CHAPTER IX

THE SWEDISH CONSTRUCTION SECTOR: ITS ECONOMIC AND SOCIAL ROLE

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INTRODUCTION

The building sector has a central role in the Swedish society and the impact on the construction industry from the Swedish government is tangible. The Swedish housing policy has been characterised by a social and distribution policy. Thus, the housing policy has been an instrument in creation of the Swedish welfare state based on social democratic policies. Public involvement in the construction industry has been characterised by regulation and an extensive subsidy system. Governmental housing loan and subsidy to new construction of residential buildings were examples of public financial support to the building market. Furthermore, the maximum rent in tenancy apartments is regulated by a utility value system, which implies that the rent is not adapted to the market value, but adjusted to the rent level of municipal housing companies in the local area.

The central and local government also play an important role as a client on the Swedish construction market. Due to the relationship between the construction market and national economy the Swedish government has taken various actions over the years in order to moderate market fluctuations. Investments in civil-engineering projects are in a wide extent financed by the government and constitute an example of political action taken to steer business activity.

The Swedish national economy entered the 1990s with a decline in business activity followed by a period of economic recovery starting in 1993. The building sector followed the recession of the national economy in the early 1990s but when the national economy showed an upturn from 1993, the recession of the construction sector continued and reached the decades lowest level of construction volume in 1997.

Due to the difficult economic situation in the early 1990s, the Swedish government reduced the financial support to the building sector, e.g. Governmental mortgage loans and subventions for new residential building were reduced. Previously detailed rules and regulations of building and construction design were replaced with new and more flexible regulations. Besides the reduced subsidies and the deregulation policies, raised value-added tax (VAT) on building construction as well as raised real-estate tax composed thoroughly changed conditions for the Swedish construction sector in the 1990s.

Objectives

The objective of this study is to give an overall picture of the Swedish construction industry and its development in the 1990s. The paper describes the structure of the construction industry by its activities, main regulations as well as industrial and

institutional actors from a meso-economic approach. The data is presented in a descriptive and principally quantitative format in order to constitute a basis for comparison with construction industries of other countries.

Information Sources
The principal technique used to collect data on the construction sector for this study is based on literature studies, principally official statistical data, annual reports and market analysis made by trade association and official authorities. The main source of information has been Statistics Sweden.

All companies in Sweden that conduct some form of economic activity are registered in the Swedish business register, regardless of whether they belong to the private or public sector. The Business register of Statistics Sweden classifies all companies by line of business according a SNI code, which is the acronym for the Swedish industrial classification. The SNI code corresponds to NACE Rev. 1[22], which is a common classification system of economic activities used by all member states of the European Union.

The data on the Swedish construction sector in Table 2, Table 3, Table 4 and, Table 5 is demarcated to construction firms within SNI code 45, see Table 1.

Table 1: Classification of Group 45 Construction, NACE Rev.1 and SNI

45	Construction		
45.1	Site preparation	45.4	Building completion
45.11	Demolition and wrecking of buildings, earth moving	45.41	Plastering
45.12	Test drilling and boring	45.42	Joinery installation
45.2	Building of complete constructions or parts thereof, civil engineering	45.43	Floor and wall covering
45.21	General construction of buildings and civil engineering works	45.44	Painting and glazing
45.22	Erection of roof covering and frames	45.45	Other building completion
45.23	Construction of highways, roads, airfields and sport facilities	45.5	Renting of construction or demolition equipment with operator
45.24	Construction of water projects	45.50	Renting of construction or demolition equipment with operator
45.25	Other construction work involving special trades		
45.3	Building installation		
45.31	Installation of electrical wiring and fittings		
45.32	Insulation work activities		
45.33	Plumbing		
45.34	Other building installation		

(Statistics Sweden)

Interviews with client representatives, architects and consultant have been a complementary source of information, especially to gain qualitative data on the Swedish construction sector system, its main institutional actors and rules and regulations.

Monetary values in the paper are stated in the European currency Euro, expressed with the currency code EUR. (1 EUR = 9.2313 SEK by 15 August 2001 when nothing else is stated).

22 Nomenclature Générale des Activités Economiques dans les Communautés Européennes. Statistical classification of economic activities in the European Community

PERCENTAGE OF CONSTRUCTION ADDED VALUES IN GDP

After the decline in the Swedish national economy in the early stage of the 1990s a period of recovery begun. By the end of the 1990s, the Swedish GDP[23] grew significantly with GDP growth rates at 3.6 percent, 4.6 percent and 4.4 percent from 1998 to 2000.

Construction investments were continuously reduced from the beginning of the 1990s to 1994, and reached its lowest volume in 1997. Over the decade, construction investments dropped by 30 percent. In accordance to the reduced level of construction investments in the early 1990s, construction added value[24] was also reduced, reaching its lowest level in 1997.

Table 2 presents information on GDP development in the 1990s together with data on the construction industry based on Swedish National Accounts.

Table 2: GDP, Added Values and Total Gross Fixed Capital Formation (1995 Reference Prices in Billion EUR)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
GDP (at market prices)	180.2	178.2	175.1	177.1	184.5	192.0	194.5	199.2	206.4	215.9	225.3	227.1
Value Added by Industry, total	124.5	122.7	119.7	119.7	127.1	135.4	137.7	143.4	148.9	158.1	168.0	169.4
Manufacturing Industry (SNI 15-37)	32.4	30.6	29.4	29.6	34.0	38.4	39.7	42.6	46.0	50.2	55.6	54.3
Construction Industry (SNI 45)	9.0	8.9	8.4	7.4	7.4	7.6	7.6	7.2	7.2	7.5	7.6	7.9
Manufacturing Added Value in GDP (%)	18.0	17.2	16.8	16.7	18.5	20.0	20.4	21.4	22.3	23.2	24.7	23.9
Construction Added Value in GDP (%)	5.0%	5.0%	4.8%	4.2%	4.0%	4.0%	3.9%	3.6%	3.5%	3.5%	3.4%	3.5%
(Value Added in Basic Prices)												
Gross Fixed Capital Formation, Total	36.03	32.95	29.13	26.14	27.87	30.64	32.01	31.93	34.40	37.21	39.66	39.98
Construction	18.18	17.47	15.81	13.59	12.73	12.85	12.92	11.93	12.16	12.16	12.67	13.29
Dwellings	9.96	9.72	8.59	5.72	3.77	2.87	3.13	2.77	2.75	3.05	3.35	3.47
- New Construction	na	na	na	2.79	1.62	1.24	1.27	1.18	1.18	1.42	1.67	1.81
- Reconstruction	na	na	na	2.89	2.16	1.63	1.86	1.59	1.56	1.59	1.64	1.64
Other buildings and constructions	8.23	7.74	7.21	7.87	8.96	9.98	9.80	9.16	9.40	9.11	9.31	9.81
Construction in total Gross Fixed Capital Formation (%)	50.5	53.0	54.3	52.0	45.7	41.9	40.4	37.4	35.3	32.7	31.9	33.2

