

Lessons from Iraq's 2009 Oil Auctions

Iraq's oil field auctions offer important lessons to those allocating oil rights on the benefits of well-designed auctions and the effects of uncertainty. In 2009, Iraq was emerging from the second Gulf war and one of its earliest priorities was the revival of its oil fields. Auctioning service rights to the fields was the most efficient way to allocate them in the presence of uncertainty. The auctions were unique in terms of their scale, the quality of information surrounding the fields and their importance in rebuilding the country. They were designed as sealed-bid, first-price procurement auctions to achieve the best possible terms for the government. The June round of auctions was a failure, with only the largest Rumalia field being allocated. The December round of auctions was more successful, allocating a further seven fields of varying sizes. The failure of the initial round of auctions, and subsequent success of the latter, illustrates the importance of uncertainty in staging oil auctions and the potential for them to achieve favourable outcomes for governments.

1. Iraq Overview

At the time of the 2009 auctions Iraq was emerging from a period of intense conflict. This was the latest in over three decades of violence, stretching back to the Iran-Iraq war of 1980-88. Oil has played a major role in Iraq's history, with 115 billion barrels of proven reserves in 2008 placing it in the top five countries by reserves in the world. Oil production accounts for the largest single component of GDP, and almost all government revenue (IMF, 2010). The auctions represented a major milestone for the fledgling economy in its return to peace, being held conspicuously on 30th June: the same day that American troops left Iraq's cities. They also represented a significant structural change in Iraq's oil sector, which had been run by the state-owned Iraq National Oil Company since 1972.

2. The Use of Auctions

The rights to service Iraq's oil fields were auctioned as this was the most efficient way to allocate them where information on the oil fields was poor and the potential for corruption was high. Auctions are a formal and transparent method of allocating and pricing scarce resources when there is incomplete information about bidder preferences. The success of an auction depends on how well it is designed to reveal this information. Oil fields often have bidders with private

information, both about the geological nature of the field and the costs and technology associated with their extraction. In developing countries oil fields are also at risk of corruption, due to the rents involved. As a result, auctions are often a better way of allocating rights than the alternatives of first-come-first-served negotiations or administrative tenders. Such methods reveal information less efficiently and are more vulnerable to corruption.

3. The Available Information

The purpose of a well-designed auction is to efficiently allocate products when there isn't complete information about the preferences of the bidders. Two aspects of bidder's preferences are important: how they are interdependent across bidders, and how they are interdependent across the products being auctioned. In Iraq's case both types of interdependence were less than in a typical oil auction, which shaped the design of the auction and helped achieve the favourable terms for the government.

In most oil auctions the preferences of bidders are quite interdependent. Usually there is significant uncertainty about the amount of oil available and the cost of extracting it. Although the bidders value the oil similarly, information about it is split between bidders with their own geological surveys. Therefore the value of the field to one bidder depends on its value to others, who may have better information. A well designed auction will reveal this information and in doing so bid up the price.

In Iraq's case the preferences of bidders were relatively independent as the fields were already well-known. All fields had been surveyed and some had been discovered up to sixty years before. Each field was easily accessible with current technology which reduced uncertainty about extraction costs. The fields offered in the June 2009 auctions were "brownfield" sites that had been in operation until interrupted by conflict, and covered 80% of Iraq's existing output. The "greenfield" December fields were less developed, but still benefited from predictable and accommodating geography (see figure 1). As a result the value of each field to the bidders were not as dependent on the private information available to others. The brownfield sites should have been easier to auction but this was not the case, as discussed in section 5.

In Iraq's case the preferences of bidders were also independent because the real source of uncertainty – political stability – was shared by all. In June 2009 violence had fallen from the pre-Surge levels of 2007, but civilian casualties were still in the order of 500 per month (IMF, 2010). The Hydrocarbon Act had not been passed, which was designed to regulate production sharing agreements

with foreign firms and reduce the role of the Iraq National Oil Company. As no bidders had more information about this than others, their preferences remained independent. Revealing this information was not paramount in designing the auctions, hence the first-price sealed bid structure discussed in section 4.

In some oil auctions the preferences of bidders may also be interdependent across the fields on offer. A starting point is that the value of a block of fields is the sum of its parts. Its value may sometimes be less, if bidders face capacity constraints. Its value may also be more, if bidders hold neighboring fields or want to avoid inefficiencies arising when two firms draw oil from a common pool. A well designed auction will reveal these dependencies and allocate fields to the bidder valuing them the most.

In Iraq's case the preferences of bidders was also relatively independent. For each bidder the value of a field was usually the sum of its parts. This is because no bidders held neighboring fields. It was thus less important that Iraq's auctions be designed to reveal this information, hence the sequential structure discussed below.

