Routledge
Taylor & Francis Group

Construction Management & Economics

ISSN: 0144-6193 (Print) 1466-433X (Online) Journal homepage: https://www.tandfonline.com/loi/rcme20

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To cite this article: Lawrence Wai Chung Lai (2000) The Coasian market-firm dichotomy and subcontracting in the construction industry, Construction Management & Economics, 18:3, 355-362, DOI: 10.1080/014461900370717

To link to this article: https://doi.org/10.1080/014461900370717

Construction Management and Economics (2000) **18**, 355–362

The Coasian market–firm dichotomy and subcontracting in the construction industry

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Received 18 January 1999; accepted 9 September 1999

This is a contribution to the debate on the contractual nature of subcontracting in the construction industry by arguing, contrary to certain views in the literature on institutional and construction economics, that the Coasian firm–market dichotomy is not blurred or pointless. By reference to the type and number of contracts, the study offers a way to distinguish the firm from the market as well as the precise nature of subcontracting in terms of such distinction. Subcontracting is shown to be a nexus of Coasian firms interacting through the main contractor with a monopsony consumer in a Coasian market.

Keywords: Transaction costs, ambiguity of the firm, subcontracting, Coasian firm, Coasian market

Three theses of the contractual nature of subcontracting in the construction industry

The works of Williamson (1975, 1979) and Williamson and Winter (1991) have been well received by theorists in construction management who subscribe to the concept of transaction costs. Williamson's concept of 'hierarchical ranking' is commonly found in the construction management literature. In their course of articulation, some theorists have lost sight of the original transaction-cost based distinction between the firm and market in Coase's seminal thesis, Nature of the firm (Coase, 1937), to which Williamson owes many of his ideas. This is particularly true of the research area subcontracting, notwithstanding the fact that as early as 1959, Stinchombe advanced a Coasian argument that subcontracting as a kind of 'craft administration' is different from 'bureaucratic administration' of the manufacturing firm (Stinchombe, 1959).

How should we characterize the nature of subcontracting in terms of the Coasian concepts of the firm and market? This question rephrases that posed by Gunnarson and Levitt (1982) in their paper. Is a building construction project a hierarchy or a market, which focuses on the issue of subcontracting. The diverse answers to this question suggested by theorists in construction economics fall into three categories, which may be described as the hybrid, inappropriate and indeterminate theses.

The hybrid thesis is represented by the views of Gunnarson and Levitt, who conclude that a 'typical building construction project is neither a pure market nor a pure hierarchy' (Gunnarson and Levitt, 1982, p. 526). In short, subcontracting is a mixture or hybrid of firm and market.

The inappropriate thesis is represented by Eccles (1981), who considers that subcontracting is an 'interface' between the market and the firm in his criticism of Stinchombe's work, and by Reve and Levitt (1984), who describe subcontracting as neither a firm nor a market but a kind of 'clan relationship' between the contractor and consultant (whereas the relationship between the developer and consultants represents a 'professional relationship'). In a nutshell, subcontracting must be understood beyond the firm–market dichotomy.

The indeterminate thesis is anticipated by the ideas of Cheung, institutional economist, about the problems of Coase's firm–market distinction (Cheung, 1983), which have been adopted since the late 1990s by Walker (1996) and Walker and Chau (1999) in the field of construction management. Walker (1996) and Walker and

ISSN 0144–6193 print/ISSN 1466-433X online

Chau (1999) contest Winch's idea of market failure by reference to transaction costs arguments. Subcontracting is used as an example. Walker and Chau agree with both Cheung's idea that a firm is indeterminate and Bon's proposition that the market and firm are only two 'extreme cases' between which are a host of alternative contractual choices (Bon, 1989, 1991). Bon holds the view that the market and hierarchy are two limits of a continuum of contractual choices.

