Hybrid forms of sale: valuation and risk for housing corporations

By Bert Kramer[1]

Introduction

One of the biggest problems on the Dutch housing market is the large gap between the rental and the owner-occupied market. Since the latter is characterized by high prices due to limited supply, first-time buyers often face an affordability issue. Furthermore, in the social rental sector there exist long waiting lists. To promote home ownership and greater freedom of choice for their customers, Dutch housing corporations have developed several hybrid forms of sale over time. To overcome affordability problems, all of these types include a discount on the initial sales price. These discounts are linked to a number of conditions on the sales contract, ranging from sharing the future profit (or loss) at turnover [2], repaying the (indexed) discount at turnover or only buying the dwelling itself, but leasing the land it is situated on. As such, these forms of sale are hybrid as they combine aspects of both buying and renting. Both the Netherlands Council of Housing, Spatial Planning and the Environment (VROM-Raad 2004, 2007) and the Scientific Council for Government Policy (WRR; Brandsen & Helderman, 2004) promote hybrid forms of sale.

In recent years, a limited number of standardized hybrid forms of sale have emerged. We will discuss three of these types, namely Koopgarant, Koop Goedkoop and Sociale Koop . A shared characteristic is that they are used by more than one housing corporation via a licensing system.

Not much literature exists on the valuation and risk of above-mentioned types of sale from a housing corporation perspective. In contrast to a regular sale where the role of the housing corporation ends after the purchase has been made, a hybrid form of sale involves a lasting commitment of both parties. That is, depending on the type of sale, housing corporations have either the option or the obligation to buy back the house at turnover, or the purchaser has the obligation to pay the housing corporation a certain amount of money somewhere in the future. For internal steering from an economical perspective, housing corporations need to have insight into the economic value of these options and obligations. Furthermore, to establish the profit tax payable to the treasury, housing corporations have to value their assets at economic value, defined as the market value of rented properties. Our first question is therefore how to establish this value. In Kramer (2008) we apply an analytic approach to calculate economic values for the three sales types. In section 2 we use an example to compare the outcome of this approach with current valuation practice, and we analyze the sensitivity of the values to the assumptions. We conclude that in most cases, current valuation practice is not a very good approximation of the economic value, and is therefore inadequate for internal steering and fiscal reporting. Furthermore, housing corporations are not only interested in the current economic value, but also in the potential financial risk. Should they hold an additional risk buffer for their hybrid sales portfolio, or can they use up all sales revenues? To answer this second question, in section 3 we look at the risk profile of Koopgarant, Koop Goedkoop and Sociale Koop.

1 ORTEC Centre for Financial Research. P.O. Box 4074, 3006 AB Rotterdam, The Netherlands. Readers interested in the working paper with all details on this research project can contact the author at bkramer@ortec.nl.
2 The future moment when the original buyer sells his home.

Hybrid forms of sale: description[3] and valuation

In line with economic theory, Kramer (2008) determines the economic value of a hybrid form of sale as the sum of the initial sales revenue and the present value of the expected payments after the initial sale. The expected future payments are influenced by the profit share for the customer, the discount given to the buyer, the habitation period, the discount rate, the yearly increase of house prices, and for Koop Goedkoop the ground rent and price inflation. We apply the analytic valuation formulas proposed in Kramer (2008) to an example to get insight into the sensitivity of the values for the assumptions, and to compare the outcomes with the (book) values currently used by housing corporations. As hybrid sales portfolios are not publicly traded, we are not able to compare our economic values with actual values observed on the open market.

Our example is based on one single dwelling with the following characteristics:
- Free market value at time of initial sale: € 200.000;
- Initial discount: 30% for all types;
- 50-50 profit / loss sharing Koopgarant;
- Expected price inflation: 2%;
- Discount rate: 6%.

We calculate economic values at the time of initial sale including the initial sales price of € 140.000. We use an initial discount of 30% in order to make the different sales types comparable. Koop Goedkoop has an initial discount of 30%.