(Statistics Sweden)

CONSTRUCTION EMPLOYMENT

A significant part of the Swedish workforce works in companies that are directly or indirectly related to the construction sector. In 2000 there were more than 226 000 individuals employed in the Swedish building industry. The figures presented in Table 3 cover the number of people working in construction companies, i.e. SNI code 45.

[23] GDP – Gross Domestic Product. The total value added or net output of all firms in an economy is called the Gross Domestic Product (GDP). The GDP estimate is based on the returns that firms provide. These returns are based on selling prices, which relate to new goods that immediately begin to depreciate. The term domestic refers to output or product made within the national borders of an economy (Ive 2000).

[24] The "value added" is defined as the difference between the value of inputs (excluding immediate labour and fixed capital, which are not treated as inputs) and the value of outputs. (Ive, 2000).

Table 3: Swedish Construction Employment in 2000 (in Thousands)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Total Swedish Workforce	4 485	4 396	4 209	3 964	3 928	3 986	3 963	3 920	3 979	4 066	4 159	4 239	4 244
Construction Employment	323	320	279	240	225	230	225	218	220	225	226	232	235
% of Total	7.2%	7.3%	6.6%	6.1%	5.7%	5.8%	5.7%	5.5%	5.5%	5.5%	5.4%		

(Statistics Sweden)

In 1970 more than 370 000 people were employed in the construction sector. In 1997 the number of employees was reduced to 118 000, which until then was the lowest level measured since 1970. Despite a reduction of the numbers of construction employees by 30 percent in the 1990s, construction was still a large industry sector in Sweden. In a broader perspective more than 400 000 people were working with construction industry related activities in 2000. This figure includes employment in building material and equipment manufactures, real estate companies and employment in other building related business activities and this corresponds to about 10 percent of the total Swedish labour force in 2000, see Segments in the Meso-System of Construction below.

MAIN CHARACTERISTICS OF CONSTRUCTION WORKS

In 2000 construction investments (expressed by Statistics Sweden as gross fixed capital formation, see Table 2) reached a total of EUR 12 665 million, including new construction and reconstruction. Maintenance is not included since it is defined as running expenses and not considered as investments in the Swedish national accounts. Residential investments in new construction and reconstruction represented 30 and 13 percent respectively of the total construction investments.

In between 1990 and 2000 total construction investments decreased by fully 30 percent (in 1995 reference prices). The reduced level of investments is most significant for dwellings that dropped by 66 percent from 1990 to 2000. Over the same period non-residential and civil engineering investments remained on a stable annual level at about EUR 8 billions. But, as the total investment volume decreased, the share of non-residential and civil engineering increased from 45 percent to 73 percent of total investments.

Construction investments distribute among households, industry and government as three types of clients. According to Table 4, the reduced level of construction investments from 1993 to 1999 distribute proportionately between households, firms and government.

Table 4: Construction Investments by Type of Client, Maintenance Excluded (Households, Industry and Government) (Million EUR in 1995 Reference Prices)

	1993	1994	1995	1996	1997	1998	1999	
Households	1 804	1 264	1 167	1 265	1 244	1 440	1 642	14%
Firms	7 634	6 514	6 527	7 029	6 704	6 712	7 055	61%
Government	3 303	3 943	3 949	3 551	2 945	3 024	2 909	25%
Total Construction	12 741	11 721	11 642	11 844	10 893	11 176	11 606	100%

(Statistics Sweden)

In terms of production output, the construction sector totalled EUR 17,89 billion in 2000, which compared to 1999 was an increase of 3.2 percent (see Table 5). Residential and non-residential production have showed a slightly increasing tendency by the end of

the 1990s while civil engineering has stayed on an annual level of about EUR 4 billion with a local peak in 1998.

Table 5: New Construction and Repair/Maintenance for Building and Civil Engineering Works (Billion EUR in 2000 Reference Prices, 1 Euro = 8.45 SEK)

Construction (taxes excluded)	1996	1997	1998	1999	2000
Total production output	16.77	15.97	16.77	17.34	17.89
Residential, total	5.60	4.85	5.29	5.85	6.08
New	1.01	1.01	1.19	1.45	1.66
Repair and Maintenance	4.67	3.89	4.15	4.42	4.42
Non-Residential, total	7.10	6.95	7.14	7.45	7.82
New	2.00	2.07	2.16	2.32	2.76
Repair and Maintenance	5.11	4.88	4.98	5.13	5.06
Civil Engineering, total	4.09	4.12	4.29	4.01	3.99
New	3.20	3.27	3.42	3.07	3.01
Repair and Maintenance	0.90	0.86	0.89	0.94	0.97

(Euroconstruct 2001)

Non-residential construction is the largest category with 44 percent of the total production output in 2000. The distribution between residential, non-residential and civil engineering production has developed rather stable in the second half of 1990s, though there has been a slightly decreasing tendency for civil engineering production and an increasing share for residential and non-residential production over the period.

