DEFINING AN INDUSTRY: WHAT IS THE SIZE AND SCOPE OF THE AUSTRALIAN BUILDING AND CONSTRUCTION INDUSTRY?

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Introduction

The traditional structure-conduct-performance approach to industry economics originated in the US in the 1930s with the work of Mason (1939) and Bain (1959). This is now the standard framework for analysing the dynamics of an industry. However, the size and scope of the Australian construction industry at the turn of the millennium may be better understood using an alternative model that highlights the diversity of the industry and the range of actors involved.

Industry analysis has traditionally focused on groups of firms with similar characteristics in their production processes, goods or services produced, and markets served in the wider economy. The distinction has been between firms and industries, and the analysis has emphasised the importance of economies of scale and scope (Sutton 1991) or organisational structure (Williamson 1979). One major difficulty in the standard structure-conduct-performance approach has been the definition of industries within the theoretical criteria of product homogeneity.

Further, some analysts see the construction industry as a manufacturing system, similar to the automotive industry. This view underpins the recommendations in the Egan Report (1998) in the UK, which emphasises lean thinking in construction. This analogy argues the industry in Australia has a few very large key players whose task it is to 'assemble' constructed items, complete buildings or transport facilities for example. These key firms play the same role in both 'production' and innovation as the automotive assemblers, except that they do not have a fixed place of assembly. Bjornsson (1998) suggests that in the future these large contractors will also resemble the auto assemblers in that they will be much bigger and fewer - perhaps ten in the world in twenty years time. These 'assemblers' are in the process from moving from being 'demand-driven' in the sense of dependency on 'hard money' projects and traditional clients, to being demand-inducing, as they actively create opportunities through equity stakes and new forms of project delivery and finance. It should be said that the analogy with car manufacturers is controversial, and at variance to those with traditional views like Raftery (1991: 39-42) and Hillebrandt (1984).

The Australian Government's construction industry policy document *Building for Growth* Analysis had the comment "The industry is in the first stage of a global industrial formation that, by 2010 will see it dominated by perhaps 10 large firms" (ISR 1999: 45). For a global consolidation on the scale suggested to take place the structure of the industry would have to undergo one of the most dramatic examples of concentration ever. However, the evidence from similar industries with low R&D intensity does not support that outcome (de Valence, 2001).

Clearly, the future structure of the building and construction industry is becoming a point of debate among researchers and analysts. However, before analysing an industry's structure it is necessary to define the industry and identify its size, scope and scale. This establishes the true economic contribution of an industry. The objective of this paper is to review the current data available on industry size and scope and compare differences between the structure-conduct-performance approach and the alternative industry cluster approach.

Industry Clusters

In the late 1980s one of the emerging new approaches to industry analysis looked at the role of chains, clusters and complexes of firms (Porter 1990, Marceau 1994). Originally attention was drawn to the fashion cluster in Northern Italy (BIE 1991), which links a large number of highly specialised firms in the textiles, clothing, leather and machine tools industries into a cohesive and globally competitive cluster. More recently the multimedia industry has been the subject of study overseas (Braczyk et al 1999) and in Australia (Searle and de Valence 2000).

The multimedia research has confirmed that, like other industries based on intensive, rapidly changing knowledge, multimedia activities are centred on networks of clients, suppliers, freelancers and mobile skilled labour, most often organised on a project basis. These networks help multimedia firms to respond to complex, dynamic work situations and rapid changes in the external environment (Heyderbrand 1999: 67). In particular, multimedia networks are characterised by strong interindustry relationships, particularly between multimedia, computing, and cultural industries. These relations are not mutually exclusive - two or more activities can be successfully carried out in the same firm (Brail and Gertler 1999: 106). Despite the industry's relative infancy, available evidence suggests that global alliances and other global networks are already significant. In Toronto, 9% of multimedia suppliers and 18% of multimedia customers were found to be located outside Canada, with 5% of customers located outside North America (Brail and Gertler 1999: 111).

