Case Study: Agreement Making in the Building and Construction Industry

For a variety of well-known industry-specific reasons, measuring productivity in the construction industry is notoriously difficult. These factors include the unique nature of each building project and building site, the complex nature of joint production on construction sites, the pyramidal and project nature of the work, the changing balance between on and offsite 'production', the dynamic nature of employment and contractor engagement, the rapidly changing intra sectoral shifts in construction activity, and so on.

The production process in construction comprises a diverse range of tasks such as design, engineering, excavation, scaffolding, concrete-laying and painting. These tasks and activities often require different skills sets and occur at different points in the production process; and different groups of workers to be assembled at the same location at different points in the production/construction process. In terms of on-site activity in construction, many workers are only required at one point in a project and these workers are organised through (though not necessarily directly employed by) firms that specialise in particular trades and activities, which contract to head contractors. As such, most actual construction work is carried out by a series of sub-contractors under the supervision of a head contractor or builder (Productivity Commission 2001:3).

This situation captures a particular type of *joint production* process that is structured around a series of contracts between firms and production entities (Morriss, 1973; Winch 1985; Vrijhoef and Koskela 2005). Understanding joint production has posed a challenge to conceptual and policy frameworks that tend to have two clear models of organising work: within individual firms, and between independent and discrete entities. Joint production does not fit neatly within either of these ideal types. It is this reality that makes contractual and governance arrangements to facilitate joint production so complex and difficult to untangle. It also makes standard economic analysis in which the role of organised labour is simply about extracting wage premiums, largely irrelevant.

One immediate implication of these sorts of industry structures is that normal economic models of economic organisation and markets do readily apply. It is these factors that also make the measurement of productivity an inherently difficult project.

Nevertheless, what evidence does exist suggests that there is no productivity crisis in the industry, and moreover that there is little evidence that industrial relations are a major factor impeding productivity growth. Professor Martin Loosemore concludes that in such a complex industry it would it would indeed be difficult to tie any productivity issue to industrial relations. "…the large number of factors that affect productivity make it difficult to draw any reliable conclusions about links between IR and productivity" (Loosemore 2014). This is not to say that the industry cannot be improved.

The empirical evidence overwhelmingly suggests that the there has been an undue and unwarranted regulatory obsession on industrial relations, and specifically on whether unions: produce excessive conflict; are able to gain excessive and inefficient wage outcomes; and reduce industry efficiency. To continue the engagement with Loosemore, his summary of the main productivity challenges facing the industry puts into perspective the punitive regulatory approach to organised labour in the industry that has characterised national government interventions over the last decade. Loosemore's list of challenges is worth citing in full, because it directs our attention to both the real long-term challenges and to different approaches to making the industry more efficient:

- Variability in subby capability/performance (can vary up to 20%)
- Interruptions/poor coordination (waiting for the next trade, waiting for information/instructions, waiting for materials, waiting for plant, weather, IR disputes etc);
- Working continual overtime (exhaustion/burn-out);
- Size of the labour force (relative to size of site);
- Unplanned increases in labour force (flooding the job to make up time);
- Poor site management/supervision;
- Lack of up-front integration in project teams;
- Lack of commitment to, and focus on, productivity and continuous improvement;
- Skills/competencies (productivity training);
- Lack of detailed short-term planning;
- Contractual conflict and poor subcontractor relationships (trust);
- Design (constructability/complexity/uniqueness/prefabrication);
- Design management (timely and accurate information);
- Productivity is not rewarded;
- Lack of information about productivity improvement; and
- Not measuring and monitoring productivity.

In the construction industry the nature and forms of agreement making are critical in both establishing and reflecting patterns of joint production, with important implications for the organisational structure and culture of work in the industry. Furthermore, there is domestic and international evidence that agreement making involving all stakeholders, including organised labour, is an important form of shaping productivity practices and processes in what can often be inherently conflict-laden contracting forms and cultures. We submit that organised labour in the construction industry has led to better organisational outcomes, more innovation and better building standards, and that outside of the ideological obsession of some politicians, and some mid-tier contracting associations (reflecting as we will show the understandable experiences of being squeezed by powerful quasi-monopsonistic head contractors), this is widely understood.

