An Analysis of the Chinese Construction Industry: Past, Present and Future

Denny McGeorge

Patrick X.W. Zhou

School of the Built Environment, University of New South Wales
UNSW Sydney 2052 Australia

Background

It is estimated that approximately 34 million people work in the Chinese construction industry and every tier of government from national to county level has some responsibility for regulating construction activity. In 1996 the Ministry of Construction (MOC), Ministry of Supervision (MOS), Planning and Development Committee and the State Commercial Bureau of China developed a joint monitoring program for the construction industry. This program was instigated as a response to allegations of endemic corruption in the construction industry. The four departments jointly investigated existing problems and set up standards for an investigation of the construction industry. All projects with a value of more than 500,000 RMB were examined: Of 108,000 projects investigated, over 80,000 were found to have problems. This investigation took 2 years and was carried out at every level of government.

The main recommendation of the investigation was that government should address fundamental and basic structural issues including the development and enforcement of a comprehensive set of laws and regulations supported by an education program for the construction industry. As a direct result of this recommendation the Construction Law was enacted in 1998 followed in 1999 by the Tendering Law and Construction Regulations.

Based on these laws, the Provincial People’s Parliament introduced complementary provincial laws that included strengthening government monitoring of the construction market through the establishment of Tangible Construction Markets (TCMs) to regulate the tendering process.

In March 2000, 13 senior Chinese delegates from the Ministries of Supervision, Construction and Finance undertook a 3 week study tour to Sydney, Australia to determine the extent to which practices and procedures in the New South Wales construction industry could be transferred to the Chinese construction industry. As part of the study tour, the participants were first introduced the general overview of the Australian Construction industry at the University of New South Wales and they then spent several days at the New South Wales Department of Public Works and Services (DPWS) where they observed, at first hand, the DPWS approach to tendering. A key point which
emerged during this visit, was concern over the effectiveness of the TCM as a means of regulating the tendering process.

Following this visit, the Australian team (which included the authors) made several visits to China and worked closely with their Chinese counterparts. The outcomes of this collaboration were numerous and varied. This paper concentrates mainly on pre and post tender issues based on the first hand information gathered by the authors during their two year liaison with senior Chinese officials in the Ministries of Construction and Supervision.

A historical perspective on construction tendering practice in China

Tendering has been used in Western countries for more than 200 years whilst in China, the practice of procuring building and civil engineering works through tender, dates back to the turn of the last century (Wang et al, 1998). Following the Opium War (1839–1842), China was forced to open its doors to Western countries and a variant of the Western approach to tendering was introduced, mainly in the coastal areas and major urban centres.

When the People’s Republic of China was established in Beijing in 1949 the Westernised tendering approach was abandoned in favour of a system in which the government allocated a major portion of construction works to local construction enterprises, through a contracting system. Under this system a contract was entered into between the government agencies and a construction company. This contract provided for the obligations and liabilities of parties to the contract. According to Wang (Wang et al 1998) this approach produced reasonable outcomes in the context of the political regime which existed from 1949 to 1957.

During the period from 1957 to 1978 the Chinese construction industry suffered severe setbacks due to a number of political policy decisions (Shen and Song 1998), such as the ‘great leap forward’ which occurred in the 1950s, and the ‘cultural revolution’ that happened in the 1960s and 1970s. The contracting system was abandoned during this period (Wang et al 1998) with the government assuming responsibility not only for providing all finance for construction works but also having direct responsibility for assigning projects to construction companies. Project clients were the various state-own organisations whose management staff had no responsibility for the overrun of budgets and construction time. There was no competition amongst construction companies as they were considered to be a non-profit-making sector of the national economy. The government reimbursed all of the construction costs. There was no system of control of project costs or construction time (Shen and Song 1998). Project-cost estimation and time programs were primary used for the government to allocate finance and resources. Not surprisingly, under this regime, the Chinese construction industry was seen as having low levels of productivity and was generally regarded as being inefficient and ineffective.