All these aspects of the multimedia industry can be found in the construction industry. The cluster approach shows the backward and forward linkages between the building and construction industry and the wider economy. It also captures the scale of the industry, as shown in the discussion below. Given the complexity of the industry this approach can be more representative of the industry than the traditional industry structure approach. However, because it is so generalised it is also difficult to use to generate statements about the industry and research questions to be investigated.

The Construction Industry

The construction industry in Australia accounted for just under 7% of GDP and nearly 8% of total employment in 1999-2000, under the Australian Bureau of Statistics industry classification, shown in Appendix 1. The output of the construction industry is composed of three distinct industry sectors. These sectors are engineering construction, non-residential building, and residential building. They are not closely related, having their own distinguishing characteristics, and the well-known volatility of the industry cannot be equally distributed across them.

Engineering

The engineering construction sector is divided into six major components. Road and bridge construction is the largest industry sector. Other engineering comprises electrical generation, transmission, water and sewerage, processing plants including oil and gas pipelines, and miscellaneous engineering construction, which includes railways, harbours, recreational facilities and pipelines. Nearly 80 per cent of all engineering construction work is for urban infrastructure, the balance carried out for the mining and heavy industries.

Residential Building

Although the housing construction share of GDP is not large, at up to 5% its volatility has an impact on the wider economy and contributes to cyclical patterns in other industries, such as consumer durables and building materials. Residential building activity includes all dwellings. Demand factors affecting the residential sector include: growth in household formation numbers and changes in household types, interstate

mobility and the level of net immigration the national and state level, and the age of the housing stock. More recently the demands of an aging population have led to changes in residential building types and locations, with support requirements like health and community services also affected.

Non-residential Building

In non-residential building, private sector activity dominates commercial construction, and includes offices, hotels, factories, shops and other business premises. The office construction area is particularly volatile. Other business premises encompasses a wide range of structures including warehouses, terminals, service stations and car parks, telephone exchanges, studios and so on. Public sector activity is mainly educational, health and recreational buildings. General economic activity and urban and population growth are the main determinants of demand in this area.

Table 1. Construction Activity, Chain Volume Measures: Reference Year 1998-99, Australia, ($billion).

Period	Residential Building	Non-residential Building	Total Building Construction	Engineering Construction	Total Construction
1986-87	12.6	13.4	26.1	12.5	39.5
1987-88	13.8	15.4	29.2	11.6	41.8
1988-89	17.7	16.1	33.7	11.4	46.2
1989-90	16.9	17.2	34.0	12.7	47.8
1990-91	14.7	15.4	30.0	12.9	43.5
1991-92	14.8	12.0	26.7	12.0	39.1
1992-93	17.3	10.8	28.1	12.4	40.8
1993-94	18.9	10.4	29.5	13.4	43.5
1994-95	19.7	11.3	31.1	13.7	45.7
1995-96	16.3	12.6	28.9	15.0	44.9
1996-97	16.1	13.8	29.9	15.5	46.6
1997-98	19.2	13.9	33.0	17.4	51.6
1998-99	20.8	14.5	35.3	19.2	54.5
1999-00	24.2	14.2	38.4	19.3	57.4

Source: ABS Construction Activity: Chain Volume Measures, Australia, Cat No. 8782.0.

Industry Size

There have been four Construction Industry Surveys (CIS) done by the Australian Bureau of Statistics (ABS). The fourth and most recent was for 1996-97. Table 2 shows three CIS for 1984-85, 1988-89 and 1996-97, and the distribution of firms across the industry sectors. The doubling in the number of subcontracting firms is the most notable feature. This reflects the trend toward contract employment, which is cheaper than full-time employees, and is an outcome of low-bid tendering driving prices down across the industry.

All four surveys have found the construction industry is overwhelmingly made up of small firms with under 20 employees, which contribute most of the industry's output and account for almost all of the total number of enterprises. Table 3 shows the numerical dominance of small firms in the construction industry. Businesses with employment of less than five accounted for 94% of all businesses in the industry, and over two-thirds of all employees. In contrast, less than 1% of businesses had employment of 20 or more. Businesses with employment of less than five accounted for slightly less

Table 2. Private Sector Construction Establishments: Number operating during the year ('000).

