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- A Dedicated Auction Design for Real Estate Sales -

In Germany, real estate is rarely sold in auctions. While in the Anglo-Saxon world, online real estate auctions are quite common, the potential bidder for real estate in the German-speaking world could be described as a timid fawn – prepared to run when the air bears only the faintest scent of a sales procedure akin to an auction. It is exactly with this type of situation in mind that we have designed an auction procedure that combines the idea of the seller and the buyer equitably meeting in the middle with the usual advantages of an auction for the seller.

The real estate market is dominated by brokers, whose added value consists in matching sellers and buyers. Depending on the state of the market, the broker is paid by either side. Reportedly, particularly shrewd brokers collect fees from both sides; however, such cases likely remain the exception. Be that as it may, the brokerage fee is calculated as a percentage of the final sales price; it does not represent any increase in the sales price that the broker might have achieved. This means that the broker's direct incentive to drive up the sales price is rather limited: He will receive a percentage of the *order of magnitude* of the achievable price in any event. To the extent that the broker was commissioned by the seller, however, he has an indirect incentive: What matters to him is the *exclusivity* of being the only one mandated to sell this particular piece of property. To obtain this exclusivity, he must convince the seller that he will achieve the highest sales price. If he fails to convince the seller, he will lose exclusivity with respect to this property.

The most important quality of a real estate broker is the outreach into the market that his reputation affords him: The more people the broker is able to show the property, the higher the price he is likely to achieve – simply for statistical reasons. This naturally requires – in the internet age more than ever – certain skills of the trade, such as a flawless presentation of the property in the exposé, professionally managed showings, etc. In this context, the tool of auctions hardly plays a role in Germany, even though it clearly promises the best price for the seller.

Quite the opposite is true in America: As soon as the broker has generated a sufficient number of potential buyers, he will invite all of them to an online auction. The group of bidders is closed; only those may participate who have been invited, have shown genuine interest and have passed a solvency test. In terms of auction design, a dynamic English auction is typically chosen, though a Dutch auction or even a Klemperer auction are also conceivable. The seller may specify a reserve price ex ante to ensure that the outcome of the auction becomes legally binding only if the highest bid exceeds the reserve price. Such a procedure generates the greatest possible revenue for the seller.

And yet auctions are very unpopular in Germany. Approaching potential buyers with the intention of staging an auction, brokers will often get indignant responses from the interested parties, suggesting that having them bid against each other borders on indecency. What is accepted as normal business



procedure in the Anglo-Saxon world will indeed provoke indignation in Germany: the comparison of offers in order to eventually achieve the best price. However, this reflexive outrage does in fact have a rational core.

Any bilateral negotiation situation between a seller and a buyer revolves around the task of finding a price that lies somewhere between the indifference price of the seller (the price below which he will not sell) and the indifference price of the buyer (the maximum he is prepared to pay). The precondition for any deal to occur at all is that the seller's indifference price lie above the buyer's. A game theorist will call the spread between the two indifference prices the 'cake' of the negotiation. The resulting price, which concludes the negotiation and which lies between the two indifference prices, marks the partition of the cake between seller and buyer. If both parties meet "equitably" *in the middle* between the indifference prices then, in other words, they are sharing the cake 50:50. Yet this "fair" solution would presuppose that both of them know both reservation prices – their own as well as their opponent's. This will naturally not be the case in any real-world setting. Conventional negotiation strategy much rather requires that each party keep their reservation price secret as long as possible.

In such a situation, the *concealed exchange of bids*¹ is a fine auction design, which can bilaterally enable an equitable outcome: Both parties write down a price – the seller quotes an ask price and the buyer quotes a bid price. Both bids are opened simultaneously. If the bids 'overlap', i.e. if the bid price exceeds the ask price, both parties accept the average of the two values as the final sales price. If there is no overlap, no deal is made. This procedure accommodates the interests of potential buyers, who believe in a 'true value' of the property and who, suspicious of profiteering, by all means wish to avoid letting the market 'find' that value. Unfortunately though, this procedure can be executed with only one potential buyer – after that, the property is most likely sold. This, however, runs contrary to the interests of the seller, who will likely have several interested parties at hand – at least if the broker has done a good job.