In 1978, the Third Plenary Session of the 11th Central Committee of the Communist Party of China declared China’s economic reforms and open-door policies. The State Construction Commission (the predecessor of the Ministry of Construction) followed suit by preparing and issuing the Recommendations on Contracting Capital Construction Projects in April 1979. The Recommendations required that a contract be entered into between all clients and construction companies on all state funded projects. Based on the Recommendations, a formal tendering system was adopted in the Shenzhen Special Economic Zone for the allocation of construction work in the 1980s. This tendering system proved effective in shortening completion time, improving quality and lowering the costs of construction works and was influential in shaping central government policy.
As a consequence of its ‘open-door’ policy the Chinese central government was exposed to the market price system employed in the West. The application of competitive tendering systems for public construction works/projects in the developed countries provided a useful reference point for China. The central government set up a number of guidelines and regulations to change (a) the project financing arrangement from traditionally government allocation of finance to loans from commercial banks and (b) the project procurement system from government assignment to competition through a tendering process.

Consequently a national tendering system was adopted as a measure for reforming the Chinese construction industry during the Second Plenary Session of the Sixth National People’s Congress held in May 1984 and thereafter the government promulgated a document related to construction industry reform requiring that the tendering system be used for allocating construction works. In 1984, the State Planning Commission and the Ministry of Construction jointly issued the first official regulation promoting and governing the application of competitive tendering methods in Chinese construction (Provisional 1984) (Shen and Song 1998). In the light of the government promotion of construction tendering, a number of research projects on tendering were undertaken as part of a general movement in developing education and training for construction professionals. These research projects included “Competitive tendering methods for construction project contracts” Lu (1985), “Tendering manual for construction projects” Lu and Zhang (1987) and “Working manual for tendering international construction projects” Yang and Zhao (1990). The tendering system continues to gather increasing momentum in the Chinese construction market (Shen and Song 1998 and Wang et al 1998). It was estimated that, in 1988, 25.4% of total completed building floor area was constructed using a competitive tendering process and in the more developed cities this figure was over 60% (Wang and Lu, 1996).

However, it should be noted that although the tendering system became popular through the late 1980s and 1990s, a single tendering parameter – cost was used as the only or at least the dominant measure of the tender submission with the assumption that time and quality requirements would be met by all companies who submitted tenders. Furthermore due to the lack of control measures, the problem of unfair competition quickly grew to be the most serious problem in the construction market. This problem not only generated many complaints, particularly from state-owned firms who had difficulties in competing for projects, but also introduced the problem of bribery for the purpose of obtaining project contracts (Shen and Song 1998). Significant doubts were raised at that time within the Chinese construction industry regarding the applicability and appropriateness of a competitive tendering approach in an environment where state-firms were in the majority. Because some of these firms could not secure jobs, many construction personnel found themselves unemployed.

This critical situation provided a strong incentive to introduce a proper management system governing tendering practice. Consequently, in 1992, the Ministry of Construction issued a formal set of regulations specifying management measures for controlling tendering practice (MOC 1992). These regulations specified tendering procedures and regulated the management roles and functions that various government departments should take to ensure fair competition in the market (Shen and Song 1998). The implementation of such regulations was effective in controlling the escalation of many of the problems in the market. However in due course, this government intervention became a barrier for further development of the competitive tendering system. Some studies indicated that higher project costs and project delays were again rising (Wang and Jiang...
1994 cited in Shen and Song 1998). This seemed to indicate that whilst government intervention in the tendering process could maintain a reasonable market for a short time it could become a serious barrier to its long-term’s development (Shen and Song 1998).

A growing body of opinion developed that tendering practice should be gradually be brought under the control of the law rather than by government intervention. The establishment of a legal system for tendering practice has become the principal reform agenda for the central government in recent years. Part of this reform agenda saw the introduction of the ‘Tangible Construction Market’ in 1995 and on the 30th August 1999, the Ninth National People’s Congress approved the tendering law which was enacted from 1 Jan 2000. At the same time, impetus was given to increase education and training as important channels to promote tendering legislation.

Operation of the Tangible Construction Market

An overview

As previously stated the Chinese Government, through the Ministry of Construction, introduced the TCM in 1995 nationwide in an attempt to improve the management of construction projects particularly with respect to probity and accountability. Currently, the TCM is used mainly for government-funded projects over $500,000 RMB or more. For the private funded projects the TCM provides safety control and quality control. The operation and underlying philosophy of the TCM is complex and although influenced by the market price system is fundamentally different in concept. For this reason the workings of the TCM are described in some detail in this paper. The TCM approach is quite unique and, in our view, it is worthy of detailed study and analysis.

