

# Self-assessed property tax

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**Overview** Consider a property tax scheme, where a land owner specify land value themselves, and are taxed 3 % of the value every year.<sup>1</sup> The value is reported to the government, and is kept constant until a new value is reported.

The posted value of land is then effectively an asking price. Anyone can buy the land (and the structures on it) for the asking price. The transfer of ownership happens immediately, and the new owner may set any price they choose. The current land users then have 3 months to vacate.

**Players** The game is over 1 piece of land, with 2 players: a current owner, and a market, consisting of all other prospective land owners.<sup>2</sup> Call these players “land-lord” and “market”. We assume the property starts out in the hands of the land-lord.

**Actions and strategies** Model this as a sequential game. In every round, the land-lord sets an asking price, and the market places a bid. The player with the highest bid takes control of the property. If the market wins, the land-lord gets the full value of their bid.

One strategy for the land-lord may be to set a high price (higher than the expected utility), hoping someone else will pay that price, giving a profit. Another strategy is to set a very low price, reducing tax costs, hoping no one will buy, but risking losing the property, and having to buy it back later.

**Utilities** Every month they retain ownership, the landlord get 30 000 SEK of utility they, and pay 0.25 % of their current asking price in tax.

Losing the property, and having it be lost for more than 3 rounds (“getting vacated”) costs 20 000 SEK. If the land-lord buys back within 3 rounds, no switching cost is incurred.

Further, the utility of owning of the property increases for the owner the longer they hold it<sup>3</sup>, so every 12 rounds of ownership the utility increases by 3 %. If the land-lord is vacated, the utility goes back to 30 000 SEK per round.

The market expects to be able to get 35 000 SEK of utility per month, with the same switching cost and projected value increase.

The game is played for 240 rounds (20 years), to avoid infinite growth problems.

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<sup>1</sup>Sometimes called Harberger tax. Inspired by [https://vitalik.ca/general/2018/04/20/radical\\_markets.html](https://vitalik.ca/general/2018/04/20/radical_markets.html)

<sup>2</sup>This captures the rational game theory actors better than more granular approaches, since we may well assume the market is, in some sense, rational, and will offer only a price which the market (meaning some entity) thinks it can get back from development of the property.

<sup>3</sup>This could be sentimental value, or value of continued development towards long term plans