	1996-97	1988-89	1984-85
Total building construction	33.1	19.6	24.5
Total non building construction	3.1	3.9	3.4
Total general construction	36.3	23.5	27.9
Total special trade construction	158.0	74.5	77.0

Source: ABS 1996-97, 1988-89 and 1984-85 *Construction Industry Surveys*.

Table 3. Summary of Performance by Business Employment Size.

Selected indicators	Units	Employment less than 5	Employment 5 to 19	Employment 20 or more	All businesses
Operating businesses	'000	182	11.1	1.2	194.3
Employment	'000	332.2	85.9	66.0	484.1
Wages and salaries	$m	3 221.7	2 309.8	2 648.3	8 179.8
Turnover	$m	27 951.2	13 713.7	16 234.0	57 898.8
Total income	$m	28 202.5	13 801.0	16 591.2	58 594.7
Total operating expenses	$m	24 123.0	13 288.0	15 987.1	53 398.1
Operating profit before tax	$m	4 066.5	616.4	781.7	5 464.6
Total assets	$m	11 330.0	3 487.8	10 747.2	25 565.0
Total liabilities	$m	6 731.7	2 344.8	7 542.6	16 619.1
Net worth	$m	4 598.3	1 143.0	3 204.6	8 945.9
Capital expenditure	$m	9 984.9	226.3	1 120.9	11 332.1
Industry gross product	$m	8 657.2	3 582.2	3 941.9	16 181.2

Source: ABS. Private Sector Construction Industry, 1996-97. Cat. No. 8772.0.

Table 4. Percentage by Firm Size.

Selected indicators	Employment less than 5	Employment 5 to 19	Employment 20 or more	All businesses
Operating businesses	93.67	5.71	0.62	100.00
Employment	68.62	17.74	13.63	100.00
Wages and salaries	39.39	28.24	32.38	100.00
Turnover	48.28	23.69	28.04	100.00
Total income	48.13	23.55	28.32	100.00
Total operating expenses	45.18	24.88	29.94	100.00
Operating profit before tax	74.42	11.28	14.30	100.00
Total assets	44.32	13.64	42.04	100.00
Total liabilities	40.51	14.11	45.39	100.00
Net worth	51.40	12.78	35.82	100.00
Capital expenditure	88.11	2.00	9.89	100.00
Industry gross product	53.50	22.14	24.36	100.00

Source: Table 3.

than half the total income and expenses, whereas businesses with employment of 20 or more accounted for almost one-third of these items.

Almost three-quarters of construction industry profit before tax came from businesses with employment of less than five. Higher profit margins were reported by smaller businesses, so the numerical dominance of businesses with employment less than five drives the industry average above the profit margins reported by businesses with employment of five or more.

When the data on performance is converted to percentages (Table 4) the importance of the 0.62% of large firms can be appreciated. Their 13.6% of employee earn 32.3% of salaries and wages, generate over 14% of profits and nearly 25% of output.

Aligning the CIS data with the industry activity in Table 1 requires some balancing factor. The CIS gives figures for turnover in 1996-97 of $57 billion (in 1996-97 dollars) and ABS construction activity was $47 billion (in 1998-99 dollars). The difference in base year would account for around $4 billion of the difference and the rest can be attributed to sample composition and extent effects.

The Construction Production Chain

Carassus has developed a model of the construction industry cluster using data on the industry in France. He starts "in the field of industrial economics … the concept of a "sector" usually covers companies which produce construction; it deals with neither the set-up nor the design, nor the management of construction operations" (1998: 1). He used the concept of the "production chain" ("filiere de production" in French) to describe the successive stages in a construction operation: set-up, design, implementation, management. This is a "meso-economic" approach (in Greek, "meso" means "median"), intermediate between the micro-economic and macro-economic levels.

Carassus defines the "economic meso-system" of construction as the range of relations between interdependent participants working to produce and manage a type of value of use: the services provided by the structures of the building and civil engineering products throughout their life-cycle.

