnover	39 053	5 335	24 910	28 163	153 241	3 552	21 391	16 456	294 594	201 341	223 408	2 395	4 023	4 058
Production	39 478	5 577	24 670	28 300	143 858	2 420	23 288	18 553	310 581	199 253	250 355	2 397	4 138	4 172
Purch. of goods & serv.	29 048	4 909	20 540	19 022	90 739	2 784	15 646	12 851	217 563	132 090	178 263	1 191	3 246	3 067
Value added	11 081	1 056	5 288	9 798	55 442	817	9 220	6 384	94 262	69 552	63 258	1 207	982	1 267
Personnel costs	7 296	412	2 875	7 198	43 006	491	2 313	3 351	63 794	55 455	31 226	744	381	769
Average personnel costs	37.0	2.4	11.0	39.6	32.6	10.0	47.1	17.4	26.8	37.7	27.7	24.1	5.2	6.9
Gross operating surplus	3 786	644	2 414	2 600	12 435	326	3 515	3 033	30 468	14 098	32 032	463	600	498
Gross investment	3 158	763	697	1 211	3 339	127	438	743	10 767	5 267	10 058	78	275	274
Apparent labour prod.	42.2	5.7	13.5	48.3	37.0	16.3	127.2	20.6	33.7	42.1	34.3	35.0	13.4	10.1
Wage adj. labour prod.	113.9	241.9	122.8	121.8	113.4	164.0	248.9	118.8	125.9	111.8	123.8	145.3	256.5	146.3
Gross operating rate	9.7	12.1	9.7	9.2	8.1	9.2	24.1	18.4	10.3	7.0	14.3	19.3	14.9	12.3
Investment rate	28.5	72.3	13.2	12.4	6.0	15.5	7.5	11.6	11.4	7.6	15.9	6.5	28.0	21.6

	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	NO
Enterprises	2.2	69.3	:	81.7	25.6	160.2	122.1	36.1	15.8	4.9	36.9	68.9	229.2	39.7
Persons employed	35.7	239.9	:	481.2	252.6	648.3	493.7	427.4	71.7	72.1	136.2	271.5	1 393.5	157.9
Turnover	3 813	14 588	:	77 067	30 455	27 078	32 518	12 778	5 437	4 933	20 579	38 154	256 676	29 110
Production	3 195	8 022	:	77 249	30 330	22 507	32 623	13 113	5 298	4 831	20 936	38 120	256 510	28 610
Purch. of goods & serv.	2 330	12 392	:	53 216	19 022	20 721	25 304	10 805	4 168	3 968	14 278	26 200	159 682	19 305
Value added	1 620	2 361	:	23 916	12 229	7 242	8 594	2 788	1 419	989	7 008	12 391	97 624	9 985
Personnel costs	1 220	1 402	:	17 369	8 710	3 088	5 611	1 586	922	562	4 706	9 113	47 543	7 244
Average personnel costs	35.2	7.1	:	46.2	37.3	6.6	12.0	3.8	15.2	7.8	38.3	40.6	39.0	52.8
Gross operating surplus	400	959	:	6 675	3 519	4 155	2 983	1 203	497	426	2 302	2 776	50 082	2 741
Gross investment	64	460	:	1 343	781	780	1 321	2 050	363	235	765	1 561	7 118	921
Apparent labour prod.	45.3	9.8	:	49.7	48.4	11.2	17.4	6.5	19.8	13.7	51.5	45.6	70.1	63.3
Wage adj. labour prod.	129.0	138.9	:	107.5	129.8	169.9	144.8	173.4	129.9	174.7	134.4	112.5	179.8	119.8
Gross operating rate	10.5	6.6	:	8.7	11.6	15.3	9.2	9.4	9.1	8.6	11.2	7.3	19.5	9.4
Investment rate	4.0	19.5	:	5.9	6.4	10.8	15.4	73.5	25.6	23.8	10.9	12.6	7.3	9.2

(1) Poland, 2005; Ireland, investment rate, 2005; the Netherlands, gross investment and investment rate, 2005; unless otherwise stated, values refer to EUR million; number of enterprises and number of persons employed are given in thousands; average personnel costs and apparent labour productivity are given in EUR thousand per person; wage adjusted labour productivity, gross operating rate and investment are ratios expressed as percentages.

Source: Eurostat (SBS)