This paper will demonstrate that Coase's distinction between the firm and market as a matter of kind rather than degree is useful and can be retained in characterizing subcontracting, using Coase's concept of transaction costs (Coase, 1937, 1960, 1988). To set the context, we shall first examine how Cheung's ideas, which in effect have been criticized by Alchian and Woodward (1988) in mainstream economics, have led to some confusion in the theorization about subcontracting in the field of construction economics and management.

Cheung's ambiguous thesis about the Coasian 'firm' and 'subcontracting'

Cheung (1983) extends the notion of Jensen and Meckling (1976) that the firm is a 'nexus of contracts', arguing that the firm has an 'ambiguous' identity in terms of contracts. Cheung argues that it is not quite correct for Coase to say that the firm supersedes the market. Rather, one type of contract supersedes another type (Cheung, 1983, p. 10, 1987, 1990). Cheung concludes that a firm may be as small as a contractual relationship between two input owners or, if the chain of contracts is allowed to spread, as big as the whole economy (Cheung, 1982, 1983, p.17). He uses three examples to demonstrate the thesis that firm is an ambiguous entity and, accordingly, the firm–market distinction is not meaningful.

The first example is directly relevant to a discussion of the construction industry, as it is an example of the 'piece-rate contract' as adopted in the subcontracting work of laying of hardwood floors in domestic premises. Cheung argues that this kind of contract has a 'dual nature' (Cheung, 1983, p.10). This 'dual nature' is exactly what Gunnarson and Levitt (1982) dwell upon. Cheung argues that what is or is not a firm is immaterial: what counts are the various ways of organizing economic activities under different transaction costs (Cheung, 1983, p.10). Cheung's idea has been followed by Chau *et al.*, (1993), Chau and Lai (1994), and Walker and Chau (1999) in their discussion about the contractual nature of subcontracting in Hong Kong.

The second example is the most important example, which embodies Cheung's tacit criticism of Coase. This example draws upon Cheung's empirical rejection of the problem of positive externalities in his Fable of the Bees (Cheung 1973), affirming Coase's analytical reasoning about Pigou's notion of social cost (Coase, 1960). Cheung asks the question: if an apple orchard owner contracts with a beekeeper to pollinate his fruit, is the result one firm or two firms? Cheung says that this question has no clear answer. The contract involved may be a hive-rental contract, a wage contract, a contract sharing the apple yield, or, in principle, some combination of these and still other arrangements. The tax authority may treat the beekeeper and the orchard owner as one or two firms, depending on tax laws and business registrations adopted. However, what is the viewpoint of economists? Cheung's answer is that most economists would probably opt for only one firm if the beekeeper is hired on a wage contract but for two if the hives are rented. Then he posed the question: 'Does it make sense to say that the number of firms, and hence firm size, depends on the chosen form of contract?' (Cheung, 1983, p.17). Cheung's answer is the affirmative.

The third example is a comparison between enterprises in a department store, often regarded as one firm, and shops in a shopping centre, typically regarded as a cluster of individual firms. Cheung points out that such distinction is arbitrary.

In posing the questions about alternative forms of contract for the economist, Cheung has obviously sought to ruin the notion of the Coasian firm as a clearly identifiable and economically meaningful entity with a clearly delineated conceptual boundary. In other words, the idea of the firm or hierarchy is meaningless in economic theory.

There can be three possible interpretations of Cheung's dual assertions that (a) the firm is ambiguous and that (b) it is better to talk about contracts than firms. The first interpretation that both assertions are correct, as expressed by Walker and Chau (1999) and implied to be correct in the work of Alchian and Woodward (1988, p.76)

The second interpretation is that the ambiguity of the firm is an exaggeration, or even a mistake, as a firm can be somehow defined, while the emphasis on the relevant contracts is correct. In other words, whether a firm is ambiguous or not will not really affect the credibility of the statement that the focus of economic analysis of 'behaviour' shall be focussed on contracts rather the party who makes the contracts.