Developments in the construction industry over the last decade and a half have greatly accentuated governance problems on building projects. Specifically, we note the greatly reduced role of clients in site governance in commercial

construction in particular, and the greatly expanded role of head contractors up and down the construction value chain, such that the large head contractors are now part project engineering firms, but very much also financial engineering firms (Rafferty et.al. 2011). Taken together, both these developments have expanded the scope and capacity for head contractors not just to manage their risks (through greater technical expertise and access to capital markets) but also to shift risk to other parties in the industry. That risk shifting is now a pervasive feature of commercial construction and this has a number of adverse consequences for construction efficiency, human capital development, safety and innovation.

We identify two types of construction governance arrangements:

- High Quality, High Road governance, involving all stakeholders (including clients, architects and professional service providers, contractors and organised labour) in setting pre-planning standards, agreed and efficient standards of conduct and risk sharing (such as exemplified in Project Labor Agreements in the US, and the Abrahamson principles) and ongoing dialogue between stakeholders during construction. High road construction also creates high road labour standards which UCLA researchers characterise as "…high road construction jobs and (where) contracting opportunities are regulated, safe, pay wages that can support a family, provide benefits, and create middle- class careers" (Le and Applebaum 2011)
- Cost and Risk Shifting (or Low Road) governance occurs where employers clients or financiers in the industry use their power or position in the industry to shift costs, extract rents, or transfer risks to other parties, where parties are asked to breach professional and regulatory standards to win work, to use contractual loopholes and turn a blind eye to quality and safety breaches. Low road governance leads to "unregulated, dangerous, low- paying (jobs) and offer few opportunities for career advancement." (Le and Applebaum 2011)

A range of industry participants and experts to suggest that the main challenge now facing the industry is that, especially in commercial construction, it too often engages in low road transaction versus process oriented governance, and some of this relates to practices surrounding agreement making and industry cultures that come from agreement making. Organised labour is crucial to good governance arrangements in construction, partly because of the well-known collective action problems of construction labour 'voice' in highly fragmented contracting arrangements, and because organised labour has a direct interest in project health and safety, managing the fragmented nature of sub-contracted joint production and in ensuring professional and trade standards are enforced. We show that in industries such as construction the alignment between these outcomes and the incentives facing economic agents cannot be taken for granted, and in such cases organised labour, contra standard economic logic, does not just provide a voice for labour, it helps to give bring order to an anarchic industry full of competitive failures and imperfections. Furthermore, especially where cost and risk shifting characterises construction governance processes, organised labour is probably the only party that is capable of protecting workers on site

from the adverse effects of intensified sub-contracting, including sham contracting, safety trade-offs, risk shifting and pressures to lower building standards.

In this setting, we are concerned by the largely unsubstantiated views reported in "Towards More Productive Workplaces (pp 168-173) by some employer associations and well-known so-called libertarian think tanks, about greenfield agreements, and the desirability of employer only access to mandatory arbitration or even approval without agreement from both sides. In the ACTUs earlier submission, the case was made that such regulatory interference would be inconsistent with international obligations for minimal interference in collective bargaining or the objects of the FW Act. We suggest that providing even limited access to unilateral arbitration at the employer's option would seem out of place in an Act that otherwise has little role for arbitration in agreement-making. Those concerns remain significant and we note that a more balanced model is provided in Chapter 14 of the Submission.

