THE CONSTRUCTION SECTOR SYSTEM APPROACH: AN INTERNATIONAL FRAMEWORK

Report by CIB W55-W65

Construction Industry Comparative Analysis Project Group

CIB Report: Publication

Editor:

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Centre Scientifique et Technique du Bâtiment – Paris

Published by:

CIB Rotterdam - 2004

ISBN:

April 2004

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CHAPTER VIII

THE PORTUGUESE CONSTRUCTION SYSTEM: THE ADJUSTMENT PROCESS TO A CHANGING MARKET AFTER THE BOOM YEARS

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INTRODUCTION

The study of the construction industry and its role in national economy has been extensively addressed. Traditional analysis of the construction industry has mainly focused on the building firm's size, the structure of employment, and the division of building, civil engineering, and R & M construction works. Existing assumptions persist that structural changes will emerge in the construction industry of a particular country as the national economy develops over time. Bon (1992) analysing the role of the construction sector in economic development presented a development pattern of the construction industry based on stages in development. The main aspects of the development pattern were as follows: in the early stages of development, the share (percentage) resulting from construction in national output will increase, but ultimately will decrease in absolute and relative terms in more advanced industrial countries. Another important aspect of the development pattern is that while the share allotted to improvement and maintenance in total construction increases, the proportion for new construction decreases in the latest stages of development. Ruddock (1999) using more recent data collected from a large sample of countries representing all stages of economic development corroborated this proposition.

An emerging approach is the "meso-economic analysis" of the construction industry or the "construction sector system", which takes into account not only construction firms, but also the wide range of participants in the development of the building environment. According to Carassus (1999), production is only one of the dimensions of the analysis, since the use and the adaptation of products are becoming the centre of the system in industrially advanced countries. Further, there is a constant interaction between the system and its participants, and this interaction is determined by the system, rules and conventions. Does this approach also apply to the construction sector of countries in the middle-income range? What is the effect of the increasing globalisation of the economy, particularly that of property investment, on the development pattern of the construction industry in less advanced countries?

The Portuguese construction sector is one of most important and largest industries of the nation. It contributed to 6.4% of the total value added and 12.1% to national employment in the year 2002. When the activities of design and consultancy services, property activities, the building materials industry, construction machinery, and Government construction departments are added to the construction sector, it is estimated that their share in total output and employment are roughly double those values. Throughout the last decade, construction and economically-related sectors have experienced a sustained growth in line with the development of the general economy. However, in the last four years, the pattern has shown signs of flagging due to excess supply, particularly in the new residential housing segment, and changing economic environment.

This paper focuses on the application of the 'construction system' model to the Portuguese case in terms of construction firm organisations, market development, player configurations and the relationship between the construction sector and the general economy.

BACKGROUND TO THE STUDY

The application of meso-economic analysis to the study of the construction industry is still in its infancy. According to Carassus (1999), several interchangeable concepts are used in the meso-economics literature: sector, production chain, economic meso-system and industry cluster. The concept of the economic meso-system is, according to same author, an appropriate way to capture the complex nature of the built environment because it deals with, on the one hand, the participants producing specific types of goods and services, and, on the other hand, the institutions responsible for regulating the individual and collective behaviour of the participants involved in the production. It is worth noting that the application of this method of analysis is very close to that proposed by the Australian Expert Group on Industry Studies or AEGIS (1999) in its study of the Australian construction industry. The AEGIS classification divides the industry into five product - system segments: on-site services, client services, building and construction project firms, building products and supplies, and tools, machinery and equipment manufacturing. A detailed review of the construction meso-economics literature is provided in a paper by Carassus (2000).

THE MACRO-ECONOMIC ENVIRONMENT

Before proceeding with the characterisation of the Portuguese construction sector system, it is worth presenting here an overview of the recent country's macro-economic environment. A more complete survey is provided in Lopes (2001). The Portuguese economy has enjoyed an era of remarkable economic performance and a low rate of inflation. Output growth averaged 3.4% per year on a GDP basis during the period 1994-1999, raising the GDP per capita measured in purchasing power parity terms to 69.4% of that of the European Union average of 53.2% in 1985 (OECD, 1999). The construction industry and related sectors have played an important role in the country's economic performance. Construction value added represents 6.5 % of the annual GDP and contributes around 12 % to total employment. According to the figures provided by the National Statistics Institute (INE-b, various years), either 68,522 large or small enterprises were active in the construction industry in 1998, with 353,574 employees. This growth in construction employment (see Table 2) has helped to lower the country's unemployment rate to 4.4%, one of the lowest in the OECD countries.

The last two decades (and particularly from the mid-1980s in the case of Portugal) have witnessed several changes within the construction industry and economically-related sectors at both the national and international levels. The run-up in monetary integration was accompanied by a number of structural reforms that impacted directly and indirectly on the construction market. One of the catalysts of the improved performance was the restructuring of the financial system, with a progressive liberalisation of capital flows. In addition, the implementation of an ambitious privatisation programme stimulated product market competition and productivity gains, particularly in the booming financial sector services (OECD, 1999). These developments coupled with the fierce competition between banks and other financial institutions as regards mortgage credit have had a strong impact on the development of the construction market, particularly on the new residential housing sub-segment.