The third interpretation, the position of the present paper, is that the first assertion about the firm is wrong, as the firm can be defined unambiguously, while the second about contracts is correct. The reason is that Cheung's thesis can become counterfactual. Cheung's emphasis on contracts does advance our understanding

of the economic world. However, one cannot make much meaningful discussion about any contract without reference to the parties to the contract. Undoubtedly parties to a contract are concrete entities with legal capacity. One can pin down the boundary of a firm because, in agreement with Masten (1991), it is necessarily a legal person with unambiguous identity.

The followers of Cheung have ignored the fact that the rights and liabilities of a contract must be party-specific. Indeed, a proper understanding of contracts requires a precise identification of the nature of relevant contracting parties, and vice versa. Cheung is correct in suggesting that *the number of firms, and hence firm size, depends on the chosen form of contract*. However, it is significant also that the certainty of nature of contracts implies also the certainty of the contracting parties, which may well be either a firm or otherwise. This legalist argument will be merely definitional 'if and only if' contracts are results of random choice. As the choice of contracts is not random but specific to transaction cost constraints, the delineation of the firm as an unambiguous legal and economic entity must be both possible and useful.

In arguing away the firm, Cheung not only removes any possible discussion of the firm – market dichotomy but also precludes Bon's idea of a range of contractual choices between the firm and market. In his 1937 paper, Coase follows Mrs. Robinson's advice in specifying the precise type of legal relationship, such as that between master and servant or employer and employee, within a firm (Coase, 1991).

Cheung dismisses the certainty of the firm and adopts an instrumentalist (as opposed to Coase's realist) argument: it does not matter whether the assertions correspond to reality; it matters only they help better explain behaviour (Nagel, 1963). A possible criticism of this instrumentalist view is that the very existence of legally definable firms as units of taxation, accounting, and contracting requires an economic explanation. Furthermore, the label firm is an efficient shorthand to characterize definitive types of contract made by specific parties. Hence, there is no harm in keeping the idea of the firm as a discrete entity alive. Alchian and Woodward (1988) gave an example from the law which lends support to the need to keep the idea of the firm alive. In a 1982 antitrust lawsuit, the court was asked to decide whether the 24 teams in the National Football League (NFL) were 'one firm' or '24 firms'. The court found the NFL to be 24 separate firms (Alchian and Woodward, 1988, p. 77). The court's decision could be wrong, as Alchian and Woodward suggest. However, one thing is certain, firms are considered ascertainable and meaningful from the court's point of view.

Neither realist Coase nor instrumentalist Cheung denominates arguments in terms of specific number or type of contract, which would help illustrate precisely the differences and similarities of the Coasian firm and market in terms of contracts, which Cheung stresses, as well as the nature of subcontracting in terms of these differences and similarities.

The Coasian market and firm defined

The connotations of 'market' and 'firm' in economics differ from those understood normally or at law. People may think of specific places of transaction, such as the 'hay market', a specific sector of the economy, such as the construction industry, or the national or global economy in general when the word 'market' is used. As regards a 'firm', it may occur immediately to people to be a category of legally recognized bodies such as the limited company, public company, private company, sole proprietorship, and so on.

Coase's ideas of the market or firm may not fall neatly into any of the categories mentioned above. Help can nevertheless be obtained by appreciating that Coase makes a distinction between the 'market' and 'firm' because he wants, as Cheung correctly points out, to discuss alternative means to facilitate voluntary transactions, i.e. contracting.

The Coasian market

Assume that there are only three human persons, A, B and C, in the world. The rationale of using three persons will unfold in the discussion of the Coasian firm below. (Theoretically speaking, two human persons suffice, but that will not permit a direct comparison with the Coasian firm.) C is the consumer of a good X which is made up of two inputs X_1 and X_2. A can supply one input, X_1, and B another, X_2.