The principal effects of unilaterally "arbitrated" "agreements" would be to entrench the move especially evident in commercial construction toward cost and risk shifting low road project governance practices that are now evident in the industry. Moreover, it would entrench what we identify as the quasi-monopsonistic market power of head contractors in the commercial construction industry, and encourage contractors to use labour cost cutting rather than best practice project management and HRM approaches to foster competitive efficiency. It would also entrench and extend what is already a structural asymmetry enjoyed by head contractors that is seeing them extract monopoly rents from sub-contractors, clients and service providers.

The particularities of joint production on construction sites presents a range of problems of economic co-ordination, but a variety of techniques and processes have been devised to deal with those problems. In these circumstances, we show that agreement making between stakeholders including and especially organised labour can assist in several important ways in improving the efficiency of projects and the welfare of industry participants.

Characteristics of Joint Production in Construction

The reality of co-ordination in economic affairs, particularly in the construction industry, is that it often involves joint production with a series of discrete bi-lateral contracts. Contracting arrangements also often involve 'connected contracts' (Collins cited in Teuber, 2011). As Loosemore, for instance, notes:

> "in contrast to much of the manufacturing sector, the products of construction are delivered by temporary, transient and highly fragmented project organizations involving a multitude of subcontractors, consultants and suppliers arranged into long and complex supply chains with complex risk structures and often conflicting interests. " (2015, p22)

Pyramid contracting in the construction industry revolves around a Head Contractor who tenders for large-scale projects. Head contractors on many large

sites now generally have very few on-site employees. The Head Contractor, rather than providing workers or equipment on a construction project, initiates the process of tendering and re-tendering to other contractors who then in turn further divide construction tasks amongst sub-contractors down the chain.

Further, research participants suggested that the fragmentation in the division of labour has contributed the deskilling of trades and the loss of technical competencies in project management, marking a shift from supervision and joint responsibility to compliance management. This increases the gap between project managers and sub-contractors and facilitates a distancing of responsibility between each level of pyramid, passing risk on to workers rather than being concentrated at the top.

In general terms, sub-contracting tends to encourage a greater focus on output while employment tends to encourage a greater focus on process (Quinlan et.al. 2002). As noted by Durham and his colleagues (2002:8):

> "The economic environment drives a culture where the objective of many contractors working in the industry is to come to the site, start and finish the contracted work, and leave for the next job as quickly as possible. In this culture safe work practices are often regarded as likely to slow the work down and cost money. Any attempt to improve workplace health and safety outcomes must take account of this environment."

While the high levels of sub-contracting in the industry is partly a result of the technical organisation of production (work flow and task specialisation), contracting is also an important response to competitive pressures in the industry. In particular, contracting is recognised not just as a way of accessing specialist skills, and dealing with volatility, but more broadly as a way of controlling (or allocating and re-allocating) costs and risks at different levels of the industry (see also Engineers Australia, Queensland Division Taskforce, 2005:20). This control of risks and costs feeds directly into the momentums for shifting to engaging work on the basis of contracting. Under this type of incentive structure of production, workers are often paid by results and their aim is to 'get in and out' as quickly as possible.

The use of idealised (conflict free) models of economic analysis is one of the key limitations of much economic policy making for the construction industry. Often researchers and policy makers who come from outside the industry attempt to fit stylised categories and concepts (like arms' length transactions versus transactions internal to the firm), derived from other industries literally and directly into their analysis of the construction sector. For instance, some researchers have described construction projects as temporary multi-organisations (TMOs) while others have suggested thinking about a construction project as a quasi-firm. However, Winch (1988) warns that such concepts tend to emphasise the technical co-ordination and co-operation aspects of construction with a focus on the personal competence and integrity of actors involved. This does not help us understand the reality that extensive sub-contracting of construction projects involves 'temporary coalitions' of firms often with quite divergent economic and social interests, and therefore the extent to which

conflict as well as co-operation are inherent parts of the construction industry. Agreement making then is one of the critical ways that conflict and co-operation is structured and mediated in the industry. Often, adversarial relations that produce conflict around delays in work, the quality of work, in site management practices and health and safety can be seen as greatly influenced by the nature of agreement making that occurred (or didn't occur before soil was broken on the site).