On the supply side, the surge in equity and bank-lending markets influenced the operating environment of the major national construction enterprises through mergers and acquisitions of companies. The participation of banks and other financial institutions in the capital of or joint-venturing with major construction companies facilitated the market diversification of the latter, namely, in the property market and utilities services. As regards the property market, the changes in the general environment, increasing per capita income and urbanisation (particularly the EXPO 98 developments in Lisbon) spurred on the development of a more modern property sector in the metropolitan areas similar to those prevailing in the 'maturing' markets of other European countries (for a discussion of this concept of 'maturity', see e.g. Magalhães, 1999).

STATISTICAL SOURCES

The intention of this section is to provide a brief explanation of the accounting procedures of the main bodies concerned with the provision of data and other statistical information pertaining to the construction industry and related sectors in Portugal. The statistical sources used stem from the various publications of the National Institute of Statistics (INE) and the *Construction Annual Report* published by the Association of Building Construction and Public Works Enterprises (AECOPS). The INE *Quarterly National Accounts* is the official publication that provides the most important statistical data concerning the nation. As with other Western European nations, the *Quarterly National Accounts* is fully consistent with the European System of National and Regional Accounts (ESA95). It provides data on Construction Value Added (CVA) and Gross Fixed Capital Formation in Construction (GFCFC), both in current and constant prices. However, since 1995, GFCFC data have not been presented in a disaggregated form. This publication also does not provide data on Gross Construction Output (GCO). Data on construction employment stems from the *Employment Statistics* also published by the INE. The *Construction Annual Report* provides data on Gross Production Value (GPV) by sector companies, disaggregated into its different market sub-segments, and the data are based on regular surveys on construction companies. As there is no official data pertaining to the repair and maintenance (R & M) sub-segment, the figures presented in this study should be taken with a great degree of caution. However, it is generally recognised that R & M data are under-estimated. The same warning also applies to the data pertaining to other segments of the construction sector system presented in this study - design and consultancy services, and property activities. Another construction-related industry analysed here is the building materials industry. All data are supplied from the INE *Business Surveys*, but only enterprises with 20 or more employees are fully reported on to this official body.

THE PORTUGUESE CONSTRUCTION ACTIVITY IN THE PERIOD 1990-2002

Since the entrance of the country in the European Union in 1986, the Portuguese economy has entered an era of sustained economic growth. As stated earlier, the run-up in the economic process and monetary integration started in the early 1990s, coupled with the transfer of EU structural funds, have impacted heavily on the construction industry activity and economically related sectors. New residential building and civil engineering works have been the driving forces bolstering this remarkable growth throughout the last decade.

The Clout of the On–Site Construction Activity

Table 1 presents construction value added (CVA) and gross fixed capital formation in construction (GFCFC) for the period 1990-2002. It is easy to see that the indicators of the construction activity experienced a remarkable growth in the period despite a drop-off in CVA in 1992/1993, which was accompanied by a plunge in national output after the world-wide economic recession in 1991/1992. Table 1 also indicates that two development patterns can be observed: i) the period 1990-1997, in which the indicators of construction activity increased not only absolutely but also relatively, peaking in 1997, which coincided with the completion of most of the major infrastructures and developments of the World EXPO' 98 hosted in Lisbon. The share of CVA in GDP increased from 5.5% in 1990 to 6.7 in 1997. ii) the period 1998-2002, in which an absolute increasing growth in both CVA and GFCFC was accompanied by a relative decreasing growth in the same indicators. The share of CVA in GDP fell to 6.4% in 2002, the year that even experiences an absolute decrease in the construction industry activity. Thus, a trend of relative decline is clearly apparent in the last four years.

Table 1 - Construction Value Added (CVA), Gross Fixed Capital Formation in Construction (GFCFC) and the Share of CVA in GDP (1990-2002)

Year	CVA (constant 1995 million EUR)	GFCFC (constant 1995 million EUR)	Share of CVA in GDP (%)
1990	4045.6	8348.5	5.5
1991	4181.3	8814.3	5.6
1992	4341.9	9152.9	5.7
1993	4311.2	9088.1	5.5
1994	4385.7	9245.2	5.6
1995	4853.3	9824.8	6.0
1996*	5090.2	10361.0	6.2
1997	5432.6	11784.4	6.7
1998	5727.4	12592.0	6.6
1999	5893.7	13053.6	6.6
2000	6155.0	13645.3	6.6
2001	6308.3	14017.8	6.5
2002	6060.2	13547.6	6.4

Source: INE-a (various issues); Note: * - New series

Construction Employment

The growth in construction activity is also visible in employment. Table 2 shows data on construction employment, total employment and the contribution of construction to total employment. Although the data for the whole period are not strictly comparable due to changes in statistical procedures and coverage (until 1998, data referred only to the Portugal mainland and after 1998 to all of Portugal), an absolute and relative growth was generally observed, particularly from 1995 and subsequently. The share of construction employment in total employment reached 12.2% in 2002, one of the highest levels in the European Economic Area.