The Coasian 'market' is a scenario where human persons A and B individually produce the inputs. C enters into a 'sale of goods contract' with A to obtain one input of X_1; and another 'sales of goods contract' with B to obtain another input of X_2. Then C combines the inputs into final product X for consumption. In this market scenario, there are two sale of goods contracts and no 'employment contract' or 'contract of service'. (Reve and Levitt describe 'classical contracting' (spot market or contingent-claims contracts) as corresponding to 'market governance'.) A sale of goods contract is one 'whereby the seller transfers or agrees to transfer the property in goods to the buyer for a money con-sideration called the price' (*Osborn's Concise Law Dictionary*, 1993, p. 296). The consideration an input owner pays to the consumer in exchange for the price is a 'piece' of product, albeit in this example an intermediate product. Thus, it is also a form of 'piece contract'.

No problem of management or supervision can possibly exist in this scenario as both A and B would work hard because the results of their own work belong to them individually. No 'shirking' problem will arise. As the Coasian market does not involve any employer–employee relationship among individuals, there is no employment contract. When there is a legal dispute between the consumer and a resource owner over the quality of the good (say X_1), the latter (say A) is personally liable. (If A or B trades through an unlimited one-person company, that legal person is 'personally' liable, with the consequences borne fully by the human person that operates it.)

In a world where there are C_1 to C_m consumers and n individual suppliers of inputs X_1 to X_n, the general equation for working out the total number of contracts for m consumers and n individual suppliers for the entire industry of X is $m \times n$ sale of goods contracts. Next, we examine the emergence of a 'firm' from the three human persons scenario depicted above.

The Coasian firm

The Coasian 'firm' is a scenario where A establishes a company, a legal person, A′ which in turns uses two 'employment contracts' or 'contracts of service' to employ A as manager and B as employee. (Reve and Levitt describe 'relational contracting' (employment contracts) as corresponding to organizational governance, i.e. firm). Under a contract of employment, a relation of employer and employee arises. This relation is said to 'exist when the employer has the right at the moment to control the manner in which the employee shall act, e.g. a clerk is an employee; an opera singer is not.' (*Osborn's Concise Law Dictionary*, 1983, p. 130). Therefore, under the supervision of A, A and B work together to produce the final product good X, which is sold by A′ under a sale of goods contract to C. Whereas the consideration the company or firm pays to the consumer is again a piece of product, namely X, this time the consideration A or B pays to the company or firm is not any 'piece' inputs but time spent on producing X. Thus the employment contract of A or B is also a 'time contract' in the sense that the employee is remunerated according to time, as a proxy of inputs provided.

In this scenario there is a global saving in the number of sales of goods contracts, which is reduced to one, but this is achieved to the advantage of the consumer at the cost of generating two employment contracts. The coexistence of sale of goods and employment contracts is the hallmark of a scenario involving a Coasian firm engaging with consumers. A firm must involve an employment contract. A Coasian firm must involve at least two employment contracts, one for the supervisor and the other for his subordinate, otherwise the nature of 'management' or 'supervision' cannot be explained. In our example, as B works for A′, B may shirk on quality of work because he is paid by the time. A as supervisor has to closely monitor the behaviour of C as an employee. In this example, as A is the owner of A′, A as supervisor will not shirk.

The Coasian firm differs from a 'company' as understood in law. In company law, the firm is a distinct legal person and there can be a 'one-person' firm. This legal attribute of the firm in company law has two implications for the discussion of Coase's firm. The first and most important implication concerns the legal capacity of the firm as a legal entity. 'An employer is liable for the act of default of his employee committed in the course of and within the scope of employment on the ground of implied authority.' (*Osborn's Concise Law Dictionary*, 1983, p. 130). When there is a legal dispute between the consumer and a resource owner over the quality of the final good X, the firm A′ rather than any specific human person A or B may become liable by reference to the sale of goods contract between A′ and C. A′ in effect insulates its employees from legal liability due to the doctrine of 'vicarious liability'. However, A′ may dismiss its employees for bad performance. From this legalistic point of view, Cheung's assertion that the firm is ambiguous and hence meaningless for analytical purpose is certainly too extreme.