Table 6: Production output of Residential, Non-Residential and Civil Engineering Works (Billion EUR, 2000 constant price, taxes excluded, 1 EUR = 8.45 SEK)

Construction	2000	
Total production output	17.89	100%
Residential	6.08	34%
Non-residential	7.82	44%
Civil Engineering	3.99	22%

(Euroconstruct 2001)

Characteristics of Residential Construction

The start of new residential buildings increased in 2000 to about 17 100 homes (preliminary). This corresponds to an increase of 18 percent, or 2 600 units, compared to 1999. Rebuilding of non-residential buildings into residential buildings added 3 500 flats in 2000. But, 4 600 flats were demolished in 2000 giving a net increase of about 16 000 new dwellings in 2000 (Statistics Sweden). New production of residential buildings is mainly located to the metropolitan areas and some of the larger urban districts around the country.

The new residential production showed tendencies of growth in the final phase of the 1999s. However, the general picture of the 1990s was characterised by a significantly reduced production of new residential buildings, which mainly can be referred to political actions that changed the conditions on the housing market. Sweden legislated a tax reform in 1991, which implied fundamental changes to housing taxation, and in 1992 and 1993 the system of granting interest subsidies based on a guaranteed interest rate was fundamentally changed (Andersson, 2003).

The living space per home in one and two family houses, as well as residential blocks,

has increased strongly in new produced buildings in the second half of the 1990s. The average living space in new produced one and two family houses were 179 square meters in 2000, which is 16 percent larger than houses started in 1996. The corresponding living space for flats in residential blocks was 177 square meters in 2000, which is about 26 percent larger than in 1996 (Statistics Sweden). The increased living spaces in newly produced residential buildings indicate that mainly high standard dwellings were produced at the end of the 1990s.

Characteristics of Non-Residential Construction

Construction of non-residential buildings was on the increase from 1950 to 1970 and stabilised in the 1970s on an average value of EUR 4.3 billion (1995-reference prices). In the beginning of the 1980s the investments decreased, but recovered by the end of that decade.

New production of non-residential buildings increased by 40 percent from 1996 to 2000, which corresponds to an annual growth rate of almost 9 percent. The most significant increase of production occurred in 2000 when the annual growth rate almost reached 19 percent. The increase is most significant for new offices and commercial buildings while production of new educational buildings in schools and universities decreased.

Table 7: Non-residential production output by type (Billion EUR, 2000 constant price, taxes excluded, 1 EUR = 8.45 SEK)

	2000	
Non-residential, total	2.76	100.0%
Schools and Universities	0.41	14.9%
Hospitals	0.04	1.4%
Industrial Buildings	0.53	19.2%
Office Buildings	0.80	29.0%
Commercial Buildings	0.53	19.2%
Other non-residential	0.45	16.3%

(Euroconstruct 2001)

One explanation to the growth of new production of non-residential buildings in 2000 is the fact that project sizes have increased substantially. The fact is that the number of projects initiated under the second half of the 1990s have remained on a quite stable number.

Characteristics of Civil Engineering Construction

New production in civil engineering showed a weak development in the second half of the 1990s in comparison to residential and non-residential production. Some major infrastructure projects, such as the Öresund Bridge between Denmark and Sweden, were completed in 2000 and were not followed by new projects of similar magnitude.
Telecommunication works, such as 3G-systems and broadband, made 12 percent of total civil engineering production in 2000, but this category is expected to grow within the next coming years (Euroconstruct 2001)

Table 8: Civil Engineering production output by type (Billion EUR, 2000 constant price, taxes excluded, 1 EUR = 8.45 SEK)

	2000	
Civil Engineering, total	3.01	100.0%
Transport Infrastructure	1.65	54.8%
(Thereof Roads and Bridges)	1.03	
Telecommunications	0.37	12.3%
Energy and Water Works	0.99	32.9%

(Euroconstruct 2001)

Characteristics of Repair and Maintenance Works

The production output of repair and maintenance constituted more than 60 percent of the total construction production output in 2000. But, in the second half of the 1990s, the share of repair and maintenance in total production has decreased from 58 percent in 1996 to 53 percent in 2000.

For residential repair and maintenance the total production output totalled EUR 4.42 billion in 2000, which were the same as in 1999. Repair and maintenance of non-residential buildings were the most stable category of the Swedish construction output in the end of the 1990s. Repair and maintenance is not as affected by the national economic development as residential or civil engineering production. Instead, an important factor regulating repair and maintenance of non-residential construction is the volume of new non-residential production, i.e. the net change of the total stock of non-residential buildings.

Table 9: New and Repair/Maintenance of Building and Civil Engineering Works (Billion EUR in 2000 Reference Prices, 1 Euro = 8.45 SEK)

	1996	1997	1998	1999	2000	
Construction, total	16.89	15.98	16.79	17.32	17.88	100%
New Construction Building	3.01	3.08	3.35	3.77	4.42	25%
Repair & Maintenance Building	9.78	8.77	9.13	9.55	9.48	53%
New Construction Civil Engineering	3.20	3.27	3.42	3.07	3.01	17%
Repair & Maintenance Civil Engineering	0.90	0.86	0.89	0.94	0.97	5%

(Euroconstruct 2001)

Repair and maintenance in civil engineering ended up at barely EUR 1 billion in 2000, which corresponded to an increase of 3.6 percent compared to 1999. Civil engineering activities, including repair and maintenance, are dependent on political initiatives. In the 1990s the Swedish government launched various national infrastructure programs, especially for railways and roads. But, as the national economy recovered after the crisis in early 1990s, the civil engineering programs were reduced.

VALUE OF THE BUILDING STOCK

In the middle of the 1990s, new construction added less than 0.5 percent per year to the existing building stock in terms of building area (Elmberg *et al.* 1996). This fact emphasises the importance of existing stock to the construction industry. Further, it coincides with the the meso-economic approach that focuses on the management of the building and construction service rendered to users, rather than a one-sided contemplation of the production process of new buildings and constructions.

Sweden has about 9 million inhabitants on a territory with a total area of about 450 000 square kilometres. Only 3 percent of this area (11 000 square kilometres) is built-up land.