The principal factor behind the growth of self-employment, subcontracting and growth of employment in small firms in the construction industry has been intensifying competitive pressures (and contracting more generally) in the construction industry has been competitive pressures, which have intensified the degree of subcontracting in the industry and led to a dramatic increase in the share of both self-employment and employment in small firms.

More is said about the detrimental effects of intensified sub-contracting in the separate attachment concerning Sham Contracting in this industry. Here we seek to develop the analysis by examining the role of key parties to construction agreements, to show how those roles have changed and the economic implications of those changes.

The Changing Role of the Client in Construction

Existing international research and policy has emphasised the important role played by the client/owner in the construction process, not just in terms of the quality of the finished structure, but also in the construction process itself (Bryant et.al. 1969; Cherns and Bryant 1984; Ryan et.al. 2006; Swedish Construction Forum 2006, UK Health and Safety Executive 2007 ACT 2007).

The Swedish Construction Forum (2006:7-8), for example, noted that 'the construction client has a key role to play in the sustainable development of the built environment'. The Forum also suggested that in order to fulfil those responsibilities a holistic approach is needed which addresses '…the creation of every building and structure (road, bridge etc.) from concept to realisation, through usage, alteration and finally, demolition…. The holistic approach makes it possible, right from the initial stages in the process, to create the appropriate conditions of other players in the construction process, and during the building's period of use and long-term management'. Put simply, it was concluded that a client with the skills and desire can contribute significantly to "…greater accountability, better quality and increased productivity and competitiveness"

Underscoring the key role of clients in the nature of the construction process itself, Costantino and Pietroforte (2002:22) report the results of a study into sub-contracting in commercial and residential construction and conclude that the relationship between commercial contractors and subcontractors is strongly dependent on the type of relationship between owner and general contractor in a given project.

An important structural change in the construction industry in Australia has been the changing relations between the construction industry and the property and finance industries. Not only are major construction companies increasingly active on a global scale (an issue taken up in the next section), the links between construction and the property sectors has also been driving change in the industry. Increasingly, property markets are integrated into financial markets and linked globally. Financial decisions about property are made on calculations of global asset allocation, where the building is not for an owners' use but part of global property portfolios of financial institutions (including listed and unlisted property trusts). This has led to a de-linking of clients from ongoing use and often even from ongoing ownership.

In testimony before a Senate Inquiry into the Building and Construction Sector (cited in Toner & Coates, 2006:107) Peter Verwer, former Chief Executive of the Property Council of Australia noted that:

> The clients in the property sector have a different role than they did even a few years ago, and it is a more distant role from the construction sector than had previously existed ... in the past the clients used to be part of the manufacturing process that was the construction industry-they were deeply embedded in the food chain.
>
> Those were the days when the AMPs and National Mutuals, as they were, all had chief engineers, big construction departments and all the rest of it. They do not do that anymore; in fact, those positions do not exist at all. The reason for that is that the property sector has been very much integrated into the capital markets sector over the past decade. It thinks like the capital markets sector, and the main questions it asks itself are: where should we invest this money, and what risks are attached to it?"

At the same time, there has also been a similar decline in the active technical engineering and supervisory role of state and federal governments when commissioning buildings. State and federal governments used to employ dedicated and qualified engineering staff to supervise their construction projects and this no longer occurs on anywhere near the scale or effect. This withdrawal of an active client role, especially in commercial construction projects, has tilted the balance of power decisively toward the head contractor. Engineers Australia Queensland Division (2005) has also noted the differences between sectors on the basis of the different relationship between clients as owners in those sectors.