The second implication relates to the requisite number of persons 'within' a Coasian firm. The minimum number is two. A legal firm can exist given the existence of the requisite number of human persons required by law. While the typical example involves more than two persons, such as two shareholders for a private limited company, sometimes one human person may suffice, as in the case of an unlimited company. McNulty (1984) certainly holds that a one-person or unitary firm 'plays a fundamental economic role no less than its larger and more diverse counterparts'. However, he clearly points out that such firms do not exist for internalizing the costs of forming contracts with input owners, or for reducing the costs of team production. (McNulty, 1984, pp. 245–6) Furthermore, the legal firm can 'exist' and attract liabilities for tax purposes even when it is devoid of any employee or director. As Coase's theory of the firm involves the economic phenomenon of 'management' or 'order', the Coasian firm cannot be meaningful for a one-person or unitary firm. Thus a hypothetical three-persons world (with two employees within a legal entity plus a consumer) is chosen for illustration purpose.

For a world with consumers C_1 to C_m and final product X with parts X_1 to X_n, and hence n employees when individual suppliers of n parts are organized by

firms, the general equation for working out the total number of contracts for the entire industry of X is $m + a \times n$ contracts. In this formula, m stands for the number of sale of goods contracts, n for the number of employment contracts, and a stands for the number of firms. As our example A′ is a monopoly, the number of contracts is $m + 1n$ or simply $m + n$.

Advantages and inherent management problems of the firm

A monopoly firm always involves less contracts than the market, because $m+n$ must be less than $m \times n$. If the costs of transactions for forming and enforcing any type of contract are identical irrespective of the number of that type of contract, then obviously a monopoly is more efficient than the market. If this assumption of uniform transaction costs of contracting is real, then two absurd conclusions will arise. First, the socialist central economic planning system, which in effect is one firm (Hayek, 1944; Cheung, 1983), is always more efficient than the market economy. Second, all industries should and will become monopolies. Firms will continue to expand indefinitely until the whole economy is socialized or nationalized.

The reality is that as the firm grows, the management costs of coordinating and monitoring production of individual employees will increase. Such higher costs do not always fall or remain proportional, and definitely will rise ultimately. Beyond a certain critical point, further expansion of the organization will bring prohibitive marginal loss in case of a private profit-making firm. This point is not made clear by Coase in his 1937 paper but has been adduced subsequently by Cheung (1983). In a typical modern company where ownership (of shares) and management (by directors) are separated, the problems of shirking, or strictly speaking the transaction costs of enforcing performance, can be serious, since supervisors themselves may shirk! For a non-profit-making public firm, there may not be an apparent loss but costs will be borne by society at large, notably the taxpayer.

Subcontracting as firms interact in a market

Subcontracting in the construction industry does not involve a hierarchical organization. Rather, it is a network of individuals (human persons or firms) interacting in a Coasian market. The organization chart of a subcontracting arrangement, which is reminiscent of an organization chart within a company, in construction management literature may lend itself to a deceptive impression that the client, typically a developer, is using his visible hand to direct or order a whole array of subordinates as 'direct labour'. The analysis of Reve and Levitt (1984, p. 20) regarding bilateral governance or clan relationship in professional services contracts (between client/developer and consultants) and contracts for construction specifications (between client/developer and construction contractor, as in a building contract) leads to the observation that 'elements of hierarchy are added to what appeared to be a pure market relationship' in subcontracting for quality assurance. This is not to say that the subcontracting arrangement involves one gigantic firm bound by an employment contract, though Cheung has suggested that economists will treat subcontracting as a vertically integrated firm.

Cheung's assumption of one firm is inappropriate because the parties (i.e. the developer and the main contractor, the main contractor and its subcontractors, the subcontractor and its subcontractors) to this complicated contractual arrangement do not come together because of any employment contract that binds them together on a purely time-charged basis. Rather, the developer farms out the project on a piece basis to the contractor, who divides the work on the same basis to further contractors. Therefore, notwithstanding the criticism of Walker and Chau (1999), Winch (1989) is more correct than Cheung in characterizing subcontracting as the governance of the market, though whether subcontracting is suboptimal compared with 'hierarchy' need not be correct.

