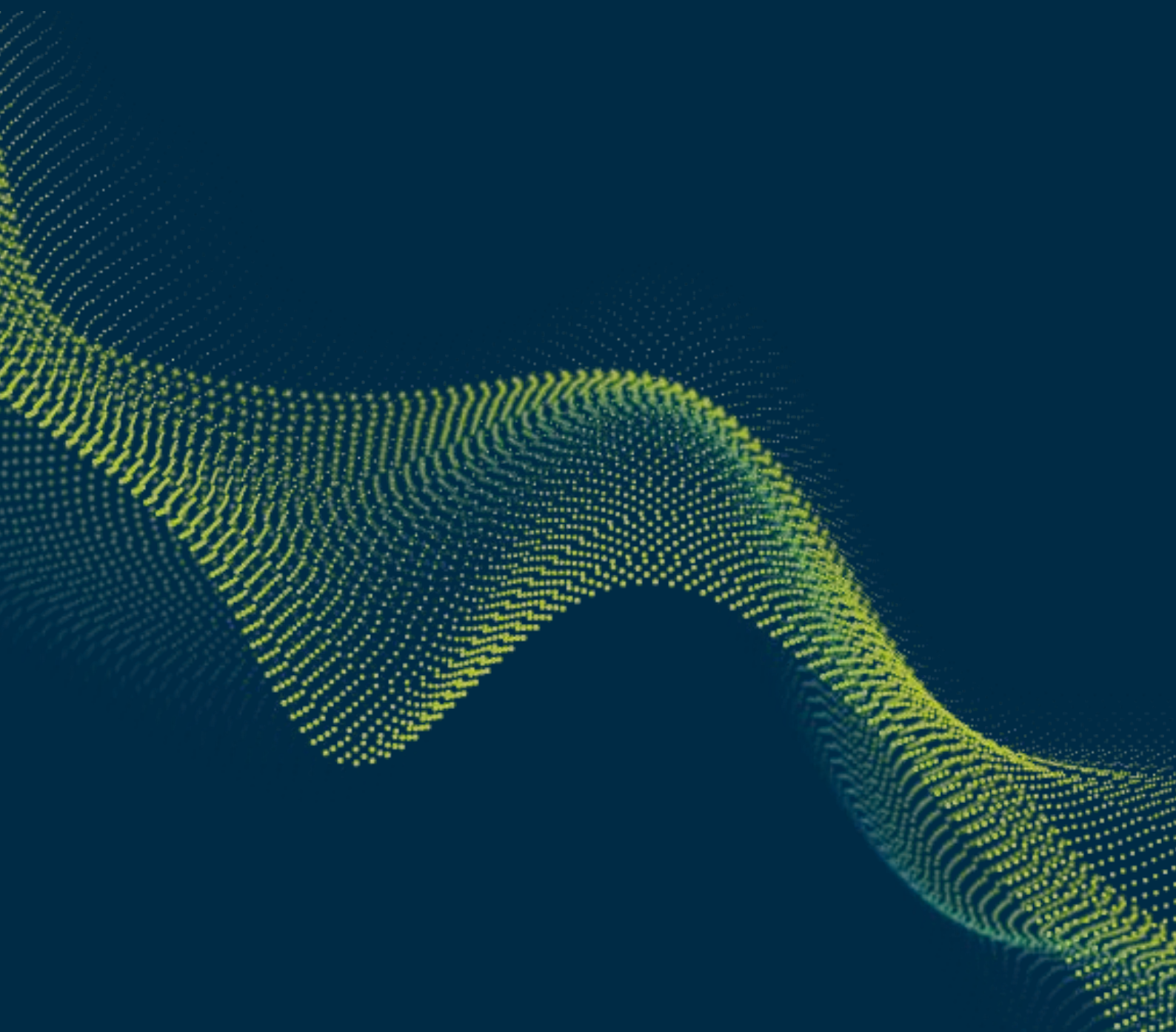


March 2022

Public Tendering Practices and their Impact on Delivering Value in the Construction Sector



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Foreword



By John G. Murphy, President of the Civil Engineering and Contractors Association (CECA).
(The CECA is a constituent body of the Construction Industry Federation)

Since 2009 the membership of the Civil Engineering Contractors Association has fallen from 138 to 77 members. Despite improving market conditions the number of contractors serving the industry has continued to fall. Some contractors have left by choice but many have simply gone bankrupt. Another recent development is many of our contractors are disproportionately increasing their turnover in foreign markets. This is worrying, given that Ireland needs its construction industry to substantially increase output to serve the needs of this country.

Whilst contractors complain about poor margins, unreasonable risk transfer and expensive tendering costs, there is little factual evidence to explain the current environment.

With that in mind the CECA commissioned Ildiro to undertake a survey that hopefully will shed some light on the diminishing interest in tendering public works contracts. The findings of the survey are indeed startling and merit some study. In summary the margin and risk added to tenders does little to protect the industry when issues arise on projects.

Max Abramson described the PWC contract as rewarding the “lucky and the litigious”. Unfortunately, Covid 19 and hyper-inflation has rendered all contractors unlucky. Attempting to improve the construction industry in the UK, the Confederation of British Industry did an in-depth study and published an excellent document titled Fine margins.

In the UK 90% of projects experience a delay of greater than 10%. This one fact demonstrates how difficult it is to enter into fixed price contracts without substantial additions to cover risk. The fact that risk is not being priced in an overly competitive market clearly shows that the current contracting structure is not fit for purpose and if not fixed effectively will damage the future of our economy.

The industry employs some 150,000 citizens and generates tens of billions for the economy. It is imperative that the Government understands the industry and treats it like it would treat any other industry. A healthy construction industry adds to the wealth of our country and our people.

1 | Introduction

The construction industry is one of the key sectors for any country's economy. In Ireland, the construction industry contributed €27 billion to the national economy in 2018, representing 10% of the Gross National Income (GNI) in 2018 (Department of Enterprise Trade and Employment, 2020). Not to mention that employment in the construction sector stood at 145,500 in Q4 2018, representing 6.4% of the total employment in the Irish economy (IPPO, 2019).

The industry's role is not merely based on the economic contributions but more so on its vital part in delivering public infrastructure and services for local communities. Robust practices around construction procurements allow essential projects such as new utilities and transport connections to be delivered on time and with high-quality standards, improving the quality of life across the country.

In recent years, much has been discussed around public procurement for construction projects. Many concerns have been raised about the difficulties of getting value for money for large capital projects. At the same time, costs and time overruns have become common practices within the industry, while opportunities for innovation seem to be extremely limited.

Although public initiatives have been put in place to tackle some of these issues, the general approach has been to increase competition, use vastly restricted contracts, focus on the lowest price, and increase risk transfer from public clients to contractors. Such practices have generated low tender success rates, high bidding costs, expensive and time consuming contractual disputes and low profit margins, causing huge financial stress to contractors. In 2011, 69 construction companies declared insolvency, placing the construction industry in second place with the most insolvencies in the country (Deloitte Ireland, 2022).

There is a general feeling among the contractors that the industry has been taken for granted. Very little has been done to protect it by creating a healthy and collaborative environment around public tenders. New measurements and practices on public procurements must be taken, considering contractors' views and experiences, promoting dialogue between public clients and contractors.

This report explores the current practices around public sector construction procurements in Ireland and their impact on the construction industry. Members of the Civil Engineering Contractors Association (CECA) have participated in the survey, which provided a better understanding of contractors' views and experiences through the public tenders process.

Survey results are analysed and compared with public tendering practices in other countries within the EU, with the objective to open the discussion of possible solutions to the issues raised by the survey respondents.

The report is divided into three main sections. The following section explores the survey methodology and its main results. The second section reviews international literature and evidence regarding public sector construction procurement. The final section is dedicated to

the conclusions and suggestions to improve procurement behaviour, stimulating collaboration and growth.