> "…the problem is particularly evident in the building and infrastructure sectors – more so than in the resources sector. Perhaps this is because the owners of resources projects are more concerned with the 'whole of life' performance of their projects, for example ease of maintenance, and reliability, throughout the life of the project… "

This finding is consistent with a growing literature on the way contractual and on-site arrangements allocate and re-allocate risks and rewards associated with construction (Loosemore 1999, Yates and Sashegyi 2001, Lloyd 2010). A number of general principles are emerging about the way contracts should apportion risk. For instance, Mead (2007) reports on a set of principles developed by the international construction law expert Max Abrahamson (known as the'

Abrahamson principles') about the fair allocation of risk in construction8. Abrahamson (cited in Mead, 2007:24) suggests that parties to contracts should bear risk under the following principles:

- the risk is within the party's control;
- the party can transfer the risk, e.g. through insurance, and it is most economically beneficial to deal with the risk in this fashion;
- the preponderant economic benefit of controlling the risk lies with the party in question;
- to place the risk upon the party in question is in the interests of efficiency, including planning, incentive and innovation efficiency;
- if the risk eventuates, the loss falls on that party in the first instance and it is not practicable, or there is no reason under the above principles, to cause expense and uncertainty by attempting to transfer the loss to another.

Mead (2007:24) suggests there is considerable evidence that the principles listed above not being followed in practice. He notes as evidence the findings of a joint study undertaken by Yates and Sashegyi 2001 for Engineers Australia and the WA Chamber of Commerce, which found that much of the contracting arrangements were not producing an efficient or equitable allocation of risks. The findings included that:

- risks were not allocated to the party best able to manage the risk;
- formal risk assessments were not being undertaken;
- risk clauses varied from those in standard contracts;
- risks were transferred to consultants and contractors which were impossible for them to manage;
- risks were not costed in tenders;
- cost savings would have occurred had risk been more effectively allocated;
- the implications of changing risk allocation were not known; and
- disputes and claims increased as a consequence of changes to risk allocation.

It should be noted that many of these principles for contractual risk allocation assume that contracting parties are not only arm's length but also of equal power in the contracting relationship (Loosemore, 1999). The reality, of course, is that pyramid sub-contracting is based around a degree of asymmetry in power and information, and so, despite even the best formal contractual arrangements, power matters in how risk is borne on the ground, with obvious implications for risk shifting onto workers in contractual and safety terms. The gap between powerful head contractors and clients and sub-contractors has been widening, and some of that risk has been shifting onto workers.

Mead (2007:34-35) also concluded his survey of trends in risk allocation in the Australian construction industry with the following observation:

> "The reality is that as a result of inequality in bargaining power and the desire of contractors in a competitive market to secure the project, risks are not always allocated to the party best able to manage them and there is not always the ability to insist upon an appropriate risk premium in exchange for having taken on that risk."

Head Contractors

The changing role of the client in construction has also been accompanied by the changing role of head contractors. The principal contractor has always had significant power and influence over the construction process, including a central role in creating a safe workplace (Biggs, et al, 2005; Biggs, et al 2006; Wadick, 2010). However, head contractors have transformed from largely specialist, regionally-based organisations, into not only national and international project managers, they have also extended their activities directly into property development, property management and even financing. When we look at these modern construction companies, two things stand out:

1. Increasingly what construction companies do off-site (and outside of supervising the actual building work per se) is as important to their success and thinking as what happens on-site.
2. Construction companies today are as much about investment banking and risk trading as putting up buildings.

There has, as a consequence, been a clear change in corporate organisation and logic in head contracting firms. The key skills and priorities of senior management in these firms now lies not just in engineering and building but in finance and financial risk management (financial engineering). In organisations that think in terms of risk management and trading senior management in the modern construction company comes less from on-site project management and engineering and increasingly from financial markets.