The TCM provides three services to the companies and government departments involved in construction procurement viz. information, networking and physical setting.

- Information service -- lists all public funded projects of 0.5 million RMB or more for open tendering purpose;
- Networking -- provides a venue for all parties who are involved in the construction industry so that they can work more effectively.
- One-stop service -- provides a place (physical setting) for government departments or agencies related to the construction to have an on-site office. More than 10 government departments are involved in the approval of construction project development or construction permits.

TCMs operate at the Provincial, Municipal and County Government levels. Provincial TCMs provide services for the provincial government funded projects, whilst the Municipal TCMs and County TCMs provide for projects funded by those bodies. TCMs are subject to the Provincial Government Ordinances and Regulations, and as such, have similar operation procedures and structures. The structure provides for a clear division between the business centre/information exchange activities and the actual tendering activities. For example, in our observations at Nanjing Municipal, there is an effective separation of these functions, which come under different management structures. The TCMs in Wuxi Municipal and Suzhou Municipal were observed to operate on similar lines carrying out equivalent functions to those in Nanjing. Differentiation between the observed TCMs lay mainly in the use of IT methods, particularly in the use of on-line technology to distribute market information such as upcoming tenders, expressions of interest and details about projects. Wuxi TCM also uses a prepaid smart card which gives clients and contractors
access to more detailed information which is kept on the TCMs database. Issues such as current workloads and supplier performance information are also available via the smart card.

Contractor Pre-qualification

All contractors of construction services, which are tendered for through the TCM are required to register with the Municipal MOC. No registration means the supplier is not able to participate in the tendering process.

Registration is a relatively straight-forward process, requiring the provision of details of relevant financial data, organisational experience and expertise, as well as key staff. The MOC reviews the application and allocates an appropriate registration category, both in work type and complexity. This criteria is set at provincial government level. As an example, there are 36 work types for contractors, with up to 4 levels of complexity for each work type in Nanjing. There are more than 800 construction companies and 700 interior fit-out companies registered on the Nanjing Municipal register, as well as some 83 contract supervisory companies and 259 experts used for tender evaluation. Most, if not all these registered companies, are State owned enterprises.

An interesting point that emerges due to the 4 tier level of government in China is that companies seeking registration from outside Jiangsu Province must have provincial level registration as a prerequisite to being registered in Nanjing Municipality. There does not seem to be any identifiable correlation between the registration status and performance of registered contractors. There also does not appear to be any mechanism to capture contractors performance reports and use them to review registration status.

The Tender Call Process

- Clients must register their project with the TCM within 30 days of receiving all necessary government approvals for the project to proceed.
- All projects greater than 0.5 million RMB must be subject to bidding through the TCM.
- Those projects below 0.5 million RMB may be conducted outside of the TCM through clients directly negotiating with single contractors, although such contractors are required to be registered with the Municipal Construction Committee.
- Clients conduct a significant portion of the tender call process. They call for expressions of interest from registered contractors (through the TCM facilities i.e. electronic touch screen, electronic notice board and paper notice board). They also develop the evaluation criteria used to review such responses, and conduct the reviews (with expert assistance if necessary).
- The list of bidders is restricted to a pre-determined number (depending on project scale and complexity) by a computer based random selection process. The TCM facilitates this process.
- Clients prepare the bid documents, using designers/documenters and other appropriate professional groups. Engagement of these professionals, such as estimators, does not go through the TCM.
- Bid documents and the tender evaluation criteria are vetted by MOC staff in the TCM prior to actual bids being invited by the client.
Tender evaluation criteria are made public with the bid documents, and its framework is generally set by Municipal Government guidelines. Note: weighting for price for construction contracts is generally 60%-70%. Typical non-price criteria are made up of criteria such as relevant experience, proposed resources (human, equipment and financial), as well as proposed completion time.