2 | Methodology

An online questionnaire was sent to 69 members of the Civil Engineering Contractors Association (CECA) to help identify bidding practices and explore construction companies' (specifically civil engineers') views on the current tendering process. The survey was conducted by Ildiro Analytics, an independent data consultancy. The survey responses were anonymous and kept confidential. No individual responses were shared with the CECA or any other body to ensure the accuracy of the survey results.

The questionnaire included seven sections. The introduction established the basic characteristics of the respondents (i.e. company size and participation in public/private procurement). This information was necessary in order to verify the representativeness of the sample. Depending on respondents' answers regarding tender participation, they were redirected to the most suitable questionnaire (i.e. only public, only private, and public and private tenders). The second part of the questionnaire was dedicated to the tendering overview. Participants were asked about the number of public/private tenders bids and wins per year and their most common methods used for bid price estimations. The third section queried about risks, while the fourth and fifth focussed on business overheads and margins, respectively. The sixth section asked about the company's below-cost bidding practices. The final section included questions about contractors' perceptions of public tenders together with an open and optional question about respondents' views of the public tendering process. (See appendix 1 for a complete list of survey questions).

3 | Survey Results

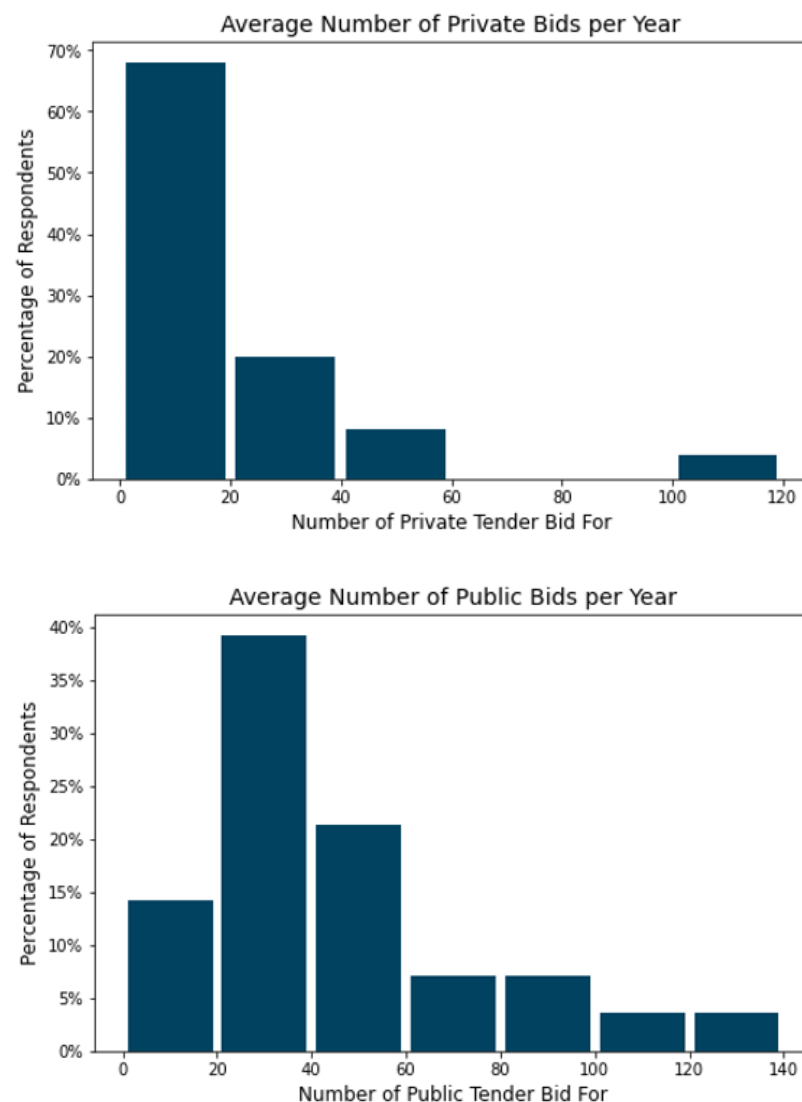
Company Size

In general, the sample was fairly representative of the industry with regard to the size of companies in terms of numbers of employees and annual turnover. In relation to the number of employees, medium-sized enterprises represented the largest percentage of respondents, followed by large, small, and micro, representing 41%, 31%, 24%, and 3% of the sample, respectively. In terms of annual turnover, 20% of respondents had a turnover of €10M or less, 45% between €10M and €50M, and 35% had a turnover greater than €50M, while the total turnover across the sample was €2.3 billion.

Number of bids per year

82% of the sample responded that they participate in both public and private tenders. Among the surveyed contractors, 13% bid exclusively in public tenders, and only 3% of the companies bid only for private tenders. On average, companies participating in public tenders bid for 46 tenders per year, whereas companies that participated in private tenders bid for 19 tenders per year. Figure 1 shows the distribution of the number of bids for public and private tenders.

Figure 1. Distribution of Average Number of Public and Private Bids per Year

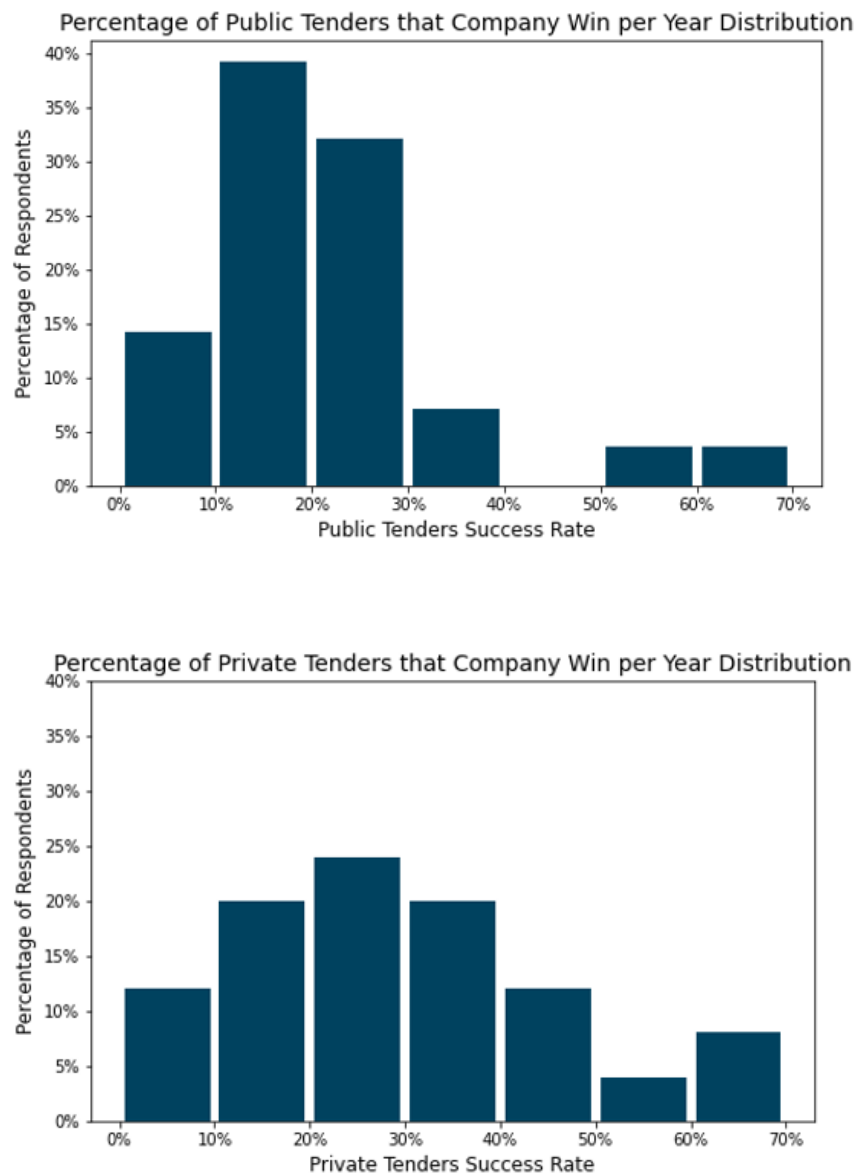


Medium-size companies, with a turnover between €10M and €50M, have the highest public tender participation, bidding on an average of 56 tenders per year. While large enterprises, with more than €50M of annual turnover, on average, bid for 38 tenders, and small companies, with less than €10M turnover, bid for 34 public tenders per year.