Table 10: The Swedish Land Use and Distribution of Build-up Land in 1995

Built-up land	3%
Agriculture	8%
Water	8%
Bog	11%
Mountainous Country	18%
Forest	52%

Built-up Land:	
Housing	51%
Trade and Industry	9%
Public Service	4%
Transport, construction	30%
Other	6%

(Statistics Sweden)

Housing (land for residential buildings and weekend cottages) represents 50 percent of the built-up land. These figures include the total area of house properties, i.e. gardens, and not only the area of the building. The method of measurement is the same for trade and industry buildings that represents less than 10 percent of the built-up land, including buildings as well as open-air storage spaces etc. A third of the built-up land is used for transport and constructions (bridges, harbours etc.). The category of other, see Table 10, includes farm properties etc.

In many countries, property taxation data is used for the description of the building stock (Thuvander 2000). There are some remarks needed to make clear when using the Swedish Property Taxation Register as a basis for determine the value of the building stock. The total area of Sweden is divided into real estates. Accordingly, a real estate represents a piece of land and each piece normally corresponds to an assessed unit. Hence, all buildings are located on a real estate that contains none, or any number of buildings.

The assessed units (real estates and/or buildings) are categorised as taxable or non-taxable. School buildings, churches, cultural buildings and defence buildings are examples of non-taxable units and consequently these types of buildings are not included in the value of stock based on taxation data. The Swedish tax authority carried out a general assessment in 2000 and repeats that operation every 6th years. The general outline for the recurrent adjustments of the tax assessment value is that it should correspond to 75 percent of the market value.

Table 11: Total Stock Value and number of Taxable and Non-taxable Units in 2000 (Million EUR, 2000 current prices)

	Total Value	Buildings	Real Estate	Units (no)
Total Value of Stock (market value)	365 274	238 622	126 652	2 906 030
Residential	222 371	155 897	66 474	2 302 358
Non-residential, industry, farming	142 903	82 725	60 178	517 395
Other (non taxable units)	0	0	0	86 277
Value of Stock in GDP (GDP=225 Billion EUR, 2000)	1.6			

(Statistics Sweden)

The Residential Stock

The housing market has a great influence on household economy. In Sweden people spend more than 30 percent of their total income on housing costs (Wigren 1995). In 2000 there were some 4.3 million apartments on the building market of which detached or semi-detached houses held 2.0 million and multi-dwelling blocks 2.2 million. The major part of the detached or semi-detached houses is privately owned. For apartment buildings there are three main categories of owners:

- Municipal housing companies
- Private real estate companies, and
- Tenant-owner associations

Ten of the largest real estate companies represent about 10 percent of the total dwelling space leased by private real estate companies. Consequently, there is a large number of small real estate companies of which the majority owns a single block of flats, see Table 16. About 620 000 of the apartments in multi-dwelling blocks, or 30 percent of the total number of apartments, are owned by tenant-owner associations.

Housing costs in tenancy apartments are only partly controlled by supply and demand of the market and to some extent adjusted by production costs. The rent level in municipal housing companies is normative for the maximum rent even for private tenancies. This regulation does not include private owner-occupied houses and tenant-owner association for which prices are set on market values (Statistics Sweden, 1999).

By the end of the 1970s, and in the beginning of the 1980s, private and tenant-owner associations owned about 60 percent of the total number for dwellings. Municipal housing companies share of new apartment buildings were considerably reduced in the 1980s and represented 35 percent in 1991. Under the first part of the 1990s municipal housing companies recovered their share of new constructed apartment buildings and reached a share of about 50 percent in 1994. Up to 1999/2000 the share decreased again to a level of 30 percent. (SOU 2000:44)

Segments in the Meso-System of Construction

In a meso-economic perspective, the life cycle of the build environment is based on three main activities (see Figure 3):

- Continuous asset, property and facilities management and transaction activities
- Short-lived briefing, project management and on-site production activities, and
- Manufacturing and distribution activities

These activities are carried out by various groups of companies such as contractors, professionals, material manufacturers etc. All companies in Sweden that conduct some forms of economic activity are found in the Business register, regardless of whether they belong to the private or public sector. The SNI code (see
Information Sources) has been used as the basis for the following description of the Swedish construction sector segments by numbers of companies and employees. The figures on numbers of companies and employees presented below are all collected from the business register of Statistics Sweden. Note that the numbers of employees consists of the people employed in a company as well as the owner of the company. For example, the owner of a one-man company is considered an employee and is consequently included in the employee statistics.

Construction Firms

Swedish construction firms are characterised by a few large companies, that operates nation-wide as well as on the international market, and a large number of small companies operating on the local or regional markets. Thus, the building industry is fragmented with more than 26 000 companies of which only 11 have more than 500 employees, see Table 12.

Table 12: Number of Contractors and Employees by Number of Employees in 2002 (SNI codes 45.1 – 45.2)

Company Size (By Number of Employees)	Number of Companies	% of Total	Number of Employees	% of Total
0	15 763	58.8%	15 763	13.1%
1-4	7 611	28.4%	14 516	12.0%
5-9	1 795	6.7%	11 644	9.7%
10-19	1 009	3.8%	13 708	11.4%
20-49	489	1.8%	13 897	11.5%
50-99	104	0.4%	6 823	5.7%
100-199	31	0.1%	4 165	3.5%
200-499	8	0.0%	2 310	1.9%
500-	11	0.0%	37 709	31.3%
Total	26 821	100.0%	120 535	100.0%

Among Sweden's largest building and construction companies, Skanska AB, NCC AB and PEAB AB operate on the national as well as on the international market and are the dominating construction companies of Sweden. Companies with less than 50 employees represent 99 percent of total number of companies and almost 60 percent of the number of employees.

Specialised Construction Firms

Specialised construction firms (SNI code 45.3 – 45.5) generally act as subcontractors doing electrical, plumbing, ventilation or other service installation works. There are more than 30 000 companies involved in specialised construction works, i.e. installation activities, see Table 13. Only the largest ones operate nation-wide and take part in the design as well as production phase.