Tender Receipt and Evaluation

- Tenders are lodged (with a company seal) in a double locked tender box. Keys to the tender box are kept by the client and TCM/or Notary Department officials.
- Tender opening is conducted by the client in the TCM opening room under TCM/MOC official’s supervision, generally the day after tenders are lodged. Tenderers must also be present, or their bids are made invalid.
- All key processes are notarised by an official from the Notary Department.
- The bid process is generally two envelopes, where the first envelope contains price details and company information. This envelope is opened first and information is placed on a notice board in the tender opening room to be reviewed by all present, including bidders.
- The second envelope, containing the information subject to the non-price evaluation criteria is then opened in the presence of the bidders and notary.
- The bidders then leave the room and the independent evaluation experts are brought in to conduct their evaluation, scoring each bidder without knowing the bidder's identities.
- The selection of the experts is from the relevant TCM register, conducted randomly by computer, in the presence of TCM officials.
- When experts have completed their task, the scores are then computed, verified by the TCM officials and the result read out, and posted on TCM notice boards for the next two days.
- For most contracts this process takes half a day, hence bidders know their status on the day that tenders are opened.

Tender Evaluation Criteria

The selection of the winning company is normally done by a scoring system which is based on the price (cost), construction period (time), proposed quality for the project work (quality), ability to carry out the work (qualification / performance) and construction plan (strategies). Each of these criteria is given a score within the range predetermined, such as:

- Price: 40-60 marks
- Construction period: 10-15
- Quality: 10
- Construction plan/strategy: 10-20
- Company qualification (past performance, financial capacity etc): 10-20
- Main materials: (small component).

Normally the company with highest score will be awarded the contract to carry out the construction. However there are terms and conditions which apply to each of these selection criteria.
Evaluation of Tender Price

The process used to evaluate and score the tender price uses a formula to determine what is variously called a “reasonable price” or “optimum price”. This formula is a combination of the pre-tender cost estimate, which is carried out using a government published method, and the average of the actual tender prices received. The price score is assessed on the basis of how near the bid is to this “reasonable” or “optimum” price. Points are deducted for prices both above or below this price. As the first part of the optimum price should be able to be accurately calculated by all bidders (using the published methodology), bidders should be able to determine the “theoretical” optimum price being sought by the client, and target their bids accordingly. This will give them the highest evaluation score for price, irrespective whether they could, through efficiency and other means, have completed the contract for a lower price. In the construction contract example observed in Nanjing, all five bids were within a 2% range from highest to lowest.

\[ C = aA + bB \]

- \( C \) the weighted price; all bidding prices will be compared to this price and, to be considered, must fall within in the predetermined range e.g. \( (0.935 - 1.03) \) \( C \)
- \( a \) is a factor between 0.3 -- 0.7
- \( A \) the reasonable price calculated by the client or its delegates who have a licence/certificate in cost estimation.
- \( b = 1 - a \)
- \( B \) Average of the tendering prices by the bidding companies.

If the bid price is outside of a given range, it is discounted say for example 3.5% i.e., if \( B_i > 1.03C \) or \( B_i < 0.935C \), \( B_i \) will not be considered in the bidding process.

The ‘reasonable price’

This price is calculated by an independent company, authorized by the Provincial Construction Commission. Only one company is engaged in calculating the reasonable price “A” although a second company may be engaged to audit the reasonable price when necessary. If an audit is undertaken this is carried out by a quantity surveyor company which has been rated at one grade higher than the company calculating the reasonable price.

The reasonable price is the price calculated based on the quotations provided by the MOC and local regulations. Therefore it is more or less a fixed number for particular project. The amount of the work is calculated from the detail drawings and the price is quoted from the MOC price index. The overheads are also calculated based on the government published data.