Tender Success Rate

In terms of tender success rate, the survey found that, on average, companies won 21% of all the public tenders they participated in. While for private tenders, the chances to win were slightly higher, with a success rate of 27%. Although the highest participation rate in public tenders was found among the medium-sized companies, they had the lowest success rate. This might be due to the increase on overheads as they grow/operate, which need to be covered in tenders, increasing bid price and making them less competitive to smaller companies. In fact, companies with a public tender success rate higher than 30% were either small (<50 employees and <€10M turnover) or large enterprises (250+ employees and €50M+ turnover). Figure 2 shows the distribution of companies' success rates.

Figure 2. Distribution of Companies Success Rates for Public and Private tenders



Pricing Method for Bid Price Estimation

In relation to the most common approach for bid price estimation, 82% of the sample responded that they use cost-orientated pricing when bidding for tenders. In comparison, 10% of the respondents use a competition-oriented approach and 7% recorded using demand-oriented pricing.

Respondents who declared participating in both public and private tenders were asked whether they used a different pricing method for public and private tenders. 54% admitted using a different pricing approach, while the rest claimed to use the same one. The three main statements provided below encapsulate the most common justifications given by the respondents for using different pricing methods.

- Private tenders promote better dialogue, tend to be more flexible and show greater engagement during the tender process than public contracts.
- Different types of contracts and approaches toward risk - private tenders tend to share and highlight all risks, whereas public tenders rely on the contractor to resolve extra costs.
- In private tenders, a greater margin might be allowed to reflect a higher risk of non-payment by the client.

Example Answer 2. Why is your pricing approach for public and private tenders different?

“Private tenders tend to be far more collaborative and less lowest cost focused - private clients engage in the tender process far more, allowing us to add value at tender rather than taking risk of that value being accepted after the tender during construction”

Risk Assessment

An open question inquired how contractors assess risks when bidding for public tenders. The below statements summarise the answers given.

- A general assessment of ground conditions, weather, stakeholders, existing services, price inflation, and contract conditions.
- A thorough analysis of works requirements to identify possible risks that have not been included.
- Risk is assessed based on previous experience and in-house expertise.
- Due to the competitive nature of tendering, there is no possibility of including additional costs such as contingency to cover risks.
- Predetermined risk allocation (E.g. 3%).

Surveyed contractors who participate in public and private tenders were also asked whether their risk assessment approach for public tenders differs from their risk approach on private tenders. 57% of the respondents answered to have a different risk assessment depending if tenders are private or public. The most common reasons provided are the following:

- There are more chances of a risks negotiation and clarification in the private tenders, generating less uncertainly and more accurate estimations.
- More thorough assessments were conducted on private contracts.
- Risk assessment for private tenders depends on the client's history.

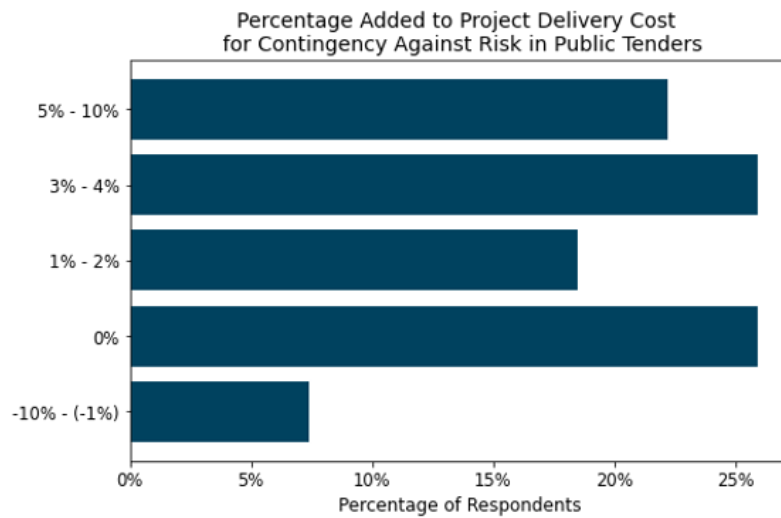
Example Answer 2. Why is your risk assessment approach different for private and public tenders?

“Where design information is inadequate and assumptions need to be made, in private tenders, this will usually mean submitting a bid with accompanying qualifications/ clarifications with regard to the unclear information. Obviously this option is not available under a public contract..”

In addition, respondents were asked what percentage is generally added to the project delivery costs for contingency against risks. It was found that, on average, companies add 2.2% for contingency against risks in public tenders, whereas for private tenders, the percentages added are doubled, with a 4.4% added for risk contingency.

Figure 3 shows the distribution of risk contingency for public tenders. The figure presents real concerns about risk allocation and management. More than 25% of the sample does not add any contingency towards risk when bidding in public tenders. These figures highlight the critical and vulnerable condition where public projects are operated, as a result of the extremely competitive environment. Moreover, 7% of the respondents add a negative contingency against risk, which might suggest an opportunistic approach to unclear or incomplete project requirements.

Figure 3. Distribution of Percentage Added for Contingency Against Risk in Public Tenders.



Business Overhead

When contractors were asked about the percentage added in public tenders to cover business overhead, the results showed that 62% of the respondents added more than 5% to the project delivery costs to cover business overhead. On average, companies added 6.3% to their public bids and 6.7% to private bids. Figure 4 shows the distribution of percentages added in public tenders to cover business overhead.

Figure 4. Distribution of Percentage Added for to Cover Business Overhead.

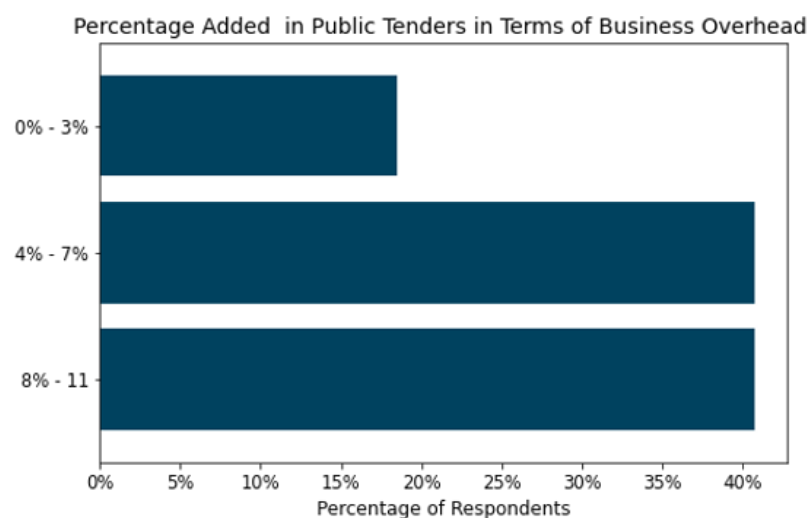
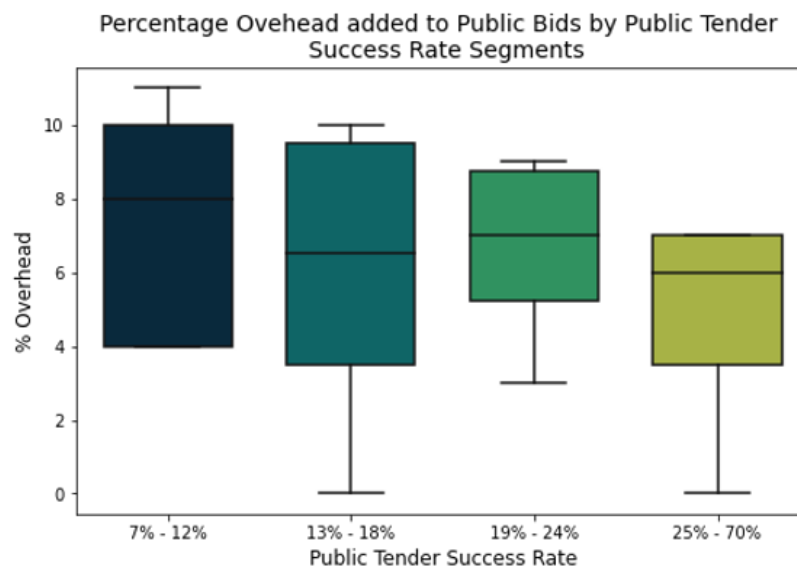


Figure 5 analyses the relationship between the percentages added in public bids to cover business overhead and tender success rates. The survey shows that companies with the lowest bidding success rates added a higher percentage in terms of overhead, with an average of 7.4%.