In the more developed countries, the central function of the construction meso-system gradually becomes the strategic stock management of existing structures. By strategic stock management, we mean the decision-making system, based on technico-socio-economic analyses, which manifests itself in maintenance, renovation, transformation, demolition, purchases, sales, and construction of new structures. (Carassus 1999: 35)

The analysis by Carassus is in terms of the ‘production chain’ of structures, or the sequence of operations necessary to create facilities. This chain has three major stages, each one associated with a type of work:

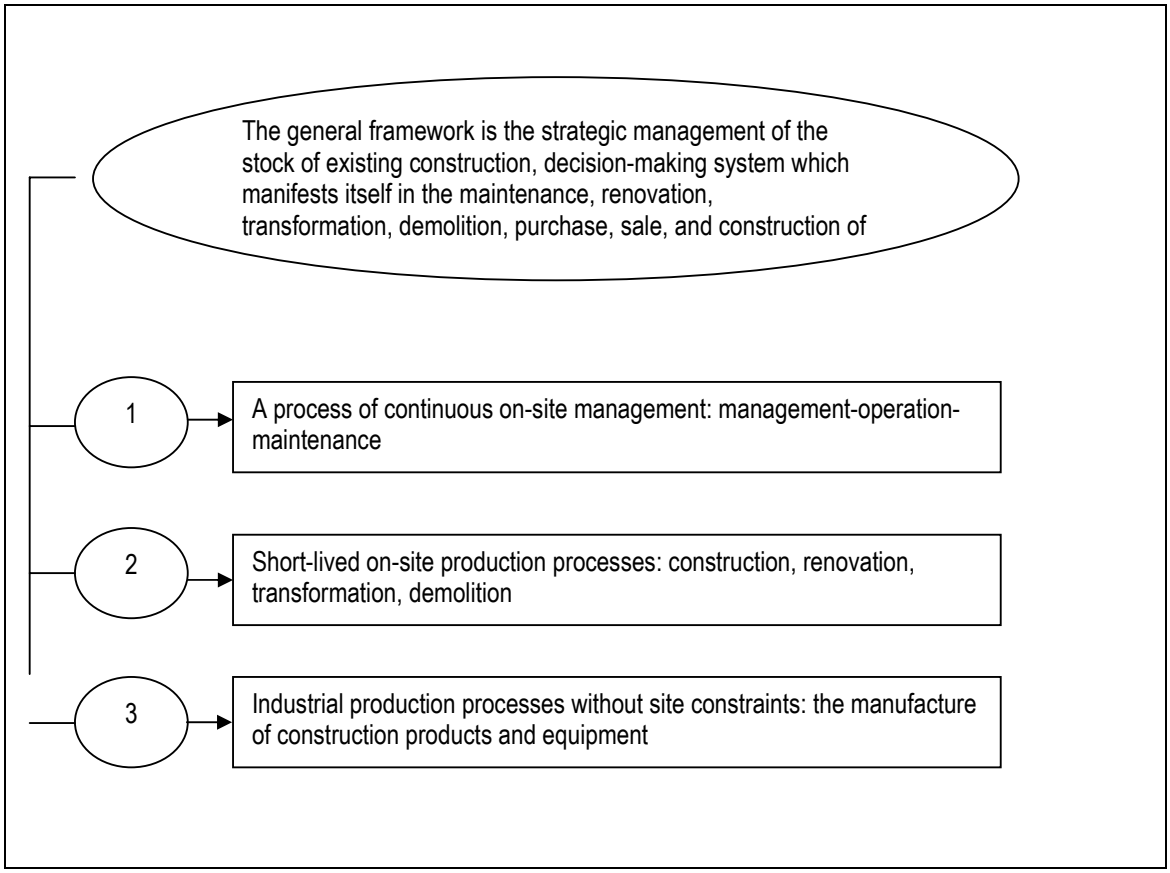
- Scheduling of operations by the clients
- Design of projects by architects
- Site works by the contractors who obtain supplies from manufacturers of materials, components, facilities and equipment

This method is very effective in analysing the construction sector in terms of flows of works ordered by clients (the downstream part of the production chain), executed by contractors (at the centre of the production chain) with material manufactures (upstream of the production chain). However, this approach does not take into account the management and maintenance of structures, the service provided by the facilities to users, and the life cycle of facilities (Carassus 1999: 39). The methodology can be seen as a change from analysis in terms of a “chain of production of new structures: to an

approach in terms of "system of participants producing and managing the service provided by constructions throughout their life-cycle. The four types of process are involved in this system are identified as:

- An on-site continuous management process of structure service which includes management, operation and running maintenance
- Short-lived on site production processes sites for major repairs, improvements, transformation, demolition and construction
- The industrial process of manufacturing materials, components, facilities and equipment, without site constraints (apart from the specific case of quarries and sand extraction)
- The sale and purchase of structures during their life-cycle

Figure 1. Three Types of Production-Management Processes in the Construction Sector.