The only item that can be varied is the management fees or the profit margin. Therefore the biding companies usually lower this component in order to get into the range:

\[ 0.935 \text{ Reasonable Price} < \text{Biding Price} < 1.03 \text{ Reasonable Price} \]

Evaluation of the Construction Plan

Apart from the bidding prices and other essential documents to support the tendering process, the bidders also need to submit construction plans or strategies. The requirement is for the main strategies that will be used in the construction to be stated in the construction plan. This is worth from 10 to 20 marks.
The construction plan is evaluated by the expert panels. Senior engineers with 8 years working experience can apply for this position. Subjected to the approval of the individual’s employer together with conformance with all terms and conditions, the applicant is invited, as an expert to evaluate the construction plans. The selection of the experts for the evaluation of a particular project is quite complex. Firstly the experts are given a number and then the computer is run on a random base to select the numbers. With matching up the numbers to the experts' names, half a day before the evaluation, the person in charge is to inform the experts that they are selected randomly for evaluating the construction plan. The time allocated for them to work on the construction plan is normally half a day.

It can be seen that the tendering price plays a major role providing that the price falls in the pre-set limit. It can also be seen that the marks of the construction plan also plays a vital role; this means that the power of the experts is very influential. Therefore it is necessary to have some measure on the performance of the experts.

Contract Award and Records

The bidder with the highest marks will be awarded the project. Below is procedure of contract award:

- Following the conclusion of the tender opening/evaluation process in the TCM, the client is required to obtain all necessary pre-construction approvals before a contract can be executed.
- Following completion of these formalities the client must obtain TCM (MOC) approval (and demonstrate that these formalities have been properly conducted) before signing the contract with the contractor.
- The relevant government agencies, departments and units who give approval in this process have representatives in the TCM, designed to facilitate and speed up this procedure.
- Once the contract is signed, an archive file is made up, consisting of all key relevant transaction documents for the project to this stage. This goes back to copies of the registration of the project with TCM to the actual letter of acceptance. It also includes copies of all relevant approvals obtained from the various “competent” authorities that have jurisdiction over the project.
- Other information on the archived file includes:
  - list of registered contractors who expressed interest
  - copy of client’s request to the TCM to call tenders
  - public tender notice
  - report on interested registered contractors
  - copies of all correspondence between the client and TCM
  - evaluation report of the experts.
- The file is archived in the TCM for two years, and is then forwarded to the Municipal Archives. The file is readily accessible to MOC/MOS staff who deal any complaints arising about the bidding process.

Post Contract Award Supervisory Procedures

We (the authors) interviewed client representatives, contractor representatives and supervisory company representatives for two projects under construction in Nanjing. One
The project was a mixed commercial/residential medium rise development, valued at 16.5 million RMB, which was approximately 50% completed. The other project was a secondary school, low rise structure valued at 6.6 million RMB which was some 80% completed.

The key findings from these discussions were:

- Post contract award supervision process is essentially the responsibility of the supervisory company, which is usually appointed by a competitive process through the TCM. The supervisory company reports directly to the client, and its operation is governed by relevant state/provincial laws.
- The design institute also participates in supervision of project work, specifically at pre-determined hold points such as reinforcement placement. Additionally, any variations which are significant require design institute concurrence. Attendance at other times may be sought by the client.
- Design institutes are selected through an expression of interest process, whereupon the fee is negotiated with the preferred tenderer. This process is not under the auspices of the TCM. Design institutes are required to be accredited and various accreditation grading exist.
- In terms of the State and Provincial Bidding Laws, clear procedures exist which regulate the reporting processes used by clients, contractors and supervisory companies following contract award. In essence, these can be summarised as being:
  - Supervisory companies formally report to clients on a weekly basis through meetings, and through a monthly written report. This report contains information on:
    - materials supplied
    - variations
    - quality issues
    - progress against schedule
    - financial status
    - major issues identified from past weekly meetings
  - Additionally, the supervisory company is required to report on quality matters, on an end of project basis, to the Quality Control Station, a government body.
  - End of project reports to the Quality Control Station consist of a work summary which primarily deals with quality and design compliance issues.
  - Monthly written reports only go to clients, not to MOS or MOC. While Jiangsu Provincial MOC has procedures promulgated through a Provincial directive requiring copies of such reports to be submitted to MOC, the procedures are not enforced as MOC is not able to handle the volume of material generated by this process. The MOC directive also sets out a pro-forma for such a monthly report, which conforms to the reports submitted by supervisory companies to clients.
  - This reporting regime is essentially directed by the relevant government regulations governing the operation of supervisory companies.
  - Additionally, in terms of State/Provincial laws, all contracts/projects are required to be audited at "practical completion" stage. This audit is essentially a final account audit, and has to be instigated by the client. This audit will identify final project cost and reconcile the makeup of this final price.
  - For government funded projects, the government Audit Bureau conducts the audit. Non-government funded works are audited by an accredited specialist audit company.
The audit report is only referred back to the client, not to MOC or MOS. Any irregularities are dealt with between the client and the Audit Bureau.