The typical type of contract involved in subcontracting is instead either a building contract, involving elements of a contract for service, or a clear-cut contract for service. Either category of contract is identical to the sale of goods contract discussed above in one crucial aspect, namely that the parties to such contracts are personally liable (even where they are legal entities), when a dispute arises. We shall deal with a simple contract for service for producing a good X. To illustrate the contractual nature of subcontracting in general, a four-human-persons' world is assumed. There are two common variants of subcontracting. In both variants, C is the consumer of a final product X who enters into a contract for service with A. In variant I, A forms another contract for service with B who will provide a constituent element of X, X_1. In other words, A subcontracts part of his service owed to C to another, B. B further subcontracts part of his service, X_2, owed to A, to another, D. The subcontracting is progressing downstream in a linear manner under variant I. In variant II, A breaks down his tasks owed to C into components and subcontracts one to B and the other to D. The subcontracting is progressing downstream in a branching manner. The number of contracts downstream of B is two in either variant. The total number of contracts is three.

As there is no relation between a company and its employee involved in subcontracting, a party upstream in the process, say C, a developer, is not the supervisor of the party downstream, say A, B or D. The developer is not protected in the same way as is a supervisor who is an employee in a company. The purchaser (not included in this description) of a defective building sold by C may sue the latter, who cannot argue that the building is the product of 'a company of subcontracting' involving him merely as an employee. Nor is a contractor or subcontractor, say A, B or D, insulated in the same way as an employees or 'direct labour' are protected by the corporate identity of any employer. In the construction process if A harms an innocent third party or hires illegal workers, the civil and criminal liabilities of A cannot be shifted easily to the developer C in the same way as an employee may to the employer. The contractor is an 'independent contractor' 'who contracts to perform a particular task for another and is not under the other's control as to the manner in which he performs the task from an employee of the other. An employer is not normally liable for the torts of an independent contractor…' (*Osborn's Concise Law Dictionary*, 1993, p. 175).

In a world where there are consumers C_1 to C_m for a product X in the presence of n individuals who can offer themselves downstream in a subcontracting arrangement, the total number of contracts for the industry of X is $m + n$ contracts for service. Note that this arrangement involves less than or equal to the number of contracts involved in the Coasian firm scenario.

Advantages and inherent management problems of the subcontracting arrangement

By working out the number of contracts using the equation suggested above, one may say that if transaction costs of forming and enforcing all kinds of contract for whatever number of contracts are uniform, then the subcontracting arrangement is as good as, if not better than, a firm arrangement for the consumers. Like the Coasian firm, the subcontracting system reduces for the benefit of the consumer the trouble of entering into n contracts. Yet, participants in subcontracting cannot shirk personal duties owed to another as they are personally liable to their default as are individual input owners in the Coasian market. Therefore one may say that the subcontracting arrangement combines the benefits of both the Coasian market and firm, but it is inappropriate to argue that it is a hybrid, an entirely new entity or an amorphous and ambiguous nexus of contracts. There is a limit to what Reve and Levitt (1984) vividly describe as 'clan relationship' or 'professional–client moral relationship'. To reiterate, the issue of a clear-cut organizational unit is important for assignment of rights and liabilities. While paid work is always more than or even without written contracts, when 'something goes wrong' and it ends up in litigation the court will not allow fundamental contractual obligations to be argued away by reference to clan, 'guanxi' or moral relationship.

In practice, the scope of subcontracting is limited in the sense that it applies to specific products. Indeed, the number of consumers (developers) may simply be unity, thus the number of contracts is simply $1 + n$, although that single consumer may interact with many clients of his own.