Table 2 - Employment by Construction Industry and Total National Employment and Share of Construction Employment in National Employment: 1990-2002

Year	National Employment (000')	Construction Employment (000')	Share of Construction in National Employment (%)
1990	4466.3	352.6	7.9
1991	4631.0	362.8	7.8
1992 *	4340.7	346.2	7.9
1993	4255.2	340.2	8.0
1994	4251.1	330.8	7.8
1995	4225.1	340.3	8.1
1996	4250.5	343.1	8.1
1997	4331.8	388.4	9.0
1998 *	4863.3	518.8	10.9
1999	4928.7	538.7	11.2
2000	5028.9	596.4	12.1
2001	5098.4	586.1	11.5
2002	5106.5	622.3	12.2

Source: INE-b (Employment Statistics)
Note: * - New series

Changes in the Composition of Construction Output in Portugal

Table 3 shows the evolution of construction output for the period 1990-2000. As stated earlier, there is no consistency of data throughout the period. All works during the period 1990-2002 and disaggregate data in the period 1990-1995 concern GFCFC. Disaggregated data for the period 1996-2000 refer to gross production by construction firms. It can be seen that all works and the different market sub-segments increased markedly during the period. However, some patterns of change can be observed. In 1990-1997, civil engineering was the fastest growing segment, followed by residential building after 1997. Non-residential building increased fairly well throughout the period. It can also be observed that residential building constituted the largest share of the Portuguese construction output, a pattern that is also clearly illustrated in Table 4 as regards new residential building. No other EU member country (not even Ireland) has been able to match this outstanding performance in this market sub-segment.

Table 3- Composition of Construction Output (1990-2002)

Year	Residential Building		Non Residential Building		Civil Engineering		GFCFC (all works)	
	Share (%)	% change of preceding year	Share (%)	% change of preceding year	Share (%)	% change of preceding year	(EUR million - current prices)	% change of preceding year
1990	52.7	1.5	22.8	7.4	24.5	17.3	6180.3	6.4
1991	49.9	-1.5	22.8	4.3	27.3	19.1	6935.8	4.8
1992	48.7	1.7	22.6	2.3	28.7	8.5	7634.6	3.7
1993	48.0	-1.2	22.1	-2.0	30.0	4.9	7937.4	0.4
1994	46.8	-0.8	22.4	3.2	30.8	4.6	8485.5	1.7
1995	45.4	2.6	22.1	4.6	32.5	11.6	9470.7	5.9
1996 *	50.7	-	22.0	-	27.3	-	10643.8	5.5
1997	50.5	11.6	21.6	10.4	27.9	14.5	12604.4	13.9
1998	51.8	9.0	20.5	0.3	27.7	5.0	13792.5	6.9
1999	54.0	6.0	19.6	0.6	26.4	0.0	14578.9	3.7
2000	55.0	3.0	19.1	1.3	25.9	2.7	16187.0	4.5
2001	53.7	-1.5	19.5	3.0	26.8	5.0	17159.8	2.7
2002	52.4	-4.0	20.4	2.0	27.2	0.0	17228.8	-3.4

Sources: INE-a (various issues) for all works in 1990-2002 and disaggregated data in 1990-1995; Estimates by AECPOS (various years) f or disaggregated data in 1996-2002.
Note: GFCFC comprises the output of new works, major repairs, alterations, site preparation by construction firms and construction works done by other entities. It does not comprise repair and maintenance works.
*- New series for disaggregated data

There is no official data on R & M construction works in Portugal. According to AECOPS (2003 edition), which used data from the *Euroconstruct Report*, the share of this market sub-segment averaged 7.6% of the total market output for the period 1998-2002, the lowest value among the Euroconstruct countries. Although the figures from Portugal, as noted earlier, might be under-reported, they do reflect somewhat the structural imbalance of the construction market, let alone issues concerning data availability and reliability. However, data on awarded public work tenders (AECOPS, 2001 edition) suggest that there has been a marked increase in R & M construction work. The share of R & M public works in total public works increased from 13% in 1993 to 26.4% in 2000. The repair and maintenance of the road network accounted for most of this increase.

The recent legislative measures targeted at stimulating initiatives for the rehabilitation and modernisation of specific aging residential parks, particularly in the metropolitan areas, added to the EU directives to lower the VAT in labour-intensive industries, will undoubtedly contribute to the development of this sub-segment of the construction market.

Table 4–New Construction and R & M in Portugal and in Euroconstruct Countries (%): 1998-2002

	Residential Building	Non Residential Building	Civil Engineering	Repair & Maintenance	Total
Portugal	48.8	17.2	26.4	7.6	100
Euroconstruct (average for 15 countries)	24.0	19.5	20.5	36.0	100

Source: AEC0PS (various years)

Size Distribution of the Construction Firms

The construction industry in Portugal is very fragmented. Table 5 below shows the distribution of firms according to company size for the period 1993-1998. Although there is a discontinuity in the series in 1995-1996 due to change in statistical procedures and improvement in statistical coverage, it can be observed that small firms (up to 9 employees) represented 93% of the total number of firms in 1996-1998, a pattern similar to those of other countries in the European Union. The number of large and medium-sized firms remained fairly stable during the period 1993-1998. The share of large firms (firms employing 100 or more) varied between 0.7 and 0.8% in 1993-1995, and between 0.3 and 0.4% in 1996-1998.