In contrast, companies with the highest success rates added a lower overhead percentage, with an average of 4.8%. Results show that companies that add less overhead to their bids win a higher percentage of their total bids, suggesting that firms are pressured to keep overhead low, in order to stay competitive. This means that contractors are not in a position to invest appropriately in talent, equipment, technology, and innovation, which would increase productivity and value for taxpayers.

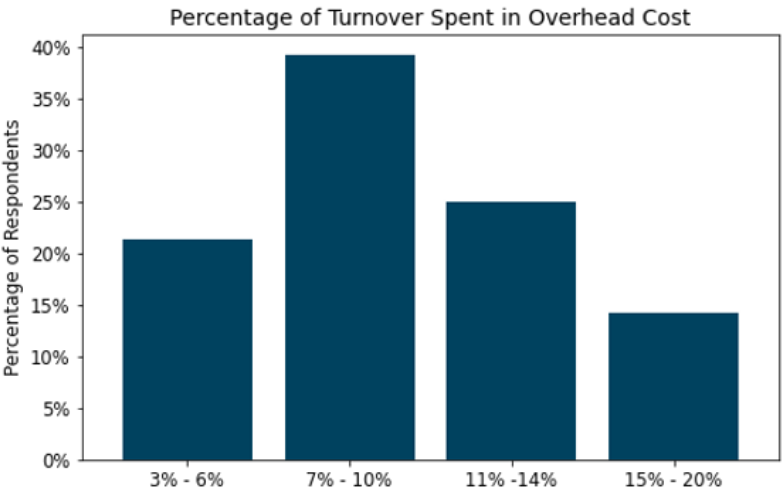
Figure 5. Companies' Tender Success Rate vs. Overhead Percentage added to Bids



Moreover, in terms of overhead costs as a percentage of companies' turnover, the survey found that, on average, respondents spent 9.5% of their annual turnover on overhead costs. Figure 6 shows that 74% of the sample spent more than 7% of their turnover on business overhead.

In terms of the company size, on average, small enterprises spend 13% of their annual turnover on overhead costs, while medium and large enterprises spend 9% and 8%, respectively. In addition, no clear correlation was found when analysing the relationship between overhead costs as a percentage of the annual turnover and tender success rates.

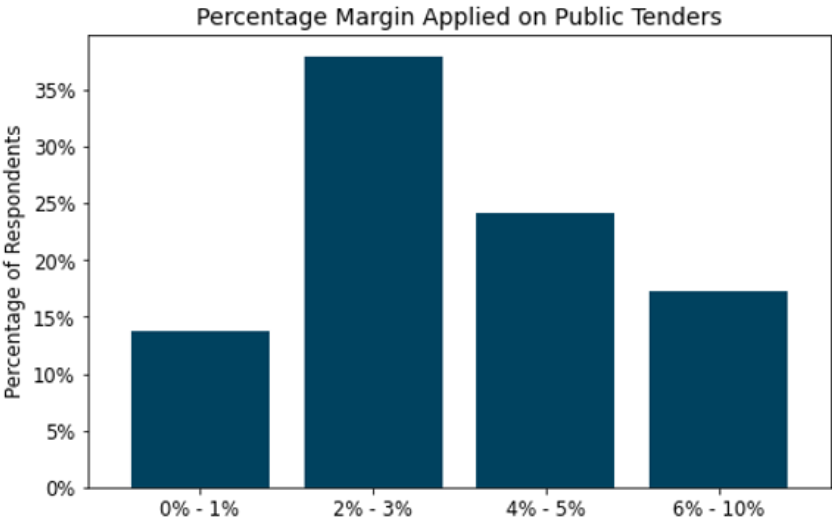
Figure 6. Distribution of Percentage of Turnover Spent on Business Overhead.



Margin

It was found that on average respondents apply a 3.8% margin in public tenders. This is significantly lower than in private tenders, where the average margin is around 6.3%. In addition, no clear correlation between percentage margin and public tender success rates was found.

Figure 7. Distribution of Percentage Margin Applied on Public Tenders.



While turnover and pricing have increased over recent years, margins have remained relatively stable, with the majority of contractors showing a margin on public tenders of between 2% and 3% (CECA, 2021)

At or Below Cost Bids

Respondents were asked if they have ever submitted a bid price for a public tender at or below cost. Results show that 56% of the respondents have submitted at or below cost bids. The main reasons to have submitted a bid under these conditions include:

- Business continuity or lack of future pipeline.
- Due to deficiencies in the contract documents and lack of opportunities during the tender to engage with the clients for clarifications
- In order to ensure success on framework tender.

In terms of frequency of at or below-cost bidding, considering the 56% of the respondents that have submitted a public bid at or below cost, on average, they have submitted 24% of their public bids under this condition. At the same time, one third of these have submitted at least 50% of their total public bids at or below cost. Figure 8 shows the frequency of at or below cost bids concentrate on 1%-10% segment and 41%-50%, suggesting that for some contractors this is a very uncommon practice, while for others is quite common.

Figure 9 shows the relationship between the frequency of at or below-cost bids and tender success rates. Interestingly survey results show a negative correlation between the tender success rate and the percentage of bids at or below cost. This result, along with business continuity as the main justification for at or below-cost bidding, might suggest that a highly competitive environment and low tender success rate incentivise below-cost bidding.

Figure 8. Distribution of at or below-cost bids as a percentage of total public bids.

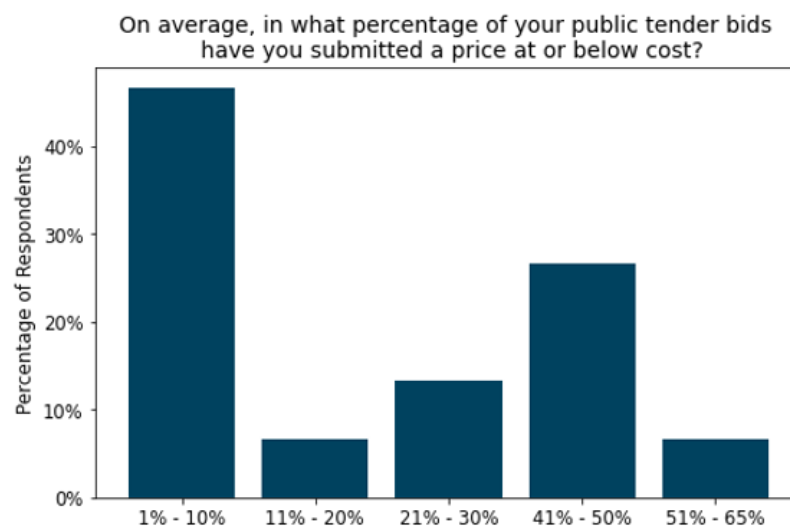
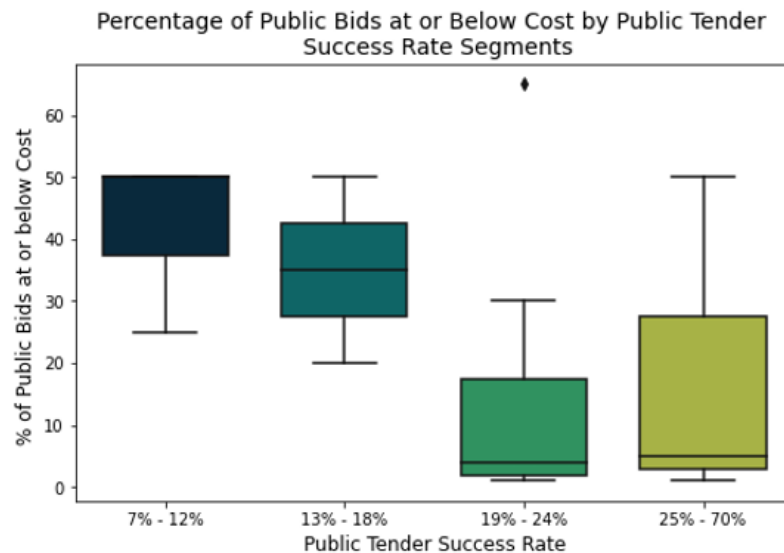