Table 13: Number of Specialised Construction Companies and Employees by Number of Employees in 2002 (SNI code 45.3 – 45.5)

Company Size (By Number of Employees)	Number of Companies	% of Total	Number of Employees	% of Total
0	18 677	62.0%	18 677	17.4%
1-4	7 699	25.6%	14 932	13.9%
5-9	20 019	6.6%	13 050	12.2%
10-19	1 139	3.8%	14 969	14.0%
20-49	457	1.5%	13 238	12.4%
50-99	89	0.3%	5 954	5.6%
100-199	34	0.1%	4 865	4.5%
200-499	18	0.1%	5 603	5.2%
500-	14	0.0%	15 840	14.8%
Total	30 128	100.0%	107 128	100.0%

There is certain difference between installations and services in residential, non-residential and industry installations. The last-mentioned often require special skills. Large and middle-sized companies normally handle all kinds of installation jobs, while small firms are mainly specialised in residential or non-residential works.

Professionals

In the 1990s, the number of construction professionals (architects and building consultants) was slowly decreasing with exception for the number of architect's offices.

The line of business for professionals is characterised by a large number of small firms, generally one-man companies, operating in a certain field of specialised skills. Theses small professional firms often work for a limited number of clients. To survive on the market the small professionals firms need to establish a network of contacts and create personal reliance with the clients. The business of the large companies serves not only the construction industry but also other industry sectors on the national as well as international markets.

Table 14: Number of Architect Offices and Employees by Number of Employees in 2002 (SNI code 74.201)

Company Size (By Number of Employees)	Number of Companies	% of Total	Number of Employees	% of Total
0	1 828	66.7%	1 828	27.0%
1-4	665	24.3%	1 176	17.4%
5-9	140	5.1%	930	13.7%
10-19	76	2.6%	1 000	14.8%
20-49	24	0.9%	707	10.4%
50-99	4	0.1%	283	4.2%
100-199	1	0.0%	128	1.9%
200-499	2	0.1%	715	10.6%
500-	-	-	-	-
Total	2 542	100.0%	6 767	100.0%

Table 14 includes only architect offices (SNI code 74201). Building consultants, included in SNI code 74202, covers both building consultants and other industry consultants that are not directly involved in construction activities. However, the general category of technical consultants, SNI 74202, consists of almost 7 000 companies with a total of 47 000 employees of which approximately 20 000 are building consultants.

Even though the commissions of architects and building consultants principally occur in the early stages of the building process, they do have significant influence on the competition of building material suppliers in the latter stages of construction. Architects and consultants often make elaborate specifications of products and their manufacturers in drawings and building descriptions, e.g. carpentry works, kitchen equipment etc. Consequently building material suppliers put effort in to establish close relations with the professionals. Large domestic material suppliers are favoured in this system having a large assortment of products and sufficient marketing resources. (Hammarlund 2000)

Real Estate and Property Management Firms and Estate Agents

There are a variety of different actors on the Swedish real estate market. Professional actors can in an overarching perspective be divided into the two major groups of real estate firms and property management firms. Real estate firms are basically defined as estate owners while property management firms provide real estate related services. In this context there is no distinction made between property management and facilities management firms. The terminology of facilities management is not yet widely used in Sweden even though a few property management firms have adopted that term in the description of their business activities. Statistics Sweden, the main information source in this study, does not present specific information on facilities management firms.

Table 15: Number of Dwellings in Multi-dwelling Blocks by Owner Category in 2000

	Number of dwellings in Multi-dwelling blocks (2000)
Tenant-owners' societies	620 000
Municipal Housing Companies	860 000
Private Companies	710 000
Total	2 200 000

(Sveriges Fastighetsägare)

There were more than 4.2 million dwellings in Sweden in 2000 of which approximately 2.2 million were in multi-dwelling blocks and about 2 million in one or two-family house. Municipal housing companies are the largest owner category of multi-dwelling block and private real estate companies are the largest owner of non-residential premises.

The Swedish Association of Municipal Housing Companies, SABO, is the organisation of municipal housing companies in Sweden. In 2000, SABO was the largest organisation on the Swedish housing market with about 305 companies affiliated, managing 860 000 dwelling units. This represents 22 percent of the total Swedish housing stock and about one third of all dwelling units in multi-dwelling blocks. The size of the SABO companies varies considerably, more than 60 percent have 500–5 000 dwellings and the largest SABO company owns and manages some 54 000 dwellings (SABO 2001). Local and central government also run companies for non-residential premises such as schools, universities, libraries etc.

There are different categories of private estate owners. Besides the downright real estate companies for which property asset management is the core business, non-profit making tenant-owner associations and major contractors also act on the real estate market. Private estate owners lease dwellings to households and non-residential premises to trade and industry. The total area in private owned apartment buildings approximately distribute between 156 million square metres of dwelling space and about 70 million square metre of non-residential premises. The structure of the Swedish real estate companies show that the vast majority is one-man companies run by the owner (see *Table 16).*

Table 16: Number of Real Estate Firms and Employees by Number of Employees in 2002 (SNI code 70.110 – 70.209)

Company Size (By Number of Employees)	Number of Companies	% of Total	Number of Employees	% of Total
0	32 602	82.8%	32 602	49.5%
1-4	5 841	14.8%	8 874	13.5%
5-9	488	1.2%	3 140	4.8%
10-19	191	0.5%	2 507	3.8%
20-49	168	0.4%	5 149	7.8%
50-99	59	0.1%	4 081	6.2%
100-199	29	0.1%	3 830	5.8%
200-499	18	0.0%	5 002	7.6%
500-	1	0.0%	694	1.1%
Total	39 397	100.0%	65 879	100.0%

Even though real estate firms are estate owners by definition in this context, real estate companies can do property management services on their own or other companies real-estate units. The downright property and facilities management firms strictly provide

real estate related services. Similarly to real estate actors, private as well as governmental companies also represent property management firms. The structure of property managers is more equally distributed in comparison to real estate firms (see Table 17).