Koopgarant (Socially-bound ownership)

Koopgarant is the successor of the concept of socially-bound ownership (Maatschappelijk Gebonden Eigendom), first introduced in the 1970s. Tenants buy the dwelling at a discount of the free market value on the condition that they will later resell it to the landlord at the same discount and subsequently share profit or loss. The housing corporation is obligated to buy back the dwelling. Koopgarant is the most successful hybrid sales type with around 70.000 dwellings offered to the tenants, and around 10.000 dwellings actually sold up to mid-2008. The share of the housing corporation and the purchaser in the value increase (or decrease) of the house depends on the discount on the market value at the initial purchase. The minimum profit and loss share for the purchaser is 50%.

Most housing corporations currently keep the value of the buyback obligation off the balance sheet. This implies a value of € 140.000 (i.e., the initial sales revenue). We calculate economic values for two options after buyback:
• Resell against market value (Koopgarant model A);
• Continue Koopgarant (Koopgarant model B).
In figures 1 and 2, we show economic values as a function of the expected habitation period and the expected house price increase.

From figures 1 and 2, we can conclude that the buyback obligation only has a value of zero in case we assume that house prices remain stable and that the housing corporation will resell the dwelling as Koopgarant after each buyback. In all other cases, the buyback obligation has a positive value. Thus, when house prices are expected to rise, keeping the buyback obligation off balance is too conservative. Furthermore, we can see that for low expected

3 In this section we only give a short description of the three standardized forms of sale. For a more thorough general description, the reader is referred to Noordenne & Vos (2006).

Figure 1. Value of koopgarant model A (resell against marked value)

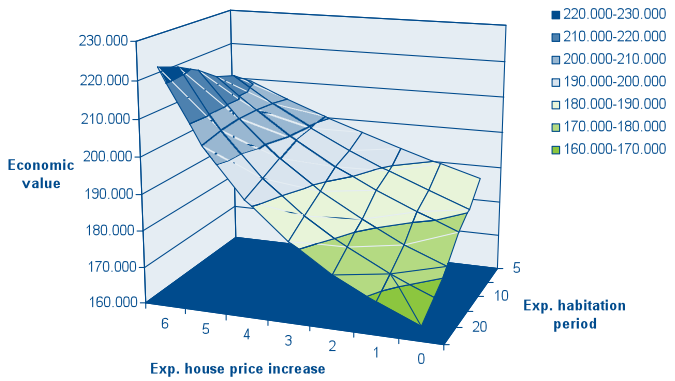
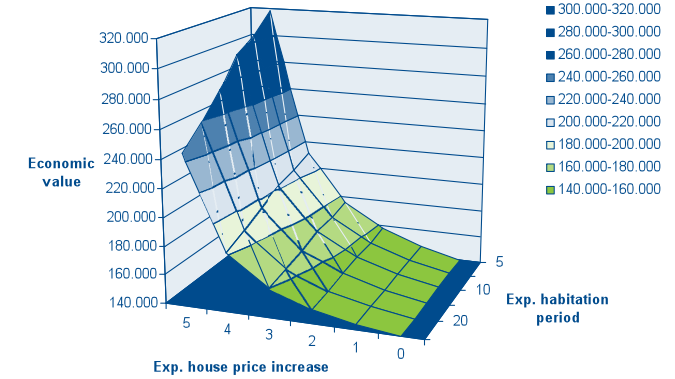


Figure 2. Value of koopgarant model B (resell against marked value)



house price increases, the economic value of reselling against market value is higher than the value of continuing Koopgarant. However, for high expected house price increases, continuing Koopgarant leads to higher economic values. The breakeven point lies around 4%. Finally, for expected house price increases above 4%, the economic value of Koopgarant lies above the free market value of € 200.000.

For low expected house price increases, continuing Koopgarant after buyback leads to the lowest economic values of all types. This is the worst performing type for housing corporations. But still, as long as house prices are expected to rise the economic value of the buyback obligation is positive (i.e., total economic value above the initial sales price of € 140.000).