Figure 9. Distribution of at or below-cost bids as a percentage of total public bids.



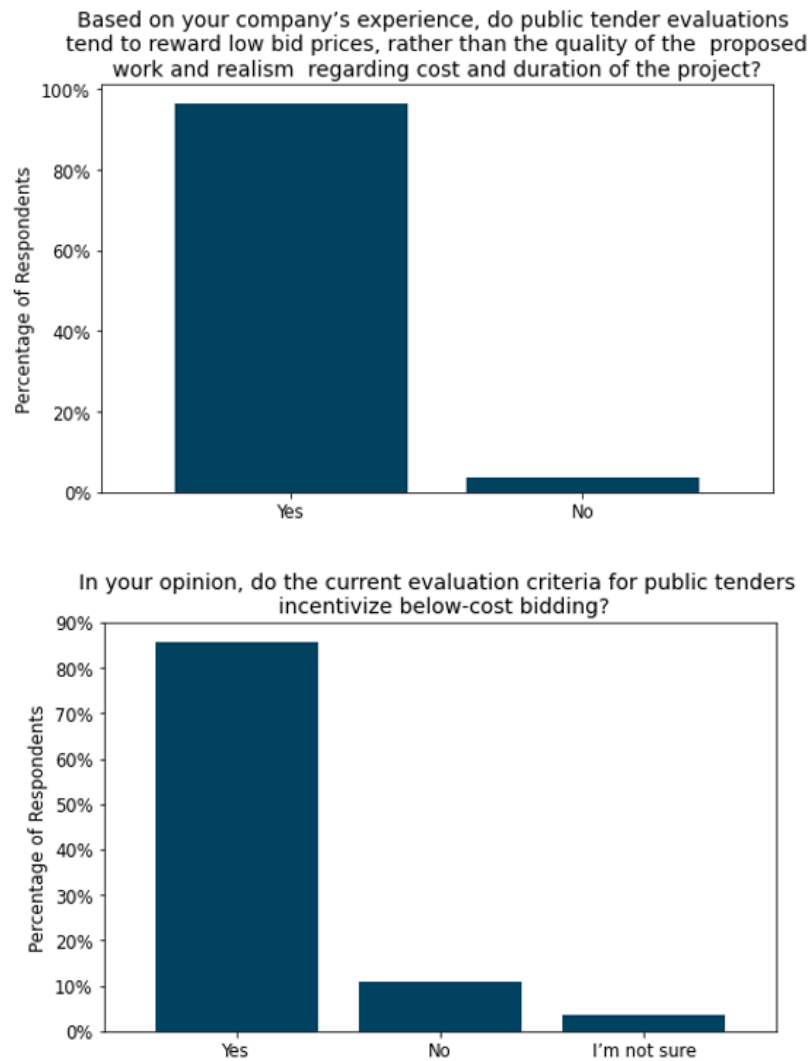
Public Tender: Contractors' Perception

In the final section of the questionnaire, contractors were asked about their perception of the public tendering process. This section includes the following two questions:

1. Based on your company's experience, do public tender evaluations tend to reward low bid prices, rather than the quality of the proposed work and realism regarding cost and duration of the project?
2. In your opinion, do the current evaluation criteria for public tenders incentivise below-cost bidding?

Results show that 96% of the respondents believe that public tender evaluations tend to reward low bid prices, rather than the quality of the proposed work and realism regarding cost and duration of the project. In the same way, 86% of the sample believe the current evaluation criteria for public tenders incentivise below-cost bidding, while 10% believe the opposite.

Figure 10. Contractors Perception of Public Tenders



The final question of the survey was an open and optional question where respondents were asked to share their views and experiences regarding public tendering practices. Several issues were raised within this question. However, we have identified the three most common issues:

- Awarding is based upon the lowest price criteria instead of the best value for money.
- Below-cost bidding incentives.
- Lack of dialogue and client engagement pre-tender and during the tender process

Example Answer 3. Share any views you have on the subject of public tendering practices

“The Public Works Contract encourages so called below cost tendering, an adversarial relationship between client and contractor and has a hugely negative impact on profitability in the sector of the construction industry that we operate.”

4 | Survey Highlights

Survey results show that companies with low tender success rates add a higher percentage of overhead cost to their bids. This might suggest that a highly competitive environment in public tenders, where there is a significantly low chance to win, could lead to higher extra bidding costs generating higher bidding prices.

In terms of risk management, most of the respondents consider that, in public tenders, a high proportion of the risk is transferred to the contractor.

A negative correlation exists between tender success rates and the percentage of bids at or below cost. This result suggests that a highly competitive environment, where tender success rates are significantly low, might incentivise below-cost bidding

Regarding tender award criteria, the perception toward public tenders is that low price bids are prioritised, neglecting technical/quality scores, thereby promoting below-cost bidding and discouraging innovation investment.

For public tenders, contractors add on average 12.3% to the project delivery cost, made up of 2.2% risk, 6.3% overhead, and 3.8% margin. Given that, on average, overhead is actually 9.5%, this leaves 2.8% to cover all risk and margin, an unsustainable proposition with almost complete reliance on variations and claims.

To sum up, there are several public tendering practices that might lead to an adversarial relationship between clients and contractors, generating project delivery issues and financial stress within the industry. The below points have been identified as the most critical issues within the public tendering process:

- **Lack of dialogue and client engagement pre-tender and during the tender process**
- **Unreasonable transfer of risk from clients to contractors**
- **High overhead costs and high bidding costs**
- **Low margins within the industry**
- **Awarding based upon lowest price instead of the best value for money**
- **Below-cost bidding incentives.**

5 | Literature Review

This section reviews the international evidence regarding public tendering practices. The section has been divided into sub-sections according to the main issues identified on the contractors' survey.

Lack of dialogue and client engagement pre-tender and during the tender process

One of the recurring issues raised by civil engineering contractors was the lack of dialogue and opportunities for cooperation between the contracting authority and contractors, during the tender process. This absence of collaboration between the two parties, along with the fierce competition on public procurements, has generated adversarial attitudes, declining productivity, and efficiency on public tendering.

CECA members believe that early involvement of contractors and an increase of clarification instances would increase value and innovations. Supporting this idea, Cunningham (2013) recognised that in Ireland, the traditional Design-Bid-Build procurement method generally excludes contractors from the design development process, leading to more buildable or sustainable solutions being overlooked, increasing the barriers for innovative change (Naoum & Egbu, 2015). Similarly, on a survey conducted in the UK, contractors agreed that their contribution to a project would be more effective if they were involved on an early stage (Roberts et al., 2016).