Table 17: Number of Property Management Firms and Employees by Number of Employees in 2002 (SNI code 70.321 – 70.329)

Company Size (By Number of Employees)	Number of Companies	% of Total	Number of Employees	% of Total
0	2 300	68.3%	2 300	14.0%
1-4	745	22.1%	1 354	8.2%
5-9	147	4.4%	968	5.9%
10-19	89	2.6%	1 203	7.3%
20-49	45	1.3%	1 401	8.5%
50-99	16	0.5%	1 218	7.4%
100-199	20	0.6%	2 772	16.8%
200-499	3	0.1%	1 002	6.1%
500-	3	0.1%	4 263	25.9%
Total	3 368	100.0%	16 481	100.0%

Table 18 presents the structure of estate agent companies by number of companies and employees. The business trade of estate agents focuses on the selling process of real estates including advertising, domiciliary visits, inspections, contract documents etc.

Table 18: Number of Real Estate Agents and Employees by Number of Employees in 2002 (SNI code 70.310)

Company Size (By number of Employees)	Number of Companies	% of Total	Number of Employees	% of Total
0	2 236	59.7%	2 236	33.1%
1-4	1 284	34.3%	2 361	34.9%
5-9	173	4.6%	1 076	15.9%
10-19	38	1.0%	484	7.2%
20-49	8	0.2%	211	3.1%
50-99	3	0.1%	223	3.3%
100-199	1	0.0%	172	2.5%
200-499	-	-	-	-
500-	-	-	-	-
Total	3 743	100.0%	6 763	100.0%

Building Materials and Equipment

The building material industry is characterised by a large number of companies of various sizes. But, in contrast to the itinerant characteristics if the construction industry building material companies are stationary with factory premises all over the country. Historically, factories have been located where natural resources could be found and consequently, the traditional use of building materials varied from region to region.

Table 19: Examples Describing the Concentrations of the Swedish Materials Market in 1998

Type of Material	Market concentration (as part of the total market)	
Cement	1 company	95%
Ballast	4 companies	80%
Ready mixed concrete	5 companies	80%
Asphalt	2 companies	80%
Reinforcement steel	1 company	80%
Lightweight concrete	1 company	100%
Concrete pipe	3 companies	100%
Plastic pipe	1 company	50%
Plasterboard	3 companies	100%
Rock wool	2 companies	90%
Bathtub	2 companies	100%

(SOU 2000:44)

A few large material suppliers dominate the market of building materials (see Table 19). The markets of cement, lightweight concrete, asphalt and rock wool are some examples of materials where one or two companies dominate the domestic market.
TableTable 20 consists of building material manufacturers[25] of all kinds and Table 21 consists of building material wholesale trades[26].

Table 20: Number of Building Material Manufacturers and Employees by Number of Employees in 2002

Company Size (By Number of Employees)	Number of Companies	% of Total	Number of Employees	% of Total
0	4 615	59.1%	4 615	7.3%
1-4	1 541	19.7%	3 145	5.0%
5-9	641	8.2%	4 263	6.7%
10-19	419	5.4%	5 725	9.0%
20-49	354	4.5%	10 649	16.8%
50-99	139	1.8%	9 549	15.1%
100-199	64	0.8%	8 373	13.2%
200-499	30	0.4%	9 735	15.4%
500-	8	0.1%	7 256	11.5%
Total	7 811	100.0%	63 310	100.0%

[25] Building material manufacturers defined according to SNI codes 20.101 – 20.302, 20.510, 26.300 – 26.520, 26.611 – 26.821, 28.110 – 28.120, 28.220 and 28.751.
[26] Building material wholesale trades defined according to SNI codes 51.130, 51.530, 51.542, 52.461 and 52.495.

Table 21: Number of Building Material Wholesale Trades and Employees by Number of Workplaces and Employees in 2002

Company Size (By Number of Employees)	Number of Companies	% of Total	Number of Employees	% of Total
0	3 705	52.9%	3 705	12.0%
1-4	2 073	29.6%	4 274	13.9%
5-9	683	9.8%	4 475	14.6%
10-19	334	4.8%	4 461	14.5%
20-49	156	2.2%	4 468	14.5%
50-99	33	0.5%	2 170	7.1%
100-199	9	0.1%	1 302	4.2%
200-499	6	0.1%	1 942	6.3%
500-	5	0.1%	3 955	12.9%
Total	7 004	100.0%	30 752	100.0%

The total market of building materials varies from year to year in relation to the production volume. Especially companies producing materials for buildings, particularly residential buildings, suffer in times of business recession. Dominating companies fortify their market position when smaller companies go bankrupt or get acquired by stronger companies.

Building equipment companies presented in
TableTable 22 consists of wholesalers and companies that rent construction machines (SNI codes 51620 and 71320).

Table 22: Number of Building Equipment Related Companies and Employees by Number of Employees in 2002

Company Size (By number of Employees)	Number of Companies	% of Total	Number of Employees	% of Total
0	679	54.4%	679	10.0%
1-4	355	28.4%	678	10.0%
5-9	117	9.4%	773	11.4%
10-19	61	4.9%	780	11.5%
20-49	22	1.8%	578	8.5%
50-99	5	0.4%	382	5.7%
100-199	3	0.2%	371	5.5%
200-499	6	0.5%	1 941	28.7%
500-	1	0.1%	579	8.6%
Total	1 249	100.0%	6 761	100.0%