A recently enacted State Regulation now requires clients to submit a Project Completion Summary Report to MOC. The relevant State law is Ordinance 78 and is titled Completion and Acceptance Report of House Construction and City Infrastructure Projects. The report is a comprehensive document which includes information such as:
- type of structure(s)
- architectural area
- functionality
- date of completion of construction
- date of occupation by client
- details of:
  - Geo-technical consultant(s)
  - Design institute
  - Construction contractor(s)
  - Supervisory company
  - Quality control organisation
- Reports on quality outcomes
- Catalogue of approval documents required under relevant government ordinances, rules and regulations.

The notable omission from this report is the final cost of the project as compared to original approved budget, as well as details of individual contracts and their performance on a time and cost basis.

- Contractors also provide a level of self-supervision through the operation of their accredited quality systems. For example, both contractors interviewed had ISO 9002 certified quality systems in place.
- No formal process could be identified for a comprehensive contractor performance reporting system. The Quality Control Station conducts checks on the quality and safety record of all “registered” contractors. Data is compiled by the contractor and forwarded to the Quality Control Station annually as part of the process for the contractor’s renewal of registration.
- Clients generally directly procure key materials for a project, such as cement, concrete, timber and steelwork. The rationale for this approach was that clients felt it was necessary to provide such a level of quality assurance for strategic materials. Supervisory companies are responsible for ensuring the quality of materials directly supplied by the client met specification. This procurement process is not subject to TCM oversight. Value of client purchased materials can reach 40% of total project cost.

In accordance with Provincial Ordinances, MOC and MOS have a supervision role to carry out post contract award. However, we found it difficult to determine how this role is carried out and the process appears to be mostly reactive, rather than proactive.

- Other organisations and companies seem to carry out day to day supervision and auditing of compliance.
- The supervisory companies, employed by the client, are required to monitor cost, time and particularly quality matters pertaining to the contract.
- The Industrial and Commercial Department audits the contract as signed to ensure it complies with government guidelines.
- The client is required to arrange the audit of final costs by the Audit Department at the end of the project.
The reporting procedures or contractor performance are vague, and the Review Team was not able to clearly ascertain who is responsible to do the reports, who the reports go to and what is done with the reports.

Project data for a project underway is collected by various and many state/provincial/municipal organisations. As such, a comprehensive status of a project at completion, or during construction is very difficult to determine.

MOS/MOC do not appear to have a comprehensive data collection process in place, and seem to rely on complaints or problems surfacing before acting.

There seems no random MOS/MOC audit process in place to ensure the various provincial and municipal ordinances/laws/regulations are being followed by clients/contractors and client/agents.

Observations and Comments

Tendering and contract awarding

The authors found that the bidding and tender evaluation processes carried out inside the TCMs appeared to conform with the published procedures, and reflect the principles of probity, fairness, transparency etc, as outlined in the various Provincial and Municipal Ordinances and Regulations.