Rafferty et.al. (2011) cite the comments of a former senior manager at a large national head contractor described the consequences of these changes in the following terms:

- Head contractors are now more administrators and not actively involved in the production process;
- Builders don't supervise production, 'rather they inspect work done and issue letters of defect where the quality is not there';
- Builders now employ 'defects managers', not supervisors. They prefer to sue people to solve a problem rather than prevent it at source through proper supervision; and
- In this way the economics of the industry dictates behaviour – builders are avoiding supervisory and managerial function and sub-contractors are expected to do much more.
- They (sub-contractors) are absorbing a lot more pressure and risk.

Thinking in terms of risk and financial calculation, the question may be re-posed as whether, in these changing circumstances, head contractors or others are able to unfairly harness competitive pressures to shift risks (up and/or) down the sub-contracting chain. That is, to 'arbitrage' as it were from the industry's evolving structure and the growing obsolescence of earlier regulatory and governance frameworks. By arbitrage we mean to make abnormal and risk free profits by either avoiding regulatory obligations or shifting risks and costs upward (to the client), or downward (into the sub-contracting network). Head

contractors now focus on a project's return on investment and finance promotes "financial engineering" as the primary means to extract more profit from the project and with the complex integrated financial models these corporates use (and in some cases their clients want) it has an impact at every level of the supply chain. With the shift (and focus) on return on investment and finance by head contractors the industry has lost a lot of its initiative in regard to "project engineering" or the pre-planned smarts that make projects easier, quicker, safer and more profitable to build and operate, including materials handling and labour relations.

Rafferty et.al. (2011) cite another industry participant who understood the modern building industry in explicitly these financial terms of risk and costs allocation/shifting, and concluded that the head contractor in commercial construction is exploiting their information asymmetry to shift risks (without commensurate rewards) to sub-contractors:

> "…I believe there's an arbitrage of knowledge between clients and head contractors, and head contractors and sub-contractors, and the arbitrage is unreasonably leveraged to the benefit of the head contractors almost all the time"

It is widely known from OH&S research that when project managers transfer commercial pressures downwards on to sub-contractors and workers there is an increased risk of injury. We also know that when the priority in contractual relations is getting the work done as quickly as possible, sub-contractors, self-employed and workers are less likely to see OH&S as an issue warranting attention, to have an OH&S program, to regularly assess OH&S risks, or to undertake OH&S induction, training and supervision (Rebitzer, 1995, p. 41; Dawson et al., 1988, pp. 101-102). Under such circumstances responsibilities, tasks, supervision and communication processes are more likely to become fragmented and disorganised. One outcome of this that has implications for OH&S is disorganisation. Dwyer (1991, pp.133-142) identified disorganisation, which results from sub-contracting as an important source of injury at work. The problem is only intensified when there are multiple workers on site who are working as sub-contractors and feel responsible for their own safety and behaviour. It is even more of an issue on non-government sites where there is a less apparent chain of legal responsibility over the rules and responsibilities that govern workplace behaviour. According to Mayhew et. al. (1997) these complexities can create ambiguity as to who is ultimately responsible for implementing OH&S systems and practices. Poor communication between the trades can result in sub-contractors leaving unsuspected hazards for other tradespeople working on the same site (Bentley et al. 2004). To survive, many sub-contractors balance the tension between costs, production and their safety (Hager et al., 2001).

The much more explicit use of cost and risk shifting by head contractors occurs not just downwards to site level. It is also occurring across the value chain. In a report on commercial construction one professional engineering association noted its members experience of contractual risk shifting in the following terms:

> "Relationships between client and consultant have become more contractual and adversarial, rather than co-operative. Most clients select a consultant on the low bid …
> The low-bid environment corrodes professional ethics and professional standards among those operating in that environment. Compromising ethics and standards allows underpricing of the necessary work to win the job. The consultant's input is then limited by price, with an increasing likelihood of searching documents for 'loophole' opportunities…" Queensland Engineers Association (cited in Rafferty et.al. 2010)

It is in this context that project agreement making can be understood to be one potential way of managing the issues of quasi-monopsonistic power, rent seeking and information asymmetry that these circumstances describe.