Source: Carassus (1998: 6)

In Carassus 1999 the analysis is extended and the similarity with the AEGIS methodology detailed below is apparent. In each case the outcome is a view of building and construction as an inter-related set of firms that design, deliver and maintain the built environment.

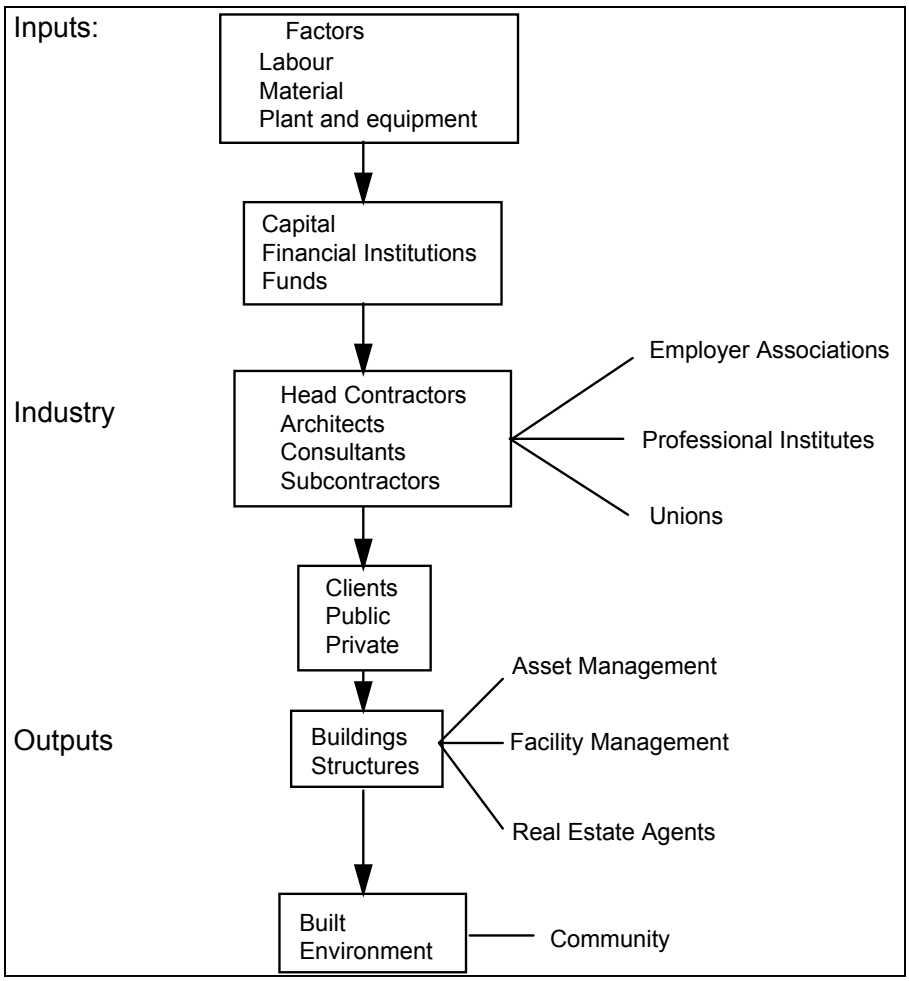
AEGIS' Map of the B&C Cluster

This section extends the discussion of the structure of the building and construction industry by using 'cluster analysis' and applying it to the Building and Construction Industry Cluster (B&C). The 'cluster analysis' approach applied to the building and construction

industry by the Australian Expert Group on Industry Studies (AEGIS) includes the industry sectors that provide services before and after the construction and identifies the flow of services between clients and industry participants. The cluster approach focuses on linkages and interdependencies between firms in a network of production.