Calls for changes to the procurement process to increase collaboration have been ongoing for years (Lefebvre & McAuley, 2019). Many countries have taken action to improve relationships between contractors and public clients to increase trust, improve risk management and generate value for money (Wondimu et al., 2016). Although different contractual approaches have been taken, all the modern collaborative initiatives incorporate Early Contractor Involvement (ECI) as the central piece for collaboration, with broad support that ECI can overcome many industry ills when applied to appropriate projects (Laing O'Rourke Centre for Construction Engineering and Technology, 2020)

According to Alliancing Association of Australia, ECI contracting is a process where the designer and constructor work together in a contractual relationship with the client, firstly to scope and price a project (Stage1) and then to design and construct it (Stage2) (Rahmani et al., 2013). The implementation of ECI varies between countries, but in general, its implementation retreats from one-stage open tender and promotes two-stage procurements, where contractors are involved in planning, assessing constructability, and developing an "open book" target cost (Mosey, 2009). It is important to note that the implementation of the ECI moves away from traditional construction contracts where most of the risk is transferred to the contractor and instead promotes more modern and flexible contracts, such as the New Engineering Contract (NEC) in the UK, the Project Alliancing in Australia, and Integrated Project Delivery (IPD) in the USA (Lefebvre & McAuley, 2019).

Although various terminologies are sometimes used in different contexts, the concept of ECI has been successfully implemented in many countries, such as the US, Portugal, Australia, Netherlands, New Zealand, Sweden, and the UK (Rahmani et al., 2013). Research conducted in these countries has found that early contractor involvement improved teamwork, innovation and delivered value for money. ECI is suitable for complex contracts, such as civil engineering projects, allowing an integrated team to gain an understanding of the requirements, develop innovative solutions, plan, and mobilise resources, and manage risks to accelerate delivery and reduce costs (Laing O'Rourke Centre for Construction Engineering and Technology, 2020). In the same sense, according to Wondimu et al., (2016), the main advantages of ECI are improved relationships and collaboration between parties, increased buildability, reduced risks, early completion of projects, savings on projects costs, reduced changes in orders and overall better value for money (Naoum & Egbu, 2015; Wondimu et al., 2016, Rahmani et al., 2013, Lefebvre & McAuley, 2019).

In Ireland, as an effort to promote collaboration on large projects, a two-stage tender with an ECI approach was introduced in 2011 for projects over €100M (Cunningham, 2013). Although this initiative is a first step in the right direction there is still a long way to go to achieve a collaborative environment in public civil engineering procurements. Competitive pricing at a stage when the project has not been scoped completely or properly will lead to inefficiencies in the tender, delivering a poor outcome. Moreover, ECI needs to be implemented thoroughly, ensuring that long-term adversarial aptitudes are truly overcome.

In consideration of international evidence, it is recommended that new initiatives that promote ECI and more modern and flexible types of contracts (such as NEC) be implemented in a more general way. This will allow a move away from hurried, single-stage tenders, where adversarial attitudes are promoted, and risks are ignored and transferred to contractors. Integrating the ECI contractual approach will enable clients and contractors to better design and plan projects in partnership before work gets underway, leading to projects' risks being fairly allocated and priced (CBI, 2020) and increasing value for money.

Transfer of risk from clients to contractors

Survey results show that risk allocation is the most critical issue on public procurements in Ireland. CECA members believe that current procurements' methods promote poor risk allocation, leading to claims and disputes, generating cost overruns and delays on project delivery.

In Ireland, public procurements are framed by the Public Work Contract (PWC), which promotes the transactional approach of "Lump Sum" - "Fixed Price" transferring most of the risk to the main contractor (Office of Government Procurement, 2014). Although PWC was introduced in 2007 to create greater certainty of cost and time and better value for money, there is no evidence that any of the expected outcomes have been achieved (Lefebvre & McAuley, 2019; Office of Government Procurement, 2014).

According to the survey responses, there are several causes for poor risk allocation, such as incomplete or ambiguous contracts, lack of clarification opportunities, price-based award criterion and contractual approach used in public procurements. These causes are not independent but interconnected, and together they reinforce an adversarial environment, where risk is allocated poorly.

For a contractor to price the risk, a comprehensively designed project must be provided with reasonable levels of information on those risks. Where a project is poorly defined, and no clarification (or collaboration) instances are implemented, a fixed price-lump sum contract will not deliver the desired outcome because it is not designed to cater for such circumstances (Office of Government Procurement, 2014). In other words, incomplete project documentation generates risks and constraints that are not adequately identified, increasing the likelihood of claims after the project starts (CBI, 2020; Office of Government Procurement, 2014). Moreover, due to the lack of flexibility of the PWC, when risks that were not previously identified arise, the chances of disputes are high, which not only delays the project delivery but also increases the costs for contractors and the relevant contracting authority.

As discussed in the survey results section, due to the highly competitive environment, where tenders' main award criteria are price only, many contractors do not add contingency against risk to their bids to avoid becoming uncompetitive (Laryea & Hughes, 2010). When incomplete information on the project is combined with an unsustainably low tender sum from the contractor, the worst possible outcome is largely inevitable - a poor quality building coupled with substantial claims, generating costs and time overrun (Office of Government Procurement, 2014).

To generate value for money, new approaches must be taken towards the risks. As discussed in the last section, several countries have adopted a multi-stage tender approach and the Early Contractor Involvement contracts to improve risk allocation. By engaging with the market early, clients can lean on the expertise of contractors who have experience delivering construction and infrastructure projects, receiving the information needed to make sure different risks in a forthcoming project are appropriately identified, understood and priced at the stage when budgets and timelines for delivery can still be negotiated and finalised (CBI, 2020).

It is necessary that the implementation of collaborative practices go along with a change of the culture around public procurement. More modern contracts must be considered in order to generate trust between the two parties, where the responsibility of risk management is shared between both parties, rather than ignored or transferred to the contractors.

Better risk management will lead to more projects being delivered on time and on budget, fewer disagreements ending in legal action, and greater trust between businesses. This healthier environment would support businesses to accelerate investment that could lift productivity and generate huge benefits for the economy (CBI, 2020).

High bidding costs

Another highlight of the report, which should be noted particularly by the contracting authorities, is the costs of doing business for contractors. It has been argued that there is a common misconception amongst public clients in Ireland, that the more tenders you get in a particular competition the better value for money you get. It stands to reason, that the more tenderers you get the lower price you will have. However, this does not generate value for money.

If we consider this from a national perspective. Given the large number of citizens employed in the construction industry and its significant contribution to the economy, a healthy construction industry contributes to a healthy economy. To function properly the industry must be profitable.

If on average, contractors spend 1% of a project's value on tendering and the success rate is 1 in 5, then indirectly the client spends approximately 5% of the project cost to cover contractor's bidding cost spent on the winning tender itself and the additional 4 unsuccessful bids. If you double the number of tenderers, you ultimately decrease the success rate of contractors and increase the cost to the client, whilst also increasing the risk of having a contract awarded to a tenderer who has tendered below cost. From the contractors' point of view, considering average additions to tenders of 6.0% to cover risk and profit, spending 1% of a project's cost on tendering, with a 1 in 5 chance of winning will eventually discourage contractors from participating in tender processes.

Although overheads and bidding costs are relevant for all industries, bidding costs tend to be significantly higher due to the complexity of civil engineering projects. This, along with a highly competitive environment where the chances to win a tender, as per survey results, are on average 1 in 5, has meant that many contractors walk away from public procurements in Ireland, increasing their service provision to private clients and clients in other countries, where there is a higher focus on quality and less price competition. In this sense, Brousseau and Glachant (2014) noted that when auction or open tendering procedures are used for complex projects there is a risk of increased bidding costs. In fact, if the buyer fails to specify the subject matter of the bid with precision then uncertainties will result, costs of bidding will be increased, and applicants will be discouraged from bidding at all. (Brousseau & Glachant, 2014).