Table 5- Construction Firms by Size of Company (1993-1998)

Size	1993		1994		1995		1996 *		1997		1998	
	Nº of Firms	%	Nº of firms	%	Nº of firms	%	Nº of firms	%	Nº of firms	%	Nº of firms	%
Up to 9 Employees	23780	83.7	26457	84.2	25591	84.2	63972	93.1	59669	92.8	63759	93.1
10 – 19 Employees	2548	9.0	2732	8.7	2665	8.8	2724	4.0	2738	4.3	2831	4.1
20 – 100 Employees	1844	6.5	1971	6.3	1923	6.3	1786	2.6	1683	2.6	1692	2.5
100 + Employees	237	0.8	246	0.8	225	0.7	236	0.3	218	0.3	240	0.4
Total	28409	100	31406	100	30404	100	68718	100	64308	100	68582	100

Source: INE-c, various years (Business Surveys)
*- New series

The distribution of employment according to company size for the period 1993-1998 is presented in Table 6. It can be seen that there was no significant change in employment and in its distribution across the size category during the period 1993-1995. In line with the increase in total employment for the period 1995-1998, the contribution of the small firms to total employment increased both absolutely and relatively, and the share of the large firms decreased relatively during the same period.

Table 6– Employment in Construction Firms by Size of Company (1993-1998)

Size	1993		1994		1995		1996 *		1997		1998	
	Nº of Emplo-yees	%	Nº of Emplo-yees	%	Nº of Emplo-yees	%	Nº of Emplo-yees	%	Nº of Emplo-yees	%	Nº of Emplo-yees	%
Up to 9 Employees	69823	30.0	75657	30.9	74314	32.0	144593	47.2	159186	49.2	185893	52.6
10 – 19 Employees	31423	13.5	35585	14.5	33282	14.3	31224	10.2	34375	10.6	40142	11.3
20 – 100 Employees	63964	27.5	71313	29.1	64242	27.6	65198	21.3	64763	20.0	65269	18.5
100 + Employees	67539	29.0	62225	25.4	60636	26.1	65392	21.3	65237	20.2	62270	17.6
Total	232809	100	244780	100	232474	100	306407	100	323561	100	353574	100

Source: INE-c, various years (Business Surveys)
*- New series

Table 7– Turnover in Construction Firms by Size of Company: 1993-1998 (EUR million)

Size	1993		1994		1995		1996 *		1997		1998	
	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%
Up to 9 Employees	2477	24.8	2932	27.0	2951	25.	7879	42.1	11098	46.5	15965	53.6
10 – 19 Employees	1281	12.8	1239	11.4	1553	13.	1703	9.1	2071	8.8	2477	8.4
20 – 100 Employees	2525	25.3	2757	25.4	3042	25.	3443	18.4	3682	15.6	4343	14.6
100 + Employees	3729	37.1	3926	36.2	4265	36.	5689	30.4	6688	29.0	6948	23.4
Total	9988	100	10853	100	11811	100	18714	100	23539	100	29733	100

Source: INE-c, various years (Business Surveys)
*- New series

Table 7 above shows the evolution of turnover by construction firms and its distribution across the size category for the period 1993-1998. It can be observed that the pattern is similar to that of employment during the same period. However, the largest firms played an important role, particularly in civil engineering and non-residential building sub-segments, added to the increasing trend in the concession regime. According to the *Construction Annual Report* (AECOPS, 2001), the turnover of the 13 largest construction companies totalled EUR 4.1 billion, about 17% of the total turnover of the industry in 1998. The value of construction works completed abroad by companies with 20 or more employees increased from EUR 205 million in 1992 to EUR 435 million in 1998.

Design and Consultancy Services and Property Activities

Table 8 presents the distribution of firms, employment and turnover across the size category in 1998 for property activities. It clearly shows the dominance of small firms in this activity. Firms with up to 9 employees accounted for 97.4% of the total number of firms and contributed to 81.6 % and 87%, respectively, in employment and turnover. Firms with 20 or more employees accounted for just over 8.8% of the total turnover of the industry, which reveals the prevalence of a 'local' market in the Portuguese property sector. The average number of people employed in property activities is 3.1.

Table 8 - Firms, Employment and Turnover in Property Activities: 1998

Size	Firms		Employment		Turnover		Average Employment
	Number	%	Number	%	(EUR million)	%	
Up to 9 Employees	8690	97.4	22625	81.6	5079.3	87.0	2.6
10 – 19 Employees	154	1.7	1854	6.7	247.4	4.2	12.0
20 + Employees	82	0.9	3231	11.6	508.3	8.8	39.4
Total	8926	100.0	27710	100.0	5835.0	100.0	3.1

Source: INE-c (Business Surveys: 1998)
Note: Include property developers, house-renting companies, estate agencies, and building administrators. It does not include property development by construction companies.

The distribution of firms, employment and turnover according to firm size in design and consultancy services shows a pattern similar to that of property activities, although the fragmentation is less pronounced. Firms with up to 9 employees accounted for 92.3% of the total number of firms and contributed to 65.5.6 % and 71.6%, respectively, in total employment and total turnover. Firms with 20 or more employees represent 24.9 % and 20.4%, respectively, in total employment and total turnover. The average number of people employed in design and consultancy services is 5.7, which is higher than in property activities.