Iraq Oil Fields to be Auctioned: June and December 2009				
Field	Reserves (billion bbl)	Year Discovered	2009 Prod. 1,000 bbl/d	Min. Prod. 1000 bbl/d
<i>June 2009 Bidding Round (brownfields)</i>				
Rumaila	17.8	1953	956	1,750
West Qurna, Phase I	8.6	1973	258	600
Zubair	4.1	1949	195	400
Kirkuk	8	1927	416	600
Bai Hassan	2.4	-	160	220
Missan	2.6	-	100	275
<i>December 2009 Bidding Round (greenfields)</i>				
West Qurna, Phase II	12.9	1973	0	-
Majnoon	12.6	1975	55	-
Halfaya	4.1	-	3	-
Gharaff	0.8	-	0	-

Badra	0.1	-	0	-
Qayarah	0.9	-	2	-
Najmah	0.9	-	0	-
Qamar	-	-	-	-
Gullabat	-	-	-	-
Naudman	-	-	-	-
Khashm al-Ahmar	-	-	-	-
East Baghdad	8	1976	-	0.4
Kifi	-	-	-	-
West Kifi	-	-	-	-
Merjan	-	-	-	-

Figure 1: Service contracts on offer in Iraq's June and December 2009 auctions (Special Inspector General for Iraq Reconstruction, EIA, Reid 2009)

4. The Auction Structure

The structure of an auction dictates how each bidder's information is revealed, and is crucial in determining the eventual price and allocation. The companies were bidding for the right to service the oil field (Technical Service Contracts), rather than the more usual practice of leasing the oilfields directly. Bids were a weighted average of the price the firms would receive for each barrel, and the amount of production that could be achieved. The government set a private reservation price which ultimately played an important role in the auction. The auctions were also conducted publicly, to satisfy popular interest and dissuade any allegations of corruption. This structure is thought to have yielded a good price for the Iraqi Central Government.

Iraq's 2009 oil auctions were first-price, sealed-bid, sequential procurement auctions. In first-price auctions the winner pays their own bid, in contrast to second-price auctions where the winner pays the runner-up's bid. First-price auctions provide an incentive to bid slightly worse than one's true value, while second-price auctions provide an incentive to reveal one's actual value. First-price auctions are thus more effective when bidder's preferences are relatively independent. First-price auctions are also more appropriate in public settings such as Iraq's where explaining why a winner pays less than their bid may be difficult.

In sealed-bid auctions each bidder only observes their own, while in open auctions all bids are visible. Open bidding is more appropriate when bidder preferences are interdependent, as the bidding process will reveal information. However, they are more open to collusion. In contrast, sealed bids are more appropriate when bidders are different and risk averse. In this case, strong bidders may wish to cast a very aggressive bid to ensure they win. In Iraq's case where preferences were independent, there were concerns about corruption, and bidders were varied (some motivated by both energy security and profits, eg CNPC) the sealed bid auction was more appropriate.

In sequential auctions each oil field is auctioned separately, while in simultaneous auctions the fields are auctioned at the same time. Simultaneous auctions are more complicated, but reveal more information about how combinations of fields are valued. This often raises the price and allocates them more efficiently. They are appropriate when bidders' preferences are interdependent across fields. In Iraq's case, assuming bidder preferences were independent across fields the sequential structure was appropriately simple. However, as the fields were so large bidders might have faced budget constraints. A simultaneous structure could have improved the allocation (see the case of Venezuela discussed in Cramton, 2007).

In procurement auctions the bidders compete to offer a service at the lowest price, while in regular auctions bidders are competing to buy at the highest price. In Iraq firms were bidding to service each oil field for 20 years, rather than for direct leases as is more usual. This meant the fields remained the property of the Iraqi state, and the foreign companies would pump the oil for a fixed price per barrel. The majority of the rents from the oil produced thus accrued to the Iraqi state, potentially setting a precedent for weighting such auctions in the favour of governments.

Bids in these auctions were made on a weighted combination of both the price that the bidders would receive for each barrel produced, and the plateau rate of production that would be achieved. A minimum level of production was set, 1.5-2.5 times existing output, and firms were paid a fixed price for each barrel produced over this threshold. The firms were also compensated for their extraction costs. This raises questions about moral hazard and inaccurate reporting of costs. One reason why this may have been included is because extraction costs were relatively certain for these fields, as opposed to other less accessible assets.

Gaining public support

Finally, the auctions were very publicly televised. The June round was broadcast from the ballroom of the Rashid hotel, on the day American troops were to leave Iraqi cities. This was done to dissuade any allegations of corruption, and to

satisfy public interest in a major checkpoint in reconstruction. There was also a game-show element to the broadcast, with twenty minutes given between each auction before bidders submit their bid into a large plastic box on stage. The bids were then broadcast onto a large screen, before the red envelope containing the government's reservation price was revealed.