Agreement Making and Project Governance in Construction

The construction industry has evolved two basic site governance models for managing contracting and employment arrangements. The first involves systematic and collaboratively-managed arrangements. This model has historically been a feature in mining, resources and other civil or engineering construction projects. Major employers like the AiG and their offshoot the Australian Constructors Association, use them and promote them on big infrastructure jobs (for example, projects like Chevron's Barrow Island, Pluto in the North West, Inpex in Darwin, mine sites during the construction phase or any number of major road construction works).

The second approach is a system in which arrangements are individualised and fragmented. This second model has historically been a feature of the residential sector or cottage industry, but is increasingly being deployed in commercial construction

The two governance models are in part about scale; that is, large projects are far more complex and require more technical and co-ordination capacity (project managers, safety officers) whereas small, low-rise residential projects are typically both less complex and require less on-site co-ordination. The different site governance arrangements, however, might also be thought of as two different ways of arranging the risks and costs associated with contracting. One model conceptualises the construction as a unity and manages the process. The other, in contrast, conceptualises construction as a series of discrete tasks and manages each as a separate transaction. This notion of a **process-based** compared to a **transaction-based** approach to contracting raises the question of the role of project agreements. While commercial construction used to have strong association with the systematic approach to site governance, evidence suggests a transition in many parts of this sector to more individualised, transactional and fragmented arrangements. Head contractors on major commercial building construction, office blocks, apartments, hospitals etc. now tend to argue for the primacy of each individual business's workplace agreement. This effectively allows contractors to forum shop, to employ negotiated site

agreements when the client is concerned with project risk management and to cost and risk shift when the client allows.

In the United States many public agencies and private companies undertaking major projects use what are known as Project Labor Agreements (PLAs) negotiated with trade unions in construction. In a review of PLAs, Johnson-Dodds (2001) noted that PLAs "…are arguably the most important change in labor management relations in the construction industry in recent years. "

Le and Applebaum (2014) report that PLAs ensure that construction work follows the governance high- road. These agreements were help to provide standards for quality, and safety, and control costs on construction projects, and can also improve economic opportunity within local communities. In a review of PLAs by the Commonwealth of Massachusetts

> "The Commission found PLAs to be particularly beneficial on public infrastructure projects that are large-scale, subject to strict time constraints, involve multiple interdependent phases, and/or may be used to revitalize job creation in the area."

Kotler (2009) reviewed of the use of PLAs in New York State noted that PLAs have been "…demonstrated to be a very useful construction management tool for cost savings, for on-time, on-budget, and quality construction…benefits that extend to workforce and economic development."

Further in a detailed study and review of evidence on PLAs, Belman et.al (2007) found that there was no substantial evidence that PLAs adversely affect the costs of construction projects, or diminish the pool of sub-contract bidders. In a study 2011 for the US Department of Labor, Interactive Elements identified a number of benefits of such agreements from better organisation and communication to cost savings.

A clear conclusion from the evidence presented here is that the construction industry is a long way from the idealised world of production of standard economics. What happens inside the black box of construction is a complex form of joint production, which increasingly exhibits patterns of monopsony, cost shifting, rent seeking and information asymmetry. Increasingly this means that the links between risk/output and reward is being de-linked. We have shown that there are significant downward cost and risk pressures being exerted in the industry, and in such situations pernicious cycles of cost cutting and rent extraction can be seen. In such situations trade unions are one of the few organisations that can address the collective action problems of small, local and fragmented agents up against large globally integrated players. It is critical that the competitive energies of all parties but especially head contractors are addressed to project management and engineering and not to financial engineering and risk shifting (including eroding working conditions and labour standards). There are significant efficiencies to be gained in moving away from the single enterprise focus for agreements in the construction industry because of the multi-employer nature of the industry and the coordination required to

pull a project together. The nature of agreement making therefore has an important part to play in the future direction of the industry.

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