Brousseau and Glachant (2014) conclude that the use of auction or open tender procedures in complex projects leads to inefficiency and costly renegotiations (Brousseau & Glachant, 2014; Guccio et al., 2008). This suggests the use of more restricted tendering approaches for these types of projects. In the EU many countries have opted to use frameworks or multi-stage tenders, in order to promote a collaborative dialogue between contractors and public clients and to reduce bidding costs (Brennan, 2016). When analysing public procurement across all the industries, at the EU level nearly one in four tender competitions by value are awarded by way of a framework agreement. In countries such as Denmark and Sweden, the share of framework agreements is above 80%. However, in Ireland, frameworks are rarely used in works contracts (4% of all contracts) but are more frequently used for services (9%) and supplies (47%) (Brennan, 2016).

The economical international evidence based on the literature review suggests that in order to decrease bidding costs and to increase risk allocation in a collaborative environment, it is critical, where appropriate and proportionate, to withdraw from single-stage open tendering and promote the use of frameworks or multi-stage tendering, especially for more complex projects.

Low margins within the industry

As a result of the public tendering transactional model, the construction and civil engineer industry is operating with very low profit margins. Survey results show that on average civil engineer contractors add 3.8% (note that contractors include a lower figure for overheads than their actual cost of overheads) of profit margin to their public bid with almost 50% of the respondents adding a profit margin of less than or equal to 3%. These thin margins have led the industry to an unsustainable financial situation, placing the construction industry in second place with the most insolvencies by industry sector? in the country (Deloitte Ireland, 2021).

In this context, to ensure business continuity, civil engineering firms have maintained their cashflows by securing work at lower prices. Businesses bet against risk by accepting full liability, or pricing the likelihood and expected cost of risk too cheaply in order to reduce their overall bid prices for clients (CBI, 2020). When unanticipated or poorly priced risks occur during the project delivery are often covered from the planned margins, affecting the profitability of the project and the industry in general (Makovšek, 2014; Taroun, 2014).

In the same direction, Bilal and Oyedele (2020) observe that clients use the competitive nature of the industry to push margins further down, since they prioritise cheaper tenders rather than quality. The authors also note that contractors in the pursuit of winning competitions submit unrealistic bids that eventually end up in losses. Projects that began with certain planned margins gets completed with entirely different (low) margins (Bilal & Oyedele, 2020).

There is no doubt that low price bidding, where there is little or no room to consider risk or margin is dangerous not just for the industry itself, but also for the supply chain, public clients, and the community. The CBI (2020) notes that when contractors submit unrealistic bids, with little or no contingency against risk, inappropriate levels of risk are transferred down through the supply chain. At the same time, the authors observe that when unrealistic low bids are awarded, if things go badly wrong and a key company collapses, the client is ultimately left to foot the bill and start again. Not only does this result in a significant financial cost to the client, it also adds delays to the programme timeline, creating an additional and substantial socio-economic cost (CBI, 2020).

In summary, a better approach to risk assessment and an increase of quality criteria on the award will pave the way for more sustainable profit levels, enabling businesses to invest more money in new technologies and explore innovative solutions to challenges, realizing a much-needed increase in productivity (CBI, 2020). A healthier and more sustainable scenario would improve not just industry profitability but also would deliver higher performance and quality on construction projects, increasing the value for money for taxpayers.

Awarding contracts based on lowest price rather than best value for money

In Ireland, the public procurement process has been criticised by different bodies for the dominant use of price as the sole award criteria. (Office of Government Procurement, 2014). Likewise, within the civil engineering industry, 96% of the survey respondent believe that public tender evaluations tend to reward low bid prices, rather than the quality of the proposed work and realism regarding cost and duration of the project.

These concerns have not just been raised in Ireland but also in the UK. In 2018, CBI research found that across the public sector marketplace, 60% of businesses felt that public clients awarded contracts solely on a basis of the lowest cost, despite an attempt to reduce this approach (CBI, 2020).

Fazekas and Blum (2021) noted that, although lowest price auctions can minimise discretion in determining the winning bidder, they may not be suited for selecting the highest value-for-money. Moreover, price only criteria auctions may encourage fraudulently low bids by bidders that bet on cost-overruns, if these are frequent and insufficiently sanctioned (Fazekas & Blum, 2021).

Although traditionally the use of price only criteria has been considered as the primary consideration for safeguarding against corruption, the EU has increasingly discouraged its use in favour of economic efficiency and more appropriately take account of the complete needs of the buyer (Fazekas & Blum, 2021). The EU procurement rules state that winning tenders should be chosen as Most Economically Advantageous Tender (MEAT) or best price-quality ratio, and awarded based on objective criteria to ensure transparency, non-discrimination and equal treatment (European Parliament and Council of the European Union, 2014). MEAT combines price and quality for tender assessment and it is evaluated through technical, management and commercial criteria (Lefebvre & McAuley, 2019).

In Ireland, calls have been raised by different contractors association to increase the use of MEAT on public procurement (Lefebvre & McAuley, 2019; Office of Government Procurement, 2014). However, the CECA, the Construction Industry Federation (CIF) and The Government Contracts Committee for Construction (GCCC) have shown concern that many contracting authorities opt to award works contracts where the sole criterion for the award of the contract is price. The argument against adopting a Most Economically Advantageous Tender (MEAT) award is that the more commonly used quality criteria result in very similar scores being achieved by tenderers for quality thereby ultimately leaving the competition to be decided on price (Lefebvre & McAuley, 2019; Office of Government Procurement, 2014).

It is essential that the use of price only criteria be minimised and a MEAT or best price-quality ratio award be promoted, ensuring that its application is accurate, fair and clear. Since the implementation of MEAT can be challenging (CBI, 2020), it is key that quality criteria be objective and consistent. At the same time, in order to achieve an accurate and fair evaluation, the relevant contracting authority must have enough expertise and knowledge on the area

being evaluated. Hence training and consultancy might be provided to ensure a high standard evaluation.

Below-cost bidding incentives

Another critical highlight from the survey results is 'below-cost bidding' or 'abnormally low tenders' practices. Results show that 86% of respondents believe the current evaluation criteria for public tenders incentivise below-cost bidding. More interestingly, 56% of the respondents admitted having submitted a bid price at or below cost. Moreover, one-third of those have submitted at least 50% of their total public bids at or below cost. These results show that the practice of submitting abnormally low tenders is more the rule than the exception, stressing the urgency for changes on public procurement process, disincentivising these behaviours.

When evaluating the causes for below cost bidding, the most common reason provided was the necessity of being competitive to ensure business continuity and future pipeline. Survey results highlight that the current tender award system generates extreme price competition, where quality and technical skills are commonly ignored, leading to dangerous below-cost practices. The impact of these practices is not only harmful to contractors' solvency, but also to the project itself. Along with downplaying quality, since there is no space for contingency for risk, and the contractor has higher incentives to raise claims to recover cost, below-cost bidding increases the likelihood of disputes, cost overruns and delays (Asker & Cantillon, 2008; Hatush & Skitmore, 1998; Molenaar & Johnson, 2003; Shr & Chen, 2003).

Bajari et al. (2009) highlight the importance of a clear and complete project description, to avoid adverse selection and end up rewarding the most opportunistic bid. In the same sense, Brousseau and Glachant (2014) note that if the contractual design is incomplete or certain details are not fully and explicitly described, the tender process may lead to choosing a bidder who has the greatest awareness of the contractual gaps to be exploited, that is to say, the one who is able to determine where contracts will fail. Anticipating that they will be able to take advantage of situations that are unforeseen in the contract by renegotiating the initial arrangement, this strategic candidate will not hesitate to propose an unrealistically low price. This type of bidding behaviour (low-balling strategy) jeopardises allocative efficiency, which is the most important objective of tendering. (Brousseau & Glachant, 2014).

On the other hand, estimating is not an exact science and mistakes often happen. Sometimes low bids are submitted by mistake. The greater the number of bidders, the higher the likelihood of the lowest bid achieving that position by mistake. Currently, there is no mechanism within public contracts to deal with low bids.