De Valence and Lauge-Kirstensen (1996, see Figure 2) and Gann and Slater (1998) also developed models used to illustrate the range and types of actors, activities and knowledge flows found in project-based, service-enhanced production. These include the regulatory, institutional and technological structures in a framework for construction industry firms.

Figure 2. Industry Flows of Inputs and Outputs



Source: de Valence and Lauge-Kirstensen (1996: 82).

The AEGIS classification divides the industries into five product-system segments: on-site services, client services, B&C project firms, building products and supplies, and building fasteners, tools, machinery and equipment manufacturing. Each of these is divided into four product/service classes.

AEGIS argues that mapping the B&C product system in this way provides analytical advantages. Firstly, it provides a stepping-stone between

traditional industry statistics based on hierarchical systems of classification and broader conceptual views of industry activity as depicted in clusters, chains and complexes. Secondly, it gives a perspective on the interrelations between segments of the industry, a view of the 'chain' of production and a framework on which to base a variant of cluster analysis (AEGIS 1999: 35-36).

The B&C cluster broken into five groups of firms is.

1. On-site services:
- building completion services – including plastering, ceiling, carpentry, tiling, carpeting, painting, decorating, glazing and related construction services;
- installation trade services – including plumbing, electrical, air conditioning, heating, fire and security systems installation services;
- site preparation and landscape services; and
- building structure services – including concreting, bricklaying, roofing and related services.

2. Client services:
- real estate services – including real estate agent services;
- professional/technical services – including architectural, surveying, consultant engineering and related technical services;
- residential property services – including residential property operation services; and
- commercial property services – including commercial property operator and developer services.

3. B&C project firms, divided into four major areas:
- house-building
- non-house residential building;
- non-residential building – including factory, shopping centre and office building –
- non-building (engineering) construction – including road, bridge and other engineering construction.

4. Building products and supplies:
- building products and supplies wholesaling and retailing;
- structural products – including such things as fabricated wood and wooden structures, concrete and aluminum products, structural metal, steel fabrications and pre-fabricated buildings; and
- B&C related products and supplies – including ply, veneer and wood products, glass, brick and ceramic products, cement, plaster, concrete, paint, plastics, metal piping and sheeting, electric cabling, etc.

5. Building fasteners, tools, machinery and equipment:
- tools and fasteners – including machine tools, hand tools – and fasteners;
- construction-related machinery and equipment wholesaling, hiring and leasing; and
- B&C related machinery and equipment – including such things as construction equipment, lifting and handling equipment, and commercial heating and cooling equipment.

When the data in Table 3 is compared to that in Tables 5 and 6 (from AEGIS 1999), the size of the industry virtually doubles, both in total income (and therefore share of GDP) and employment. The data is grouped by the product-system sectors. The industry income in Table 3, of $58.6 billion, compares with total income of $110.4 billion in Table 5, so the effect of inclusion of materials manufacturers and services is clearly seen. A similar result for total employment is found, increasing from 484,100 to 682,000.

Table 5. Total B&C Income by Industry Segment 1995-96 ($ million).

Industry Segment	Total Industry Income ($m)	Input-Output Discounted ($m)
On-site Services (Trade Services)	21,898	21,898
Client Services (Engineering, Technical, etc.)	8,607	8,607
Building & Construction project firms	34,250	34,250
Materials and Products Supplies	41,352	18,608
Machinery and Equipment Supplies	4,312	2,803
Total	110,419	86,166

Data sources: ABS Private Sector Construction Industry 1996-97, Cat No 8771.0. (Preliminary). ABS Real Estate Agents Industry: Australia, 1995-96, Cat No 8663.0. ABS Selected Technical Services: Australia, 1992-93. ABS Consultant Engineering Services: Australia, 1995-96, Cat No 8693.0. ABS Business Operations and Industry Performance: Australia, 1995-96, Cat No 8140.0. ABS Manufacturing Industry: Australia, 1995-96, Cat No 8221.0.