Subcontracting is closely related to product specificity, i.e., often it is tailored to suit the specific needs of specific clients, typically those in the construction industry. Subcontracting is well suited to this industry because projects are unique and specific in terms of type, size, class, location, time, sum, technology, specification and the like. Furthermore, often the continuity of orders, confronting a building contractor, is uncertain, as they are commonly lumpy and discrete. It is simply impossible for a building contractor with a permanent staff who can meet all contingent requirements (i.e. all types of building works) and who can shift all liabilities to the body corporate. The subcontracting arrangement involves a division of labour in searching for specialists as well as sharing of risks and liabilities. Each level of contractor needs only be to specialist in knowing his tasks and searching for experts one layer lower downstream and one level upstream. Each party to the contracting process bears all the risks and liabilities appropriate to the level of work and the sum of money involved. As liability is a big issue, a contractual limit to liability to that of liquidated damage is allowed by contract.

Subcontracting is generally not suitable for long term product development, which demands the permanent retention of workers who can either (a) learn by doing in a routine fashion or (b) generate useful intellectual property relevant to product development, or (c) both. The benefit of mass output in these situations outweighs the costs of internal management, which include the costs for searching and training such workers or bearing the liabilities arising from their negligence. As these firms often reap huge profits and are involved in the production of goods for mass consumption, the law does not allow them to shirk legal liability by exclusion clauses. Class action is frequently allowed for under consumer protection legislation. To protect themselves against the burden of lawsuits, the firms must be careful and buy insurance policies. Typical examples in these respects are banks and chemical manufacturers.

Conclusion

This paper disputes the view that Coase's firm–market dichotomy, which has been borrowed by many researchers in construction economics without consulting Coase's original works, is blurred or pointless in the analysis of subcontracting. It suggests the general formulae for working out the total number of contracts for the Coasian market, firm and subcontracting, are, respectively, $m \times n$, $m + a \times n$, and $m + n$, where m stands for the number of final consumer(s) for a composite final product X with n parts and a is the number of firms. A subcontracting arrangement in this light is not one unitary firm but rather a nexus of Coasian firms interacting through the main contractor with a monopsony consumer in a Coasian market involving just $1 + n$ contracts.

In the evolution of paradigms, the original focus behind them can become inconspicuous as they are replaced by more elaborated ideas in application to new areas of research. The recession of the realist emphasis of Coase on the nature of contracts for the firm in the application of transaction cost theories to construction management is a case in point. Space limitation does not permit a discussion of the application of the debate on the firm to various forms of subcontracting in the construction industry. However, a general characterization of subcontracting as the nexus of Coasian firms is presented. It is hoped that this characterization will rekindle an interest in the original concern of Coase (1937, 1960), informed by Mrs. Robinson, for contracts in the development of transaction cost based management theories among researchers in construction economics.

Acknowledgement

The author wishes to thank Dr. Ben T Yu, Professor of Economics, California State University, Northridge, and Dr. Frederik Pretorius, Lecturer of the Department of Real Estate and Construction, University of Hong Kong and four anonymous referees for their useful comments on the draft of this paper.

References

Alchian, A.A. and Woodward, S. (1988) The firm is dead; long live the firm: a review of Oliver E Williamson's the Economic Institutions of Capitalism, *Journal of Economic Literature*, **24**, 65–79.

Bon, R. (1989) *Building as an Economic Process: An Introduction to Building Economics*, Prentice-Hall, Englewood Cliffs, NJ.

Bon, R. (1991) Why are there construction firms and why is there subcontracting in construction: some lessons for Soviet-type economics in transition, paper delivered at the Anglo-Soviet Symposium on the Management of the Construction Firm in the Market Economy, Moscow, 17–18 September.

Chau, K.W. and Lai, L.W.C. (1994) A comparison between growth in labour productivity in the construction industry and the economy, *Construction Management and Economics*, **12**, 183–185.

Chau, K.W. and Walker, A. (1994) Institutional costs and the nature of subcontracting in the construction industry, in *Proceedings of CIB W92 Symposium*: *East Meets West: Procurement Systems*, Rowlinson, S.M. (ed.) CIB Publication No. 175, Department of Surveying, the University of Hong Kong.