THE SWEDISH CONSTRUCTION SECTOR SYSTEM

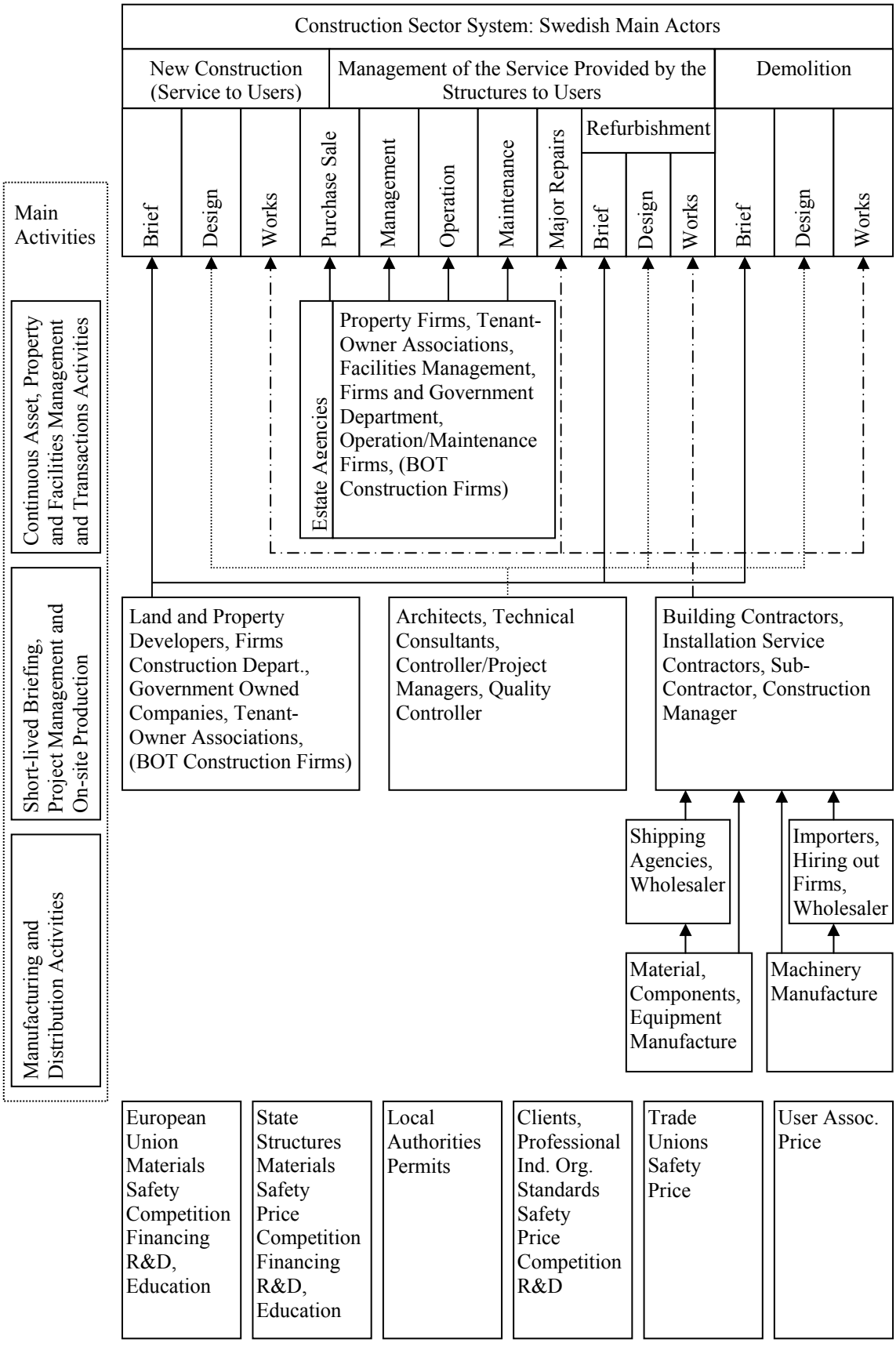
The Swedish construction sector has a central position in Swedish economy and society. The construction sector employs, directly and indirectly, a significant number of people and contributes to the national GDP. In a political perspective, construction has been a tool in the creation of the Swedish welfare state. Thus, in a historical sense politics have influenced the construction activities by governmental investments, taxes, subsidies etc.

A few large contractors that operate nation-wide as well as internationally dominate the private actors of the Swedish construction sector. These contractors undertake residential, non-residential and civil engineering works and are involved in all phases of the construction process. One significant feature of Swedish construction is the rather subdued role of the architect that is, more or less, limited to the early brief and design

phase and the development of architectural drawings. Another aspect of the construction system is the important role of private non-profitmaking and municipal housing companies on the Swedish residential market. These companies have a long tradition and are big actors on the housing market.

An overview of the Swedish construction meso-system is presented in Figure 3. Segments of the meso-system are placed according the phases of the lifecycle of a building or construction and are described on basis of three main building activities. The first main activity is related to asset and real estate management, which in the Swedish case are carried out by property managers, real estate firms and non-profitmaking housing companies. The second main activity covers the brief and design phase as well as production activities on site. In Sweden mainly contractors and professionals, such as architects and engineers, carry out the brief and design phase. General or specialised construction firms do on site activities such as site preparation, construction and civil engineering works and, installation and completion of buildings. Finally, producers and distributors of construction materials, components, equipment and machinery perform the manufacturing and distribution activities that constitute the third main activity in the meso-system.

Figure 3: The Swedish Construction Sector System



MAIN REGULATIONS AND INSTITUTIONAL ACTORS

In the 1990s, the Swedish government took a number of decisions in order to ease the rules and regulations on the construction industry. Sweden has had a tradition of governmental financial support to the building industry through public guarantees, economic aid and subventions as a way to control and stimulate the building industry. But, in the beginning of the 1999s, the public finances where strained and in the early 1990s, new and less generous subsidy rules where introduced along with more flexible building rules and regulations. All Swedish construction regulations are in force nationwide.

Table 23 presents an overview of institutional actors and their corresponding regulations that characterise the Swedish construction industry.

Table 23: Regulations and Institutional Actors on the Swedish Construction Industry

Regulations / Institutions	Building and Materials			Firms			Environment of the Firms		
	Construction Permits	Rules Concerning Structures	Rules Concerning Materials	Professional Rules and Firms Standards	Safety/Security and Personnel Management	Agreements on Price and Quality of Products and Services	Competition and Procurement Systems	Financing Taxation	R&D Support Education
International institutions			X		X		X	X	X
Government		X	X		X	X	X	X	X
Regional and local authorities	X								X
Client, industrial, professional organisations				X	X	X	X		X
Trade unions					X	X			X
User associations						X			

Construction Permits
Construction permits are managed by local authorities and is handled in by the client. Local authorities make comprehensive, area development and detailed development plans in their respective municipalities and give building permits according to these plans.