Notes:
1. Trade services and construction employment estimated for 1995-96 based on proportions of 'construction' in 1996-97.
2. Architectural & surveying services income for 1995-96 estimated based on proportions to engineering services 1992-93.
3. Excludes wholesale, retail, hiring and leasing.
4. Excludes residential or commercial property operators and developers from 'client services' due to lack of data.
5. Based on total income by industry, not allowing for input-output proportions.

Source: AEGIS (1999: 57).

Table 6. Employment in the B&C Product System by Segment 1995-96.

Industry Segment	Total Employed
On-site Services (Trade Services)	220,000
Client Services (Engineering, Technical, etc.)	102,000
Building & Construction	108,000
Materials and Products Supplies	222,000
Machinery and Equipment Supplies	30,000
Total	682,000,000

Data sources: ABS Private Sector Construction Industry 1996-97, Cat No 8771.0. (Preliminary). ABS Real Estate Agents Industry: Australia, 1995-96, Cat No 8663.0. ABS Selected Technical Services: Australia, 1992-93. ABS Consultant Engineering Services: Australia, 1995-96, Cat No 8693.0. ABS Business Operations and Industry Performance: Australia, 1995-96, Cat No 8140.0. ABS Manufacturing Industry: Australia, 1995-96, Cat No 8221.0.

Notes:
1. Trade services and construction employment estimated for 1995-96 - set equal 1996-97.
2. Architectural & surveying services employment for 1995-96 estimated based on proportions to engineering services 1992-93.
3. Excludes wholesale, retail, hiring and leasing.
4. Excludes residential or commercial property operators and developers due to lack of data.
5. Based on total industry, not allowing for input-output proportions.

Sources: AEGIS (1999: 58).

Policy Implications

The scale of the difference between the two approaches to defining the size and scope of the construction industry has significant implications for industry policy. There are two policy areas that are affected: competition policy and industry development.

The key determinant of the degree of competition in any market is the number of firms that are supplying products and the number of buyers that are the purchasers

of that output. Where there are few firms, competition tends to be less intense and price is higher than in markets where there are many firms and competition is severe. The building and construction market is characterised by a wide range of different products, and some of these products are bundled with services such as installation and maintenance. This makes it a market that often does not fit easily into the framework of the competition authority, in Australia the Australian Consumer and Competition Commission (ACCC), and makes the fit with the theoretical structure given to different types of markets also problematic. In theory, where industrial economics specifies product and market characteristics in order to identify the form of market structure, the requirement is typically for either identical products, or for clearly identifiable markets for those products.

In industry economics, industries are usually seen in terms of a number of firms which advance along a single technological trajectory, and these firms compete in enhancing the quality of their individual versions of the same basic product (homogeneity of product). In this case, firms make decisions on how much R&D to finance, and apply that R&D to product development. This view fits some industries well, however many industries encompass several groups of products rather than a large number of versions of a single product. The products may be close substitutes in consumption, but embody different technologies, so R&D projects that enhance products in one group may generate spillovers for products in other groups (de Valence 2001).

Such complex overlapping patterns of substitutability have bedeviled industry economics since Chamberlin (1932) first developed the definition of an industry as limited by the chain of substitution, where industries were defined by their product. If industries are broken into separate sub-industries in order to address this problem, the choice in R&D spending can be between any number of technologies for the development of different groups of products. The products may be close or distant substitutes for products of firms on other technological trajectories. Both of these linkages operate on the demand side. When the linkages are strong they reflect the presence of scope economies in R&D; where the linkages are weak these scope economies will be absent and there will be a low degree of substitution across sub-markets.

Applying this discussion of sub-markets to the building and construction industry raises a number of issues. The first is the general lack of specialisation of firms in the construction industry in terms of their product. The answer to the question "What does the industry produce?" varies from providing services (management, coordination, finance) to producing products (buildings and structures). The former argues that the main task of the industry is one of coordinating site processes while the latter is more concerned with the building itself. Secondly, the building and construction industry is typically broken into the engineering, non-residential, and residential building sectors. Although some firms cross all of these areas, typically firms work in either the residential or the non-residential sectors. Many of the larger firms cover both engineering and non-residential building in their activities. Within the non-residential building sector, there are ten or twelve different sub-markets, divided into offices, retail, factories, health, schools and so on. Some firms specialize in building particular types of buildings, for example in Australia Grocon specialises in high-rise office buildings and Westfield specialises in shopping centres. However, more commonly a building contractor will apply their management skills to a range of building types, and not limit themselves to specific sub-markets. In this case, for the construction industry, sub-markets are difficult to identify because firms can be highly specialized in one area, or they can be highly generalized and put up a wide range of buildings and structures.