5. The Outcome

Despite the unsuccessful June round, the Iraq government did well from the auction process. The June round of auctions failed with only the largest Rumaila field being allocated on the day, albeit on favourable terms. Two other fields were allocated after the auctions. The December round was more successful, with favourable agreements on a further seven fields being reached. The favourable terms can be attributed to the size of the fields, the predictable geography and an incentive to be present in the country. The importance of uncertainty is illustrated by the location of the successful placements and the improved performance of the second round.

The June round of “brownfield” auctions failed with only the largest Rumaila field being allocated. Of the six oil fields on offer, three received only one bid. The bids on these three were between four and ten times the government’s reservation price. Rumaila, the successful field, was eventually allocated to a BP/CNPC joint venture after the companies agreed to reduce their requested price from \$3.99 to \$2 per barrel. The field, the fourth largest in the world, was at the time operating at one-third of its capacity. The West Qurna Phase I and Zubair fields were later settled by negotiation on favourable terms. The production rate on the winning West Qurna Phase I bid was nearly four times the minimum target. This may have been an unintended consequence of the bid scoring system taking a weighted average of the fee and plateau production rate. It is unclear whether this will be in the long-term interest of Iraq.

The December round of “greenfield” auctions was more successful. Figure 2 outlines the details of the seven fields that were successfully allocated. The East Baghdad field received no bids due to ongoing violence in the area. The comparative success of the second round of auctions has been attributed to a reduction in uncertainty. Although the fields offered in the second round were less developed than in the first, more information about the government’s reservation wage was revealed. More information about other firms and their willingness to operate in Iraq may have also affected second-round bidding.

The favourable terms achieved by the government were due to the auction process, the size of the fields, the predictable geography and an incentive to be present in the country. The well-designed auctions had more success than could be expected from negotiations or tenders. The size of the fields permitted economies of scale and offered oil security for some foreign state-owned companies. The predictable geography reduced the risk premium demanded by the firms. The incentive to be present in the country was driven by the potential for exploring the country’s western desert, and for being well placed for future contracts for technological expertise.

The process illustrated the importance of uncertainty in auctions, through the location of the successful placements and the improved performance of the second round. The successfully allocated fields were almost all located in the more stable southeast region surrounding Basra. In contrast, fields in the most conflict-prone regions received no bids at all. Although the geological risk in the contracts was low, security and political risk still played a major role. The improved performance of the second round can be attributed to the reduced uncertainty around the government's reserve price from the first, and the discovery of the willingness of other firms to operate in Iraq. Political and security risk remains an important consideration, with continuing sectarian violence and oil wealth disproportionately distributed amongst the Shi'ite south and the Kurdish north at the expense of the Sunni minority.

Iraq Oil Field Auctions: June and December 2009				
Field	Winning Bidders	Service Fee \$/bbl	2009 Prod. 1,000 bbl/d	Target Prod. 1000 bbl/d
<i>June 2009 Bidding Round (brownfields)</i>				
Rumaila	BP, CNPC, SOMO	2	1,000	2,850
West Qurna, Phase I	ExxonMobil, Shell, NOC	1.9	270	2,325
Zubair	Eni, Occidental, Kogas, Misan Oil	2	205	1,200
<i>December 2009 Bidding Round (greenfields)</i>				
West Qurna, Phase II	Lukoil, Statoil, Oil Exploration Co.	1.15	0	1,800
Manjoon	Shell, Petronas, Misan Oil	1.39	55	1,800
Halfaya	CNPC, Petronas, Total, South Oil	1.39	3	535
Gharaff	Petronas, JAPEX, North Oil	1.49	0	230
Badra	Gazprom, Kogas,	5.5	0	170

	Petronas, TPAO, Midlands			
Qayarah	Sonangol, Nineveh	5	2	120
Najmah	Sonangol, Nineveh	6	0	110

Figure 2: Winning bids in Iraq's June and December 2009 auctions (Special Inspector General for Iraq Reconstruction, EIA, Iraq-businessnews.com)

6. Implications for future auctions

The 2009 oil auctions allocated service contracts for some of Iraq's largest oil fields, on favourable terms for the Iraqi government. This was due to the well-designed auctions, the large reserves on offer, predictable geography and an incentive to be in the country for the future. They illustrate that auctions can yield better results than those reasonably expected from negotiations or tenders. They also show that reducing uncertainty may improve the likelihood of a successful auction. Security and political risk meant that the fields in the most violent areas of Iraq were not bid on at all. Uncertainty around the government's reservation price led to numerous unsuccessful bids in the first round. This was rectified in the second once information about this reservation price had been revealed.

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