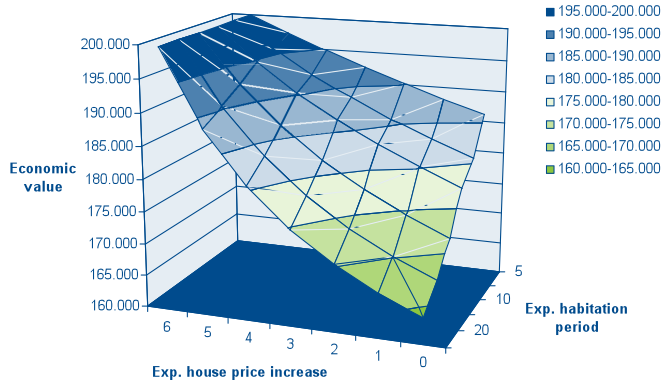
Sociale Koop (Social Purchase)

With Sociale Koop, a tenant buys the dwelling at a discount and repays the (indexed) discount at turnover. The size of the discount is determined by the purchaser. The maximum discount is 65% of the free market value. The repayment of the discount at turnover is not based on the actual resale price, but on the development of a price index based on region and type of dwelling. Since its introduction in 2007, around 100 dwellings have been sold through this concept. Four housing corporations participate.

At turnover, the purchaser is obliged to offer the dwelling to the housing corporation. The housing corporation is not obligated to buy however. If the housing corporation decides not to buy, the purchaser is left with selling the dwelling on the free market. He receives the entire value of the dwelling and has to pay the indexed discount back to the housing corporation. In that case, the second purchaser buys from the first purchaser without a discount. The second purchaser is therefore not bound to the housing corporation.

Current valuation practice is to put the nominal value of the claim on the balance sheet as an asset. As the housing corporation is not free to decide when to collect the claim but is dependent on the purchaser, this is not equal to the economic value. In figure 3, we show the economic values for our example.

Figure 3. Value of koopgarant model A (resell against marked value)



We can see that the economic value only equals the nominal value of the claim in case the expected yearly house price increase is equal to the discount rate (6% in this example). For lower expected house price increases, current valuation practice overestimates the economic value of the claim. When we assume a 25 year habitation period (the current average for single family homes) and stable house prices, the economic value is only € 164.000 including initial sales revenue. That is, the nominal value of the claim would be € 60.000, while the economic value is only € 24.000.

Koop Goedkoop (Purchase Inexpensive)

In the Koop Goedkoop concept, a tenant buys the dwelling but only leases the land. The value of the land is standard assumed to be 30% of the total free market value of the home. Thus, the purchaser initially pays 70% of the free market value. He receives an additional discount on the market ground rent in the first 10 years after the sale. Both the interest payments on the mortgage and the ground rent are tax deductible. Since its introduction in 2004, around 2.000 dwellings have been sold through this concept. Sixteen housing corporations participate.

At turnover, the purchaser is obliged to offer the dwelling to the housing corporation, but the housing corporation is not obligated to buy. If the housing corporation decides not to buy, the purchaser is left with selling the dwelling on the free market. In such a scenario, the second purchaser will still lease the land from the housing corporation. The two standard models are:

Model A: each subsequent buyer is entitled to the discount on the ground rent;
Model B: only the first buyer is entitled to the discount on the ground rent.

Current practice is to put the nominal market value of the land on the balance sheet as an asset, irrespective of the model used. Note that this leads to exactly the same balance sheet value as in the Sociale Koop concept defined by a fixed 30% discount, even though the expected future cash flow patterns are different. In figures 4 and 5, we show the economic values for both models.

The economic value of a Koop Goedkoop contract is strongly influenced by the type of model chosen and by the expected habitation period. For model B, the economic value after initial sale equals the nominal market value of the land when we assume a yearly house price increase of around 1.7%. For model A, the economic value is roughly equal to the nominal value with a 3% yearly house price increase for long habitation periods, and with over 4% yearly house price increases with short habitation periods. Koop Goedkoop model B is the most profitable type from the perspective of the housing corporation, as the economic value is the highest of all types for all cases.

Measuring financial risk

In this section we extend our example from the previous section to evaluate the effects of different types of sale in a dynamic stochastic sense. Economic values are based on many assumptions and housing corporations run risk(s) as realizations can substantially differ from these assumptions. Important risk factors are, for instance:
Development of house prices;
a. Price inflation;
b. Changes in the expected habitation period.
c. Changes in these risk factors will lead to variation in the actual cash flows (direct return) and to changes in the economic value (indirect return). Higher sensitivity to changes in these risk factors means larger risk buffers for housing corporations.