Table 9- Firms, Employment and Turnover in Consultant and Design Services: 1998

Size	Firms		Employment		Turnover		Average Employment
	Number	%	Number	%	(EUR million)	%	
Up to 9 Employees	3139	92.3	12623	65.5	1205.1	71.6	4.0
10 – 19 Employees	162	4.8	1854	9.6	135.2	8.0	12.9
20 + Employees	93	2.9	4561	24.9	341.7	20.4	49.7
Total	3394	100.0	19280	100.0	1682	100.0	5.7

Source: INE-c (Business Surveys:1998)
Note: Include architects, engineers, project managers, technical designers, land surveyors and other technicians. It excludes non-registered individual designers and other technicians, and construction and construction–related government departments.

Building Materials Industry

The indigenous building materials industry impacts heavily on the fate of a country's construction industry, even in a globalised market of construction products and services. As pointed out by E & T (2000), innovation in this sector will be a key factor in the competitiveness of the Portuguese construction industry.

The building materials sector is more concentrated than the construction sector, although the heterogeneity of the former is also evident. One distinct category is the very concentrated, high-technology and capital-intensive activities of cement and lime production, sanitary equipment and special steel products. At the bottom end of the sector are the dispersed low-technology manufacturing activities involved with the production of bricks for walls, cement products and stonework. Unfortunately, it is difficult to get a really accurate measurement of the output of the building materials industry and the products directly used by the construction industry. Although input/output tables do provide an important contribution to the data collected for this purpose, they are outdated, however, in the case of Portugal. Indeed, many segments of the building industry provide products that are not exclusively targeted for the construction sector. Thus, the data provided here concern the activities of non-metallic mineral products and basic metallurgical manufacturing, which are to a great extent directed toward the construction industry activity.

Tables 10 and 11 show the distribution of firms, employment and turnover across the size category in 1998 for, respectively, non-metallic mineral products, and metallurgical manufacturing. It can be seen that firms with 20 or more employees play an important role in these activities. In the former industry, they contributed to 70.4% in employment and 81.9 % in turnover. In the latter industry, their share amounted to, respectively, 85.2% and 94.2% in employment and turnover.

As can be obtained from INE-c (*Business Surveys: 1998*) the combined value added and employment figures of these two industry segments were, respectively, 38.6% and 32.5 % of those for the construction industry in 1998.

Table 10 - Firms, Employment and Turnover in Non-Metallic Mineral Manufacturing: 1998

Size	Firms		Employment		Turnover		Average Employment
	Number	%	Number	%	(EUR million)	%	
Up to 9 Employees	3383	74.4	14650	20.0	490.7	11.4	4.3
10 – 19 Employees	513	11.3	7032	9.6	292.7	6.7	13.7
20 + Employees	647	14.3	51629	70.4	3523.1	81.9	79.8
Total	4543	100	73311	100	4306.5	100	16.1

Source: INE-c (Company Surveys:1998)

Table 11 - Firms, Employment and Turnover in Basic Metallurgical Manufacturing: 1998

Size	Firms		Employment		Turnover		Average Employment
	Number	%	Number	%	(EUR million)	%	
Up to 9 Employees	368	70.6	1313	9.8	50.2	3.9	3.6
10 – 19 Employees	51	9.9	665	5.0	24.1	1.9	13.0
20 + Employees	102	19.5	11352	85.2	1213.4	94.2	111.3
Total	521	100	13330	100	1287.6	100	25.6

Source: INE-c (Business Surveys:1998)

VALUE OF THE BUILT ENVIRONMENT STOCK

No statistics are available on the value of the built environment stock. Since the late 1950s, when the National Institute of Statistics (INE) started publishing the country's *National Accounts* in its modern version, data have been compiled and are available on the gross fixed capital formation (GFCF) and the GFCF in construction (GFCFC) as a component of GDP in terms of expenditures. Ever since then, there has been a remarkable uniformity in the value of the GFCF and the GFCFC, the latter being roughly half that of the former. The GFCF varied between 15% and 20% during the period from the late 1950s to the mid-1980s and between 20% and 25% from the mid-1980s up until now.

As stated earlier, the GFCFC comprises new work and major repairs / alterations in residential housing, non-residential housing, and civil engineering by construction firms, as well as works performed by other entities. The residential housing share varied between 45% and 50% compared to the total GFCFC. Considering that building depreciation is far less pronounced than for civil engineering depreciation, it is estimated that the residential building's contribution to the country's total built environment stock is around 60-65%.

The *Census of Population and Housing* and the *System of Price Indicators in Construction and Housing,* both published by the National Institute of Statistics (INE-d, 2001: INE-e, various issues), are the only comprehensive sources to allow an accurate estimate of the country's residential stock value. According to the 2001 Census of Population and Housing, the Portugal mainland had a total of 9,833,408 inhabitants, 3,015,786 residential buildings and 4,849,274 housing units. Table 14 shows a sharp rise in residential housing during the period 1970-2001, an increase just under 2.3 million housing units. The total number of housing units in Portugal (including the Atlantic islands of Azores and Madeira) is 5,036,149 and a total population of 10,318,084 inhabitants. The Metropolitan area of Lisbon (Lisboa e Vale do Tejo) accounts for about 35% of the housing stock.