- The various laws, regulation ordinances and procedures governing the procurement of capital works establish a sound framework for the operation of TCMs.
- Critical issues such as probity, conflict of interest, transparency, fairness to all parties and a consistency of process are properly addressed in these documents.
- While roles for the relevant administrative departments (mainly MOC) are listed in these documents, they are not detailed in areas of project supervision post contract award, despite the clear mandate through the Provincial Ordinance for such a role.
- The standard procurement methodology used (Construction Management) places significant risk onto clients (through their agents) for project coordination. Whether this is necessary is debatable.
- While the current structure of the contractor pre-qualification systems support such a delivery method, the roll-up of the various trade and specialist packages into a single large contract may provide clients with better project outcomes.
- A phased move to a Single Contract delivery approach will enable industry time to develop or acquire the necessary skills to effectively operate in such an environment.
- Until this new procurement model is put into general use, consideration of more sophisticated models, such as design and construct or BOOT appears premature as these methods transfer even greater risks and obligations onto the Head Contractor.
- The bidding and tender evaluation processes carried out inside the TCMs appeared to conform with the published procedures, and reflect the principles of probity, fairness, transparency etc, as outlined in the various Provincial and Municipal Ordinances and Regulations.
- Whilst probity issues are soundly dealt with, the matter of value for money is altogether different. The tender price evaluation process on basis of nearness to some sort of reasonable or optimum price (which can be pre-determined) mitigates against the efficient contractor, as bids below the pre-set “reasonable price” are scored down.
• This outcome is exacerbated by different and important project information being collected and separately kept by clients and various provincial and municipal organisations, making the determination of comprehensive project and supplier status by MOS and MOC, particularly during construction and at completion, extremely difficult.
• While regular performance reports are required to be made on registered contractors, no mechanism was identified which linked these reports to ongoing registration status. A proper linkage could result in incentive for better performance due to potential threat to registration status, which is a prerequisite for bidding on contracts.

Post contract award supervisory procedures

From the above findings, we provide the following comments:
• The supervisory procedures reviewed appear to be of comparable standard and extent to that applied in Australia. The use of specialist organisations to act as clients’ agents, such as supervisory companies, and the use of specialist designers and builders reflects typical government capital works procurement processes in Australia.
• Reporting mechanisms appear extensive and critical project data is being collected and reported on. Nevertheless, the reports are compartmentalised, and seemingly only accessible to the client in their totality.
• In particular, while MOC is now, through Ordinance 78, mandated to receive from the client a detailed Project Completion Report, the report lacks vital data relating to project cost and time, which can act as key indicators of the “health” of a project. Final cost data is available through the completion audit which is required to be initiated by the client, while time performance data appear to be limited to the monthly reporting process between the client and the supervisory company.
• Reporting on contractor performance on a project by project basis seems less than ideal, with no formal comprehensive system in place that measures objectively contractor performance. The self-assessment model in use is very limited in its scope and effectiveness.
• While supplier selection for contractors and supervisory companies passes through the security of the TCM process, the same cannot be said for materials purchases made by the client and the selection of the design institute. Material purchases in particular can add significantly to a project budget and the level of scrutiny as applied through the TCM process would appear to be warranted.
• Project/contract profiling can provide an effective supervisory mechanism provided suitable and accurate data can be collected. In terms of the findings, significant useful data is currently available to MOC/MOS, although not all key data. For instance, post completion cost data and time performance data is not readily available to MOS/MOC although it is available to the client and other government bodies.
• Data presently available to MOS/MOC through its TCM operations and the Ordinance 78 Completion and Acceptance Report which can provide a useful immediate basis for a data base is:
  − Contract Price at Tender
  − Contract Time at Tender
  − Type of Structure
  − Architectural Area
  − Client
• Location (Province, Municipality, County)
• Supervisory Company
• Design Institute
• Contractor
• Geotechnical Company
• Date of Contract Award
• Date of Contract Completion
• Construction Quality Requirements and Outcomes

Other key data not presently available to MOS/MOC but available to the client including:
  - Final contract/project price
  - Safety performance

Additional reports could be developed which could measure outcomes such as:
  - Contractor performance
  - Supervisory company performance
  - Environmental performance

Summary

This paper has, amongst other things, reviewed the operation of the TCM and the current tendering system used in China. As can be seen the Chinese law and regulations relating to its construction industry are well developed and comprehensive. These include tendering law, guidelines for evaluating the bidding documents, etc. A fundamental difference between China and the Western market price system is that China has (currently) opted for a 'reasonable/optimum' price. On the surface this seems very much at variance with the economic rationalist approach of awarding the tender to the lowest bid. However in most developed countries there is now an emerging trend to move away from automatic selection of the lowest bid in favour of a range of selection criteria which although measures mainly related to quality. Our contention is that unpredictable social, economic technical and political aspects of a globalising society will force organisations to look at forming national and trans-national business alliances. Certainly from our exposure to both Western and Chinese construction environments, we believe that both parties have much to gain and learn from each other.

References