There are several existing systems in use by many countries that are intended to detect abnormally low bids (Ballesteros-Pérez et al., 2015). The most recurring example consists of arithmetic systems that measure the deviation of a particular bid from the average of all bids submitted, with minor differences in the percentage and/or calculation of the average (for instance Belgium, France, Italy, Portugal, Spain and Greece use ranges mostly varying between 10% and 15%) (Ballesteros-Pérez et al., 2015). However, there is to date no systematic method

that enables the effective evaluation of abnormally low bids detection (Ballesteros-Pérez et al., 2015). In this sense, while it is inefficient to have high numbers of bidders chasing a project, having 3 or less bidders makes the implementation of an arithmetic system unworkable.

In Ireland, a method to detect abnormally low bids has not been implemented, however, a new initiative has been raised for implementing an abnormally low bids detection method (*An Bille Um Thairgeoirí a Rialáil, 2021 Regulation of Tenderers Bill 2021*, 2021). The industry recognises government efforts to tackle this issue and welcomes the new regulation to discourage abnormally low bids. At the same time, it is important that abnormally low bids or below-cost bidding be analysed within the current construction procurement context. In this sense, avoiding the use of price only criteria and applying quality/ technical evaluation in advance and independently of price criteria might help to reduce below-cost bidding. In the same way, multi-stage tendering with a strong collaborative approach, where costs and risks are correctly identified and priced in a cooperative environment will leave little room for below-cost bidding, resulting in a realistic and accurate estimation of project cost and duration, and ensuring quality work that delivers value for the client and the community.

6 | Conclusion and Recommendations

Conclusions

In the last thirty years, many concerns have been raised about the difficulties of getting value for money for civil engineering and construction projects. For a long time, the public procurement process has been operating under unhealthy and adversarial conditions. The lack of collaboration and chances for dialogue between contractors and the contracting authority, in a lawfully transactional environment, has led to poor risk allocation, generating significant cost overruns, projects delay and lack of innovation.

At the same time, contractors have had to deal with unsustainable low margins, low public sector success rates and high bidding costs, in an extremely price competitive environment. This has resulted in many firms becoming insolvent, submitting bids below or at cost, or simply walking away from public contracts.

The industry welcomes public initiatives that have been implemented to improve public procurement and acknowledges that often unique tendering requirements are needed for each project. However, it is critical that new approaches be adopted to promote better practices around tendering in general. In this sense, this document aims to identify current practices around tendering that have generated a financially unhealthy industry and poor outcomes for public clients and the community. At the same time, recommendations are given to increase collaboration instances, where contractors and clients work together to deliver high-quality project, on time and with no overruns.

In order to explore tendering practices in Ireland, members of the Civil Engineering Contractors Association (CECA) have participated in a survey. Analysing the contractors' responses, some critical issues have been identified:

- **Lack of dialogue and client engagement pre-tender and during the tender process**
- **Unreasonable transfer of risk from clients to contractors**
- **High overhead costs and high bidding costs**
- **Low margins within the industry**
- **Awarding based upon lowest price instead of the best value for money**
- **Below-cost bidding incentives.**

Recommendations

As a result of the survey responses analysis and an extensive international literature review, the following points are recommended:

- **Promote early engagement or proactive collaborative environment in complex project, where clients and contractors work together identifying, planning, and pricing risk, at an early stage. This collaborative approach will ensure responsible and thorough risk management, using contractors' expertise and clients' knowledge, leading to fair competition, and higher innovation opportunities. At the same time, it will allow clients to be confident on the delivery, cost and timeframe for the asset.**
- **Adopt a more flexible and modern contract (i.e. NEC) approach where ECI is embraced and risks are not neglected, but rather managed. This will generate trust between clients and contractors, moving away from an adversarial environment and reducing the frequency of disputes.**
- **Provide a complete and clear project description, where risks are identified and explained. This will allow for correct risk allocation and will avoid adverse selection of the most opportunistic bidder.**
- **Avoid single-stage procurements and promote multi-stage procurement processes, where collaboration and clarification instances are prioritised and bidding costs are reduced. Using contractors' skills and experience, innovation will raise, increasing productivity and value for money.**
- **Minimise the use of price only criteria and encourage an accurate, fair and clear use of multi-criteria awards, such as Most Economically Advantageous Tender (MEAT) and Best Value Procurement (BVP). A responsible and effective implementation will discourage below-cost bidding, increasing profitability for contractors and value for taxpayers.**
- **Identify and penalise below-cost bidding or abnormally low tenders, where risk tends to be neglected and incentives for claims are high, generating delays and high cost overruns.**
- **Public clients to be more responsible for the costs of tendering. A fair mechanism to distribute costs and risks between clients and contractors needs to be established.**

7 | Bibliography

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8 | Appendix

Questionary

1. Please select the size of your company, according to the number of employees.
2. What was your company's turnover for 2020?
3. Does your company bid for public or private tenders?
4. On average, how many public tenders does your company bid for per year?
5. On average, how many private tenders does your company bid for per year?
6. On average, how many public tenders does your company win per year?
7. On average, how many private tenders does your company win per year?
8. Which pricing method do you mostly use for bid price estimation?
9. Is your approach to pricing private tenders different to your approach to public tenders? If so, please state how and why.
10. Please describe how you assess risk when bidding for public tenders.
11. Is your risk assessment approach different for private tenders? And if so, please explain how and why.
12. When calculating pricing for public tenders, on average, what percentage is added to the 'project delivery cost' for contingency against risk? (See example above)
13. When calculating pricing for private tenders, on average, what percentage is added to the 'project delivery cost' for contingency against risk? (See example above)
14. On average, for public tenders, what percentage is added to the project delivery cost + risk (subtotal in the example above) to cover business overhead?
15. On average, for private tenders, what percentage is added to the project delivery cost + risk (subtotal in the example above) to cover business overhead?
16. What percentage of your company's annual turnover is spent on business overhead ((Total Business Overhead/ Annual Turnover) x 100)?
17. When calculating pricing for public tenders, on average what percentage margin do you apply?
18. When calculating pricing for private tenders, on average what percentage margin do you apply?
19. On average, how many public tenders does your company bid for per year?
20. On average, how many public tenders does your company win per year?
21. Which pricing method do you mostly use for bid price estimation?
22. Please describe how you assess risk when bidding for public tenders.
23. When calculating pricing for public tenders, on average, what percentage is added to the 'project delivery cost' for contingency against risk? (See example above)
24. On average, for public tenders, what percentage is added to the project delivery cost + risk (subtotal in the example above) to cover business overhead?
25. What percentage of your company's annual turnover is spent on business overhead ((Total Business Overhead/ Annual Turnover) x 100)?
26. When calculating pricing for public tenders, on average what percentage margin do you apply?

27. On average, how many private tenders does your company bid for per year?
28. On average, how many private tenders does your company win per year?
29. Which pricing method do you mostly use for bid price estimation?
30. Please describe how you assess risk when bidding for private tenders.
31. When calculating pricing for private tenders, on average, what percentage is added to the 'project delivery cost' for contingency against risk? (See example above).
32. On average, for private tenders, what percentage is added to the project delivery cost + risk (subtotal in the example above) to cover business overhead?
33. What percentage of your company's annual turnover is spent on business overhead ((Total Business Overhead/ Annual Turnover) x 100)?
34. When calculating pricing for private tenders, on average what percentage margin do you apply?
35. For any reason, has your company ever submitted a bid price for a public tender at or below cost? If so, please explain why.
36. On average, in what percentage of your public tender bids have you submitted a price at or below cost?
37. Based on your company's experience, do public tender evaluations tend to reward low bid prices, rather than the quality of the proposed work and realism regarding cost and duration of the project?
38. In your opinion, do the current evaluation criteria for public tenders incentivise below-cost bidding?
39. We'd love to hear any views you have on the subject of public tendering practices and their impact on construction sector profitability. If you would like to add something to your answers, please use the box below.

Thank you.

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