In 1995, the Portugal mainland housing units had an average inhabitable area of 80 square metres. According to INE-e (2001, third quarter issue), the average housing price was EUR 1,059 the square metre (Table 13). After depreciation, the residential housing stock value may therefore be estimated at EUR 255,530 million, and the non-residential housing and civil engineering stock value at EUR 137,593 million. The ″construction stock to GDP″ ratio is 3.5.

Table 12 – Evolution of Housing Units in the Portugal Mainland (1970-2001)

Year	Habitual space of residence	Vacant/second residence	Total	% change of preceding census
1970	2135360	423380	2558740	-
1981	2653100	586900	3240000	26.6
1991	2928500	1061770	3990270	23.2
2001	3585472	1263802	4849274	21.5

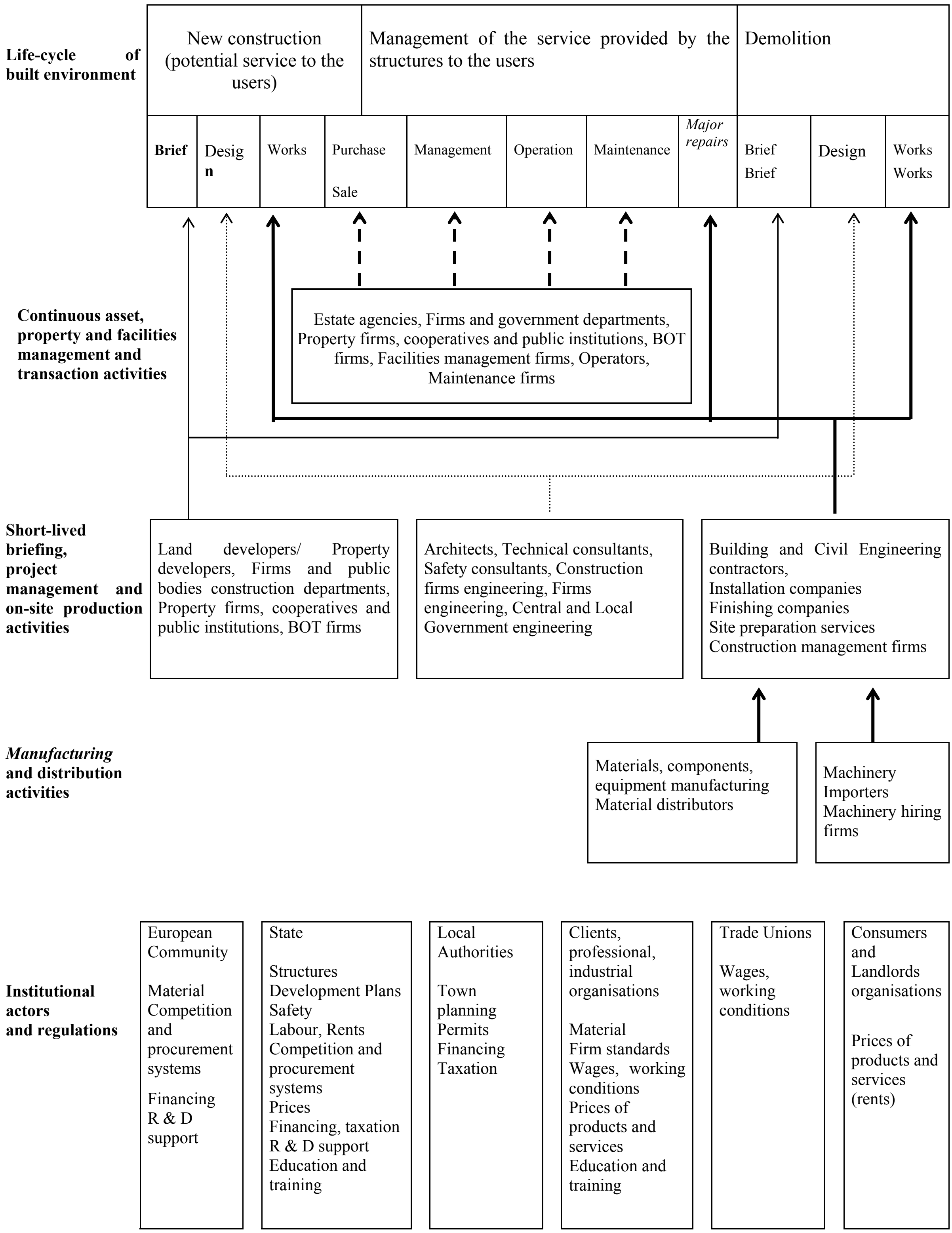
Source: INE-d, 2001(2001 Census of Population and Housing)

Table 13– Bank Valuation (mean average) of Housing in the Portugal mainland (EUR/m2): third quarter 2001

	Total	Apartments	Detached houses
Portugal mainland	1,059	1,147	886
North	922	996	797
Centre	895	1,002	797
Lisboa e Vale do Tejo	1,272	1,302	1,149
Alentejo	898	996	839
Algarve	1,158	1,199	1,043

Source: INE- e (Systems of Price Indicators in Construction and Housing)

Fig.1 Construction Sector System in Portugal



INSTITUTIONAL ACTORS AND MAIN REGULATIONS

Institutional Actors

The Portuguese construction sector system is characterised by the important roles played by the Central and Local Governments and the major construction companies. Table 13 below presents schematically the statutory domains of the main institutional actors in the built environment. The principal promoters in the construction market are the central government and local private housing investors, but international investors and financial companies have been increasingly playing an important role, namely, in the commercial property market and construction works in the concession regime.