Since 1995 a number of changes in the Swedish Planning and Building Act (PBL), with construction permit regulations etc, has been in force. The new set of rules that were introduced implied a deregulation of the construction sector. It involved a number of changes on construction permits, for example:

- Building permissions no longer had to contain technical aspects of the building
- The building client became responsible for technical standards of the building
- A new system for inspection and control of the technical standards were introduced

For a traditional construction permit (residential or non-residential building) only elevations and plan drawings are needed, accordingly, no detailed structural calculations are needed.

Rules Concerning Structures
In 1994, new and more flexible building regulations BBR 94 and BKR 94 were introduced. The general purpose of the new, less detailed, regulations was to enhance the possibilities for the practitioners to choose design and construction solutions as well

as choice of materials. The idea was to stimulate development and implementation of new technique.

Rules Concerning Materials
Materials, structures and appliance that are embraced by BBR 94 and BKR 94 (see Rules Concerning Structures) can be certified according to Swedish building rules and regulations. Certain materials, structures and appliance can also submit to manufacturing control. The rules about certification are strictly national and are not to be mixed up with the system and procedures of the building products directive and the CE-marking of materials in the European Community. Type approvals of materials used in building and construction is not a strict demand from the Swedish public authorities.

Professional Rules and Firms Standards
Contracts set up in the construction industry regulates the relation between two parties and refers to documents in which responsibilities are defined in a set of general regulations. The parties can make their own adjustments and exception from the contract templates. See general regulations in the list below. Abbreviations of the regulations are put in brackets.

- Consultants, professionals commissions (ABK)
- Building, construction and installation contracts (AB, ABT, AFU and ABS)
- Supply of building materials (ABM), and
- Procurement templates (AMA)

Safety, Security and Personnel Management
The Swedish Work Environment Authority is the central authority for issues related to the working environment and working hours and it is the authority to which the Work Environment Inspectorate is accountable. The objectives of the Work Environment Inspectorate is to control that employers fulfil the demands of the Swedish law on working environment and the legislation enacted by Swedish Work Environment Authority. The Swedish laws on work safety and environment are valid nationwide. (Arbetsmiljöverket 2001).

Swedish rules and regulations on working environmental matters are regularly amended to comply with the directives adopted by the European Union.

Agreements on Price and Quality of Products and Services
In Sweden housing costs are regulated according to the market price, with one exception. The rent in tenancy apartments is set by a utility value analysis on basis of prime costs, including financial costs, repairs, maintenance, heating etc. of the building. The basic political idea of this system, in which equivalent dwellings shall have the same rent, is to avoid segregation where only wealthy people can afford to live in the most attractive locations. The rent is set by an agreement between the tenants' association and the real estate owner. (Blomkvist et.al. 1997).

The Act on Employee Participation in Decision Making, MBL, was introduced in 1997. Under MBL employers must inform and negotiate with the union at the workplace before undertaking important changes (selling the company, revise production, give employees notice or appoint executives). Employers are also required to keep the union informed about the company's finances, production, activities and staff policy. An example of the consequences of MBL is that a construction company needs to negotiate with the employees, i.e. the union, to get their approval for engaging a specific subcontractor. The union uses this procedure to protect their own work and to ensure that employers follow the protective labour legislation. (Sesam 2002)

Competition and Procurement Systems

The Swedish government and other official authorities follow the European Union regulation on public purchase of goods, services and building contracts for investments over a specified value. Invitation to tender must be handled and published by the office of European Union official publications. The construction industry and all other lines of businesses is regulated by the act governing restrictive practices. The Swedish Competition Authority supervises competition matters.

There are different ways to invite tenders for a contract:

- Open tendering — The client invites all interested companies for tendering
- Invited tendering — The client invites a selected a group of companies for tendering
- Negotiation tendering — The client turns to a single company for contract negotiations.

Financing, Taxation

Financing of residential construction is divided into short-term building loan and long-term real estate loans. Building loans are used to finance the production phase and are usually borrowed in banks. When the production is completed the building loan is replaced with a long-term real estate loan.

The Swedish government have financially supported building projects through public guarantees, economic aid and subventions as a way to control and stimulate the building industry. But, as mentioned before, when the public finances where strained in the beginning of the 1999s, new and less generous subsidy rules where introduced in 1993.

All building and construction products and services are charged with an added-value tax of 25 percent. This is the Swedish general level of added-value tax. Real estates, i.e. land, are excluded from taxes. But, when buying a ground, the buyer is compelled to pay a fee that can be considered a tax, in order to get registered as the lawful owner of the land in a national land register. This fee is currently 1.5 percent of the total purchase-price for private persons and 3.0 percent for juridical persons, i.e. companies and organisations. Mortgage bonds also involve a stamp duty of 2 percent of the mortgage amount.

R&D Support and Education

The educational system related to the construction industry consists of institutions for higher education, technical schools, schools for labour market training and in service training. It is the Ministry of Education that, on a governmental level, handles all matters related to the technical education on upper secondary school and university levels for the construction industry. The Government also supports basic research conducted at the national universities.

The employers' association of contractors financially contribute to a business development fund that supports research and development for the building industry.

The Worker's Educational Association, ABF, is the oldest (1912) and largest voluntary adult education organisation in Sweden. AFB consists of 55 member organisations and has strong connection with the Labour movement, construction as well as other areas (ABF 2002).

CONCLUSION

The analysis of the Swedish construction sector presented in this paper provides a general picture of the construction sector and its development in the 1990s. A decade in which the construction sector went through some significant changes which, to some extent, can be referred to political actions taken as a consequence of the deep economic recession in the early 1990s.

The paper identified structural changes of construction activities in the displacement between new construction and repair and maintenance works, as well as the redistribution between residential, non-residential and civil engineering works. The analysis illuminated the service aspects, in terms of repair and maintenance works, as prominent characteristics of the Swedish construction sector. For example, in 2000, repair and maintenance represented a larger share of total production output than new construction did. The important share of repair and maintenance reflects that buildings and constructions are long-term investments, with a short production phase relative to the phase of property management. The balance between new construction and repair and maintenance also reflects the diversity of construction activities, ranging from new production of large-scale civil engineering projects to minor and demarcated repairs. The diversified construction activities relate to the fragmented picture of contractors and other components of the construction sectors, considered in the paper.

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