What happens in an auction though? Well, an auction identifies the bidder with the highest willingness to pay, who will then receive the property at a price which essentially corresponds to the indifference price of the bidder with the second highest willingness to pay. This is the price at which – in an English auction, for example – the second but last bidder folded. This implies that the part of the cake which the winner receives is different from what he would end up with in a concealed exchange of bids: In an auction, the winner only gets 'what the competitors leave for him'. If the winner's and the second but last bidder's indifference prices lie close to each other, then only this small difference remains as the winner's part of the cake. All the rest of the cake goes to the seller. This explains why it is indeed quite rational for potential buyers who want their half of the cake to back away from an auction.

The following auction design is intended to induce even those potential bidders to participate in an auction who consider half of the cake as their fair share: As in the concealed exchange of bids, the seller and *all* potential buyers write down bid and ask prices, respectively. All bids are opened simultaneously

¹ In the game-theoretic literature: "Harsanyi's compressed Nash-Zeuthen game".



and compared. If the highest bid price falls short of the ask price, no sale takes place. If, by contrast, the highest bid price exceeds the ask price, the property is sold to this bidder at a price that lies half-way between this bid and the ask price – just as in the concealed exchange of bids. We call this procedure the **discrete exchange of bids**.

The elegance of this procedure lies in the fact that the seller and the buyer indeed share the cake equally. This outcome may of course appear extremely costly to a seller who ex post compares it to the possible result of a traditional auction: He ends up paying almost half the cake merely to induce the bidders to participate. Yet this is exactly what is fair about the procedure: Without the promise to share the cake equally, there would have been no auction in the first place, given the German real estate market populated by ‘timid fawns’. Moreover, to the layperson, the *discrete exchange of bids* does not feel like a classic auction because it misses the element of outbidding each other – which further lowers the barriers to participation.

Practical experience shows that sellers must be given a massive disincentive to exploit the procedure by entering a very high indifference price. If the seller wins, he thus reduces the buyer’s share of the cake. If he loses, he can still sell the property in a different manner or even approach one of the participating bidders for a renegotiation. But such behaviour runs squarely against the principal idea of the *discrete exchange of bids*: The procedure only works well (in the sense of being credible and attractive to bidders) if a seller who exaggerates his ask price is exposed to the pain of having burned up the potential buyers (mere ‘sales options’ from his perspective) – at least those who participate in this particular auction. For this reason, we have developed three arrangements, which in practical applications have proved critical to the success of the procedure:

- From the bidders’ perspective, it is imperative for them to unequivocally signal to the seller that their interest in the property does not extend beyond the discrete exchange of bids, even if the property should not be sold in the course of the procedure (in which case there will have been no overlap of bid and ask prices).
- From the broker’s perspective, it makes sense to charge the seller the brokerage fee even in case the discrete exchange of bids produces no sale because the offers fail to overlap. The agreement between the broker and seller should provision that the brokerage fee is then calculated as a percentage of the seller’s ask price. (In case the bids do overlap, the fee should be specified as a – correspondingly higher – percentage of the cake.)
- The seller, finally, should enter a discrete exchange of bids arrangement with the broker only once potential buyers have submitted bids that are acceptable to him. Then the highest of these already submitted bids constitutes the seller’s ‘fallback option’ and effectively also his indifference price. Whether he makes this bid his ask price in the *discrete exchange of bids* is ultimately up to him.

Even though the *discrete exchange of bids* may not appear entirely intuitive and may therefore require some effort to explain to the seller and to potential bidders, its fairness on both sides remains compelling. It allows the seller to incorporate all alternatives in finding the price; nevertheless, the buyer



can rest assured that he will not be robbed of 'his half of the cake' by the application of some bidding procedure that exploits the competition among the buyers for the benefit of the seller.

Finally, for the broker, the application of the *discrete exchange of bids* can represent a differentiating argument in the acquisition of potential sales objects for which he would like to be granted exclusivity by the sellers.