The recent development of capital markets influenced the operating environment of major national construction enterprises through mergers and acquisitions. Another recent feature is the increasing market diversification of these companies, namely, in the property activities and utilities services. It is also worth noting that according to Decree Law 59/99, the concession consortiums must include at least one construction company. There are today three major holdings each with an annual turnover above EUR 500 million. They are Mota-Engil, Somague-Sacyr and Teixeira Duarte-Soares da Costa. The main representative organisations of Portuguese contractors are: AECOPS (Association of Building Construction and Public Work Contractors); ANEOP (National Association of Public Work Contractors); AICCOPN (Northern Industrial Association of Building Construction and Public Works); and AICE (Industrial Association of Builders). Their main functions are to represent the interests of their member associations to the Government and other public bodies related to the institutional environment of the construction industry, and to provide information and services concerning relevant aspects of the industry to their members.

In terms of professional practice in construction, the graduate professionals are architects, civil engineers or technical civil engineers. In order to legally practise in the field, architects must be registered with the Order of Architects, civil engineers with the Order of Engineers and technical civil engineers with the Professional Association of Technical Engineers, respectively. The role of these organisations is to ensure and enforce educational and training standards and to set up and control the professional conduct of their respective members. As far as the qualification of design professionals goes, the legal regime is somewhat ambiguous (Lopes and Ribeiro, 2001). According to the Decree Law 73/73, only architects are qualified to make architectural designs in protected areas and for 'prestigious' buildings. For other kinds of architectural designs, these professionals compete either with technical civil engineers or civil engineers. It should be noted that the technical civil engineer is awarded a degree after completing three years of higher education, while the civil engineer is awarded a degree after completing five years of higher education. In terms of engineering design and supervision/management of construction works, technical civil engineers and civil engineers are the ones entitled to carry out these activities. However, the Decree Law 73/73 stipulates that in construction projects of great complexity both the design and execution of works 'should' be under the responsibility of a civil engineer, but the term 'great complexity' is not defined. As regards project management and real estate professions, these professionals are not obliged by law to fulfil any specific educational requirements nor are they subject to any legal regime regulating their activities. It should be noted, however, that some design consultants act also as project managers, particularly those that are members of the Portuguese Association of Designers and

Consultants (APPC).

Although the enforcement of the rules regarding the construction industry and related sectors pertains to the central and local governments, there has been an increasing concern on the part of industrial and professional associations for the safety, quality and environmental aspects of the built environment. The role of the European Community has also become more important lately.

Table 13 - Main Regulations and Institutional Actors

	Construction permits	**Building regulations**	**Rules concerning materials and quality systems**	**Firm standards and professional rules**	**Safety, human resources management**	**Agreements on price and quality of products and**	**Competition and procurement systems**	**Finance Taxation**	**RD Support Education**
European Commission			X		X		X	X	X
Government	X	X	X	X	X		X	X	X
Local Authorities	X							X	
Clients, Professional, Industrial Associations			X	X	X	X	X	X	
Trade Unions					X				
User Associations						X			

Contracts, Competition and Procurement Systems

The Portuguese law (art. 1207º of the Civil Code) defines a project as a contract whereby one of the parties guarantees to the other that he will undertake certain work for an agreed price. According to Martinez (1990), a construction project has three essential features: the parties;the execution of a job; and the payment of a fee. Thus, according to the legal definition, the same features also apply with restrictions to other construction services (design services, project management services, sub-contracts, works in concession regime). In public works contracts, the owner of the project may be the State, a public association, a public institute, a public enterprise or a municipality (art. 3º of the Decree Law 59/99). The Civil Code and Decree Law 59/99 for, respectively, private works and public works, state the rights, duties and obligations of the different parties. For example, the contractor is liable not only for infractions against his duties under the terms of the project contract (e.g. defective compliance), but also for failure to comply with any legal requirements which directly affect a third party. As regards the owner, he has the right to supervise the execution of the work, but he must not interfere with the ordinary progress of the job - the notion of good faith, or the owner's right to make alterations on the works with the ensuing obligation to pay an indemnity to the contractor. It is worth noting that in some cases the contractor's liability is excluded pursuant to those legal provisions. For instance, the impossibility to perform the work at the present state of the art, or if the defects resulting in the work appear in work of its nature, or if the defect could not be avoided on account of the degree of accuracy demandable from the contractor (Martinez, 1990).