We analyze the sensitivity of the economic values for changes in these external parameters by means of Monte Carlo simulation. The stochastic scenarios of house price changes and

Figure 4. Value of koopgarant model A (resell against marked value)

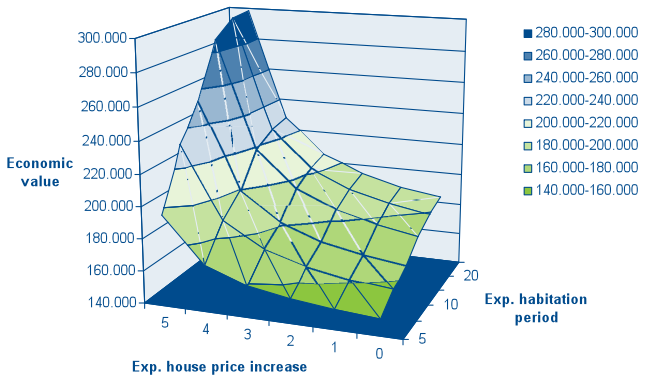
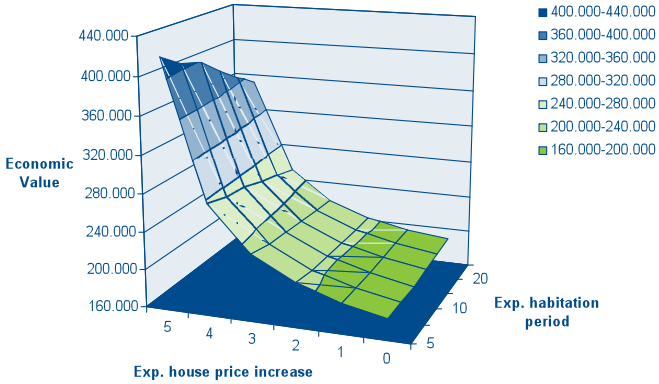


Figure 5. Value of koopgarant model B (resell against marked value)



price inflation are generated with a Vector Auto Regressive (VAR) model estimated on annual time series data for the period 1970-2007. This means that volatilities, correlations and dynamics (i.e. auto- and cross-correlations) are in accordance with the historical statistics. The expected values for the different variables are overruled, based on current market and forward looking information. For each of the stochastic scenarios the economic value is calculated. In this way, a 'cloud' of possible outcomes is generated. The spread of this cloud represents the sensitivity for economic parameters. Furthermore, we can extract probability distributions from scenario clouds. These probability distributions give the likelihood of a certain value given economic uncertainties. To show the sensitivity of the hybrid forms of sales to above-mentioned risk factors, we will present 90% confidence intervals for the economic value.

Table 1 Economic values and risk assuming 14 years expected habitation period and 4% expected yearly house price increase

	downside	upside	range	std. dev.
Sociale koop	156,414	**252,096**	95,681	34,400
Koop Goedkoop A	196,628	283,714	**87,085**	**30,391**
Koop Goedkoop B	**224,514**	**392,460**	167,946	62,855
Koopgarant A	**145,618**	305,087	159,469	57,333
Koopgarant B	159,093	332,250	**173,157**	**88,162**

Table 2 Economic values and risk assuming 8 years expected habitation period and 4% expected yearly house price increase

	downside	upside	range	std. dev.
Sociale koop	164,765	248,293	83,527	24,689
Koop Goedkoop A	172,905	236,822	**63,917**	**23,783**
Koop Goedkoop B	**225,253**	**421,523**	196,270	77,826
Koopgarant A	**154,249**	293,461	139,212	41,149
Koopgarant B	162,897	381,372	**218,475**	**106,349**

Table 3 Economic values and risk assuming 14 years expected habitation period and 2% expected yearly house price increase

	downside	upside	range	std. dev
Sociale koop	155,221	228,127	72,906	26,212
Koop Goedkoop A	169,455	225,793	**56,338**	**18,392**
Koop Goedkoop B	**179,615**	**284,536**	104,921	36,393
Koopgarant A	143,629	265,139	**121,510**	**43,686**
Koopgarant B	**132,912**	231,779	98,867	41,661

Table 4 Economic values and risk assuming 8 years expected habitation period and 2% expected yearly house price increase

	downside	upside	range	std. dev
Sociale koop	162,356	233,865	71,510	21,137
Koop Goedkoop A	155,716	**195,119**	**39,403**	**14,042**
Koop Goedkoop B	**173,437**	**293,111**	**119,674**	44,618
Koopgarant A	150,232	269,415	119,183	35,228
Koopgarant B	**130,495**	248,772	118,277	**50,195**

Upside: 5% probability of a value higher than this value; Downside: 5% probability of a value lower than this value; Range: upside – downside; Std. dev.: standard deviation of the economic value.
Green: highest upside / downside; smallest range / standard deviation;
Blue: lowest upside / downside; largest range / standard deviation.