Chau, K.W., Lai, L.W.C. and Wong, K.C. (1993) Will labour only subcontracting lead to exploitation and inefficiency?, discussion paper, Department of Surveying, University of Hong Kong, Subsequently in *Conference on Changing Roles of Contractors in Asia Pacific Rim*, CIOB HK Branch, Hong Kong, pp. 171–82.

Cheung, S.N.S. (1973) The fable of the bees, *Journal of Law and Economics*, **16**(2), 11–33.

Cheung, S.N.S. (1982) *Will China Go Capitalist*?, Institute of Economic Affairs, London.

Cheung, S.N.S. (1983) The contractual nature of the firm, *Journal of Law and Economics*, **24**(2), 1–21.

Cheung, S.N.S. (1987) Transaction costs and economic organisation, in *The New Palgrave*, Macmillan, London, pp. 55–58.

Cheung, S.N.S. (1990) *On the New Institutional Economics*, Discussion Paper No. 118, Department of Economics, the University of Hong Kong.

Coase, R.H. (1937) The nature of the firm, *Economica*, **4**, 386–405.

Coase, R.H. (1960) The problem of social cost, *Journal of Law and Economics*, **3**, 1–44.

Coase, R.H. (1988) *The Firm, the Market and the Law*, University of Chicago Press.

Coase, R.H. (1991) The nature of the firm: origin/meaning/influence, in *The Nature of the Firm: Origins, Evolution, and Development*, Williamson, O.E. and Winter, S.G. (eds) Oxford University Press, pp. 34–47, 48–60, 61–74.

Eccles, R.G. (1981) Bureaucratic and craft administration revisited: the impact of market structure on the nature of the construction firm, *Administrative Science Quarterly*, **26**, 449–69.

Gunnarson, S. and Levitt, R.E. (1982) Is a building construction project a hierarchy or a market?, in *Proceedings of the Seventh World Congress on Project Management*, Riis, J.O. *et al.* (eds) pp. 521–529.

Hayek, F. A. (1944) *The Road to Serfdom*, Routledge and Kegan Paul, London.

Jensen, M.C. and Meckling, W.H. (1976) Theory of the firm: managerial behaviour, agency costs and ownership structure, *Journal of Financial Economics*, **3**, 305–360.

Masten, S.E. (1991) A legal basis for the firm, in *The Nature of the Firm: Origins, Evolution, and Development*, Williamson, O.E. and Winter, S.G. (eds) Oxford University Press, pp. 196–212.

McNulty, P.J. (1984) On the nature and theory of economic organisation: the role of the firm reconsidered, *History of Political Economy*, **16**, 233–53.

Nagel, E (1963) Assumptions in economic theories, *American Economic Review*, 211–19.

Osborn's Concise Law Dictionary (1983) Sweet and Maxwell, London.

Osborn's Concise Law Dictionary (1993) Sweet and Maxwell, London.

Reve, T. and Levitt, R.E. (1984) Organisation and governance in construction, *Project Management*, **2**, 17–25.

Stinchcombe, A.L. (1959) Bureaucratic and craft administration of production: a comparative study, *Administrative Science Quarterly*, **4**, 168–87.

Walker, A. (1996) *Project Management in Construction*, 3rd Edn, Blackwell, Oxford.

Walker, A. and Chau, K.W. (1999) The relationship between construction project management theory and transaction cost economics. *Engineering Construction and Architectural Management*, **6** 166–76.

Williamson, O.E. (1975) *Markets and Hierarchies: Analysis and Anti-trust Implications*, Free Press, New York.

Williamson, O.E. (1979) Transaction cost economics: the governance of contractual relations, *Journal of Law and Economics*, **22**, 233–61.

Williamson, O.E. and Winter, S.G. (1991) *The Nature of the Firm: Origins, Evolution, and Development*, Oxford University Press, New York.

Winch, G. (1987) The construction firm and the construction project: a a transaction cost approach. *Construction Management and Economics*, **7**, 331–45.