Construction characteristics influence the construction market's competition. Construction in Portugal is mainly a local market. Any company that wants to compete outside its own local market is charged with transport costs for labour, material and equipment. This is the case for small companies, which normally carry out their activity in the house building segment of the construction market (low capital intensity and lower works complexity). Generally, there are no real entry barriers, except for some segments of the industry, namely, in the civil engineering works, office and retail markets, which are the domain of major national companies. According to INOFOR (1999), the market quotation of construction enterprises in the stock exchange can only be enhanced if entry barriers are sufficiently effective, in conjunction with structural changes that differentiate trademarks and enterprises with high profitability (implying necessarily stability and recurrent profit making). The construction enterprises are according to the Decrees Laws 60/99 and 61/99 (Regime of Entry and Permanence in the Construction Activity) classified as either public work contractors or private work contractors. These two categories are further sub-divided into classes: class 1 to class 9. Thus, a class 1 company may only undertake works having a value up to EUR 125,000 (in 2001), while a class 9 company has no value limit imposed on its activity. Besides financial and economic capacity, the enterprises are differentiated by technical capability.

The traditional approach on procurement practices is by far the most commonly used in construction projects, especially in public construction projects. This approach may be the result derived from cultural reasons as well as the latent conflicting objectives of the different parties in the construction process. Owing to the changing industry structure, new contracting practices such as design-build and build-own-operate-transfer are being adopted. In 1999, the investment through the involvement of private sector accounted for 32% of the country's total investment in the road networks (ANEOP, 2000). Instead of the traditional reliance on tight prescriptive specifications and low-price selection criteria, those practices allow, according to some advocates, ensuring the best value for one's money. Several authors have already referred to the resistance to their use among some clients, many of whom are concerned about the quality of the finished project, inaccuracies in the client's briefing, conflict between the briefing and the contractors proposal, and the dubious quality of the work done by some firms (for a more detailed account on this subject see e.g. de Valence, 2001). As regards Portugal, an account in the media making reference to the concession of road projects points to the risks associated with this kind of procurement practice, particularly the excessive weight given to the price factor to the detriment of safety.

With respect to tender procedures and selection criteria, there are different ways to invite tenders for project contracts: open tendering, invited tendering, and negotiated tendering. The most favoured way in public work contracts is open tendering as stipulated in the Decree Law 59/99. According to EU directives, if the estimates in value of the works are equal to or greater than EUR 5 million, the invitation to tender shall be published in the *Official Journal of the European Communities*. The article 105º of the Decree Law 59/99 also stipulates that the works shall be awarded to the most ‘economically advantageous’ tender, i.e. implying the weighting of different factors, namely, the ‘price, time, the cost of utilisation, the profitability and the technical value of the proposal.’ This appears to be somewhat contradictory to that stipulated in article 67º of the same Decree Law, which states that ‘the certificate of public work contractors constitutes a presumption for the capacity to trade, technical capacity and economic and financial capacity’ As regards the price factor, it is interesting to note that the Ministerial Order 15/72 (as amended in 1986) of the Ministry of Public Works provides instructions for the establishment of the fee level for project designs in public works (it is debatable whether the ministerial order applies to all public projects or only to those promoted by this ministry). What is unquestionable is that the price factor is one of the criteria for the selection of designers in public work projects (Decree Law 197/99) and the fee level rarely is higher than 5% of the price of the project contracts (Lopes and Ribeiro, 2001). The value stipulated in the Ministerial Order varies from 7 to 8%.

Building Regulations and Building Standards

The General Regime of Building and Urban Development enacted in 2001 (as an amendment of the formerly separate General Regime of Building and General Regime of Urban Development, both enacted in 1991) and the General Regulation of Urban Buildings enacted in 1951 (successively amended to take into account technical developments) constitute the core regulations for the Portuguese urban built environment. The former regulation deals with building and urbanisation work permits and covers the administrative procedures for building control and approval. The latter stipulates the mandatory minimum requirements concerning the safety, health and welfare of people in buildings and other urban facilities.

Mandatory detailed requirements are laid down (by means of Decree-Laws) in separate Regulations pertaining to structural safety, traditional materials, fire safety, acoustic and thermal comfort, water supply and waste water systems, electrical appliances, building installations, toxic and hazardous substances, and facilities for disabled people.

Other technical details regarding construction materials and components can be found in the Portuguese Standards and the National Laboratory of Civil Engineering (LNEC) Specifications and Homologation Documents. The Portuguese Institute for Quality and the LNEC are the main official bodies of the Portuguese System for Quality for the accreditation of construction products and processes within the framework of the Construction Products Directive of the European Union.

CONCLUSION

This paper constitutes an attempt to analyse the construction industry in Portugal using the construction sector system approach. This study implicates that such an analysis sheds more light on the roles the industries pertaining to the development of the built environment play in the global economy. Indeed, the data presented here have shown that if the activities of the construction industry, the construction professions, the property related professions and the building materials industry are collectively considered, their combined share in the GDP and the national total employment are, respectively, 1.72 and 1.46 compared to those pertaining to the construction industry. If the activities of the construction equipment manufacturing and distribution sectors, and the construction and construction-related government departments are added to this total, the construction sector system's contribution to the national output is about 13%, and its share in the nation's total employment is about 20%. Thus, this approach seems to be a promising methodology for dealing with international comparisons. However, compared to other important sectors of the economy, the research designated for the study of the construction sector encounters up front data limitations and measurement problems. It is not surprising that these problems tend to get worse when a more extensive scope is taken for the analysis. Further efforts are needed to investigate the usefulness of this analysis in the study of the construction sector in Portugal.

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