We distinguish four cases: two values for the expected habitation period times two values for the expected yearly house price increase. Like Conijn & Schweitzer (2000), we use 8 and 14 years for the expected habitation period. These are the average number of years Dutch households stayed in their owner-occupied dwelling in the 1990s (14 years for single family homes, 8 years for multi-family homes). For the expected house price increase we

use 2% and 4%. The NVM expects house prices in 2008 to increase by 2% compared to 2007. From 2003 to 2007, Dutch house prices have increased by around 4% on average.
The results are summarized in tables 1 to 4. These tables show the 90% confidence intervals (i.e., downside to upside), the range (width) of these intervals and the standard deviations of the economic value for the five different hybrid forms of sale discussed in the previous section; namely Sociale Koop, Koop Goedkoop model A (repeated discount), Koop Goedkoop model B (no discount 2nd buyer), Koopgarant model A (resale against market value), and Koopgarant model B (continue Koopgarant).
When we look at the risk profile, we can conclude that Koopgarant model B carries the highest risk of the three sales types discussed here. It has the largest ranges of outcomes with high expected house price increases (tables 1 and 2), due to repetitive profit and loss sharing. For low expected house price increased (tables 3 and 4) the downside value is even below € 140.000. In those cases, the housing corporation looses on the buyback and resale. This happens in scenarios with falling house prices and subsequent loss sharing. Koopgarant model A also leads to relatively low downside values. So Koopgarant requires the largest risk buffer of the three sales types discussed in this paper. For Sociale Koop, the sensitivity to economic risk factors is relatively low. However, this low uncertainty also means low upside potential. Koop Goedkoop model A has the smallest range and lowest standard deviation for all cases. So, this type requires the lowest risk buffer.

About the author: Dr. Bert Kramer is employed by ORTEC Centre for Financial Research, Rotterdam. Readers who are interested can reach him via bkramer@ortec.nl

Conclusions

Hybrid forms of sale involve a lasting commitment of both the housing corporation and the buyer. Determining the economic value, expected return and financial risk is therefore more complex than with a regular sale. Up till now, housing corporations do not have sufficient insight into value, return and risk. We have shown that the current reporting approach does not resemble the economic value. For internal steering and for fiscal reporting the economic value should be used. Finally, we also conclude that for housing corporations Koopgarant leads to higher financial risks than Koop Goedkoop and Sociale Koop.

References

- Brandsen, T. & Helderman. J.K. (2004), "Volkshuisvesting", In: Maatschappelijke dienstverlening, een onderzoek naar vijf sectoren, H. Dijstelbloem, P.L. Meurs & E.K. Schrevers (eds.). Wetenschappelijke Raad voor het Regeringsbeleid (WRR) Verkenningen 16. Amsterdam University Press, Amsterdam. Available at www.wrr.nl.
- Conijn, J. & Schweitzer, M. (2000), "Fair Value bij Verzekerd Kopen", Research Report Rigo Research en Advies bv. Available at www.rigo.nl.
- Kramer, B. (2008), "Innovative social sales programs: valuation and risk issues", OCFR Applied Working Paper No. 2008-04, ORTEC, Rotterdam.
- Noordenne, M. van & Vos, M. (2006), "Atlas koopvarianten", Stuurgroep Experimenten Volkshuisvesting (SEV), Rotterdam. Available at www.sev.nl.
- VROM-Raad (2004), "Op eigen kracht. Eigen woningbezit in Nederland", Advice 044, VROM-Raad, The Hague. Available at www.vromraad.nl.
- VROM-Raad (2007), "Tijd voor keuzes. Perspectief op een woningmarkt in balans", Advice 064, VROM-Raad, The Hague. Available at www.vromraad.nl.