In regards to industry development and policy, the 1990s were a decade of

development and refinement of construction industry policy in Australia, with a range of State and Commonwealth agencies involved. The industry reform strategy has focused on the lead role of large public sector clients, the introduction of performance standards, rationalisation of contractual relationships, and more effective building management practices. The New South Wales (NSW) Government established a Building Industry Royal Commission (RCBI), which published in 1992 a 10 volume report, implemented by the NSW Construction Policy Steering committee (CPSC), which was made responsible for the development of building and contractual policies and practices for NSW agencies. At the same time a Commonwealth Government agency, the Construction Industry Development Agency (CIDA), was working with industry and publishing reports on issues identified in the Final Report. CIDA's main policy initiatives were pre-qualification criteria, Codes of Conduct and Tendering, and the development of best practice and continuous improvement tools (de Valence 1997).

In 1997 the Australian Procurement and Construction Council (APCC) was established as the national policy advisor on procurement and construction and the peak industry Council for the Commonwealth, State and Territory Governments. In 1997, the APCC released *Building a Better Construction Industry in Australia* which contained fifteen recommendations to improve industry performance. This was followed by the launch of the *Building for Growth* policy and agenda (ISR 1999) by the Department of Industry, Science and Resources.

Despite these efforts to promote better performance by the Australian construction industry, the industry's performance measured by productivity growth, value of services exported, skill development, innovation and R&D, use of information technology and supply chain integration has be mixed, at best (ISR 1999).

Conclusion

This paper has presented data from two different perspectives on the size and scope of the Australian construction industry. The first is in the traditional structure-conduct-performance approach to analysing industry structure. The industry activity data from the ABS and the *Construction Industry Survey* data is in this form. The paper then used an extended framework to the construction industry with a "complexes" or "cluster" approach that includes suppliers and manufacturers. This was applied to the Australian industry by AEGIS, and that study produced data on the industry that extended the scale of the industry, doubling the share of GDP and employment.

In conclusion, it appears that defining the size and scope of the construction industry depends on the definition of industry products or markets adopted and the sectors of the industry that are to be included. The importance of this finding has implications in two key policy areas. Firstly, in competition policy administered by the Australian Competition and Consumer Commission, and counterparts overseas, determinations of anti-competitive behavior are based on the definition of ‘market’ and ‘industry’ used. From the data in this paper it is clear that the definition of the industry is far from being a settled issue. Both narrow (sector based) and broad (cluster based) definitions are appropriate in certain circumstances. For example, some building materials are widely used (concrete, plasterboard) while others are not (scaffolding, lifts). Some services are common (surveying), other are specialised (design, cost and engineering consultants). Therefore, the appropriate definition of the ‘industry’ for competition policy will depend on the specific ‘market’ under consideration.

Secondly, the building and construction industry can be depicted in a variety of ways, but a model showing how the built environment is created through the project initiation, design and construction process is the most representative of the whole industry. The number and range of

participants in the creation and maintenance of the built environment can be seen in this view. From the suppliers to the end users, the number of stakeholders is extraordinarily large. The complexity and number of activities involved in the B&C has, to date, prevented a coherent view of the industry developing. This has, in turn, made efforts to improve the performance of the industry largely ineffectual.

Despite repeated efforts by Governments, both in Australia and elsewhere, the performance of the industry, using measurements such as the rate of productivity growth, levels of research and innovation, training and process improvement, is often seen as poor. An important part of the explanation for the failure of industry policy in the past is the misunderstood extent of the industry, due to the failure to adequately determine the size and scope of the building and construction industry, and the implications of that for policy initiatives.

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