

Forced Sales and Farmland Prices

S. Jetzinger, S. Hüttel and M. Odening¹

Abstract - In this paper we analyse agricultural land prices in the federal state of Brandenburg. Our objective is to understand the price formation in foreclosures. Knowledge of the impact of foreclosures is desirable for the determination of mortgage lending values. The empirical analysis is based on a rich data set of land prices in Brandenburg between 2000 and 2011. The treatment effect of forced sales is derived by means of a statistical matching approach. Our results show on average price premia rather than price discounts.

INTRODUCTION

This paper was motivated by the simple but not trivial question: What is a reasonable mortgage lending value of agricultural land? It is essential for creditors to know this value when offering loans to farmers since the mortgage lending value constitutes an upper limit for the loan. It is frequently conjectured that realized prices in forced sales are lower compared to "normal" land market transactions where sellers are not under financial stress (Allen and Swisher 2000). In this paper we aim to explore whether there is a price discount in forced sales and if so, how large is it? According to the literature, the effect of foreclosures can be decomposed into two parts. First, the effect of a pressured sale which likely reduces the realized price compared to an unpressured sale and second, the effect of an auction which may lead to a price premium (e.g., Lusht 1996, Quan 2002). This prevents a clear prediction of the sign and the size of a price effect for enforced land sales in auctions. Moreover, it is expected that price premia / discounts depend on the current market conditions.

In order to measure the impact of foreclosures empirically we use land price data in the state Brandenburg covering the period 2000-2011. They contain both: forced and unforced sales. The identification of a forced-sales-effect is challenging. First, land characteristics vary between the sold land plots. It is necessary to control for these differences carefully. Second, the land market in East Germany evolved dynamically within the last decade showing high rates of price increase. This development may cover a price discount of forced sales. Finally, one may face a self-selection problem such that land sold in foreclosure auctions differs systematically from land sold under non-forced conditions. Thus we have to

create a proper counterfactual. The statistical approach that we pursue in this paper accounts for all three problems.

METHOD

In order to measure the impact of a forced sale on the farmland price there is need to create a counterfactual situation, i.e., what would have been the price if the land was not sold as a forced sale via a public auction? The idea is to select close observations with similar characteristics defined through the covariates such that the counterfactual is taken from the observation sample (Morgan and Winship 2007). This implies that for each forced sale observation we seek a matched counterfactual price to directly compare the prices. A rather simple mean comparison based on all observations would be naïve since it would neglect possible differences in the land characteristics like soil quality.

The commonly known propensity score matching cannot be applied to our dataset since we have no information about the initial owners of the land which is necessary to estimate the probability of being forced to sell land. Instead, we apply a non-parametric approach and use the Mahalanobis metric to measure the similarity between the plots.

DATA

The land price data for the Federal State of Brandenburg are provided by the "Oberer Gutachterausschuss für Grundstückswerte im Land Brandenburg". We focus on the Federal State of Brandenburg because it offers an interesting opportunity to examine one part of the dynamic East German farmland market. The dataset contains information about land prices, soil quality, plot size and the date of sale. The observations can be classified into unforced sales and forced sales. The latter includes only cases with a foreclosure procedure. In the sequel we consider this group as the treatment group. The control group contains all other forms of land transactions like the 'normal' market sales that take place if one farmer ceases production and offers the land either through a non-public auction or via negotiations with other farms and also sales from auctions within the privatisation process.

The original dataset has been modified by several ways before we analyse the impact of forced sales. First, so called unusual sales have been removed. These include transactions between relatives or similar cases which are supposed to be not representative for a regular price building. This left us with 58,464 observations representing a total traded area of 324,145 ha. Unfortunately, we had to omit

¹ Simon Jetzinger: Humboldt-Universität zu Berlin, Department of Agricultural Economics, Germany (jetzinsi@agr.ar.hu-berlin.de).

Silke Hüttel: Humboldt-Universität zu Berlin, Department of Agricultural Economics, Germany (silke.huettel@agr.ar.hu-berlin.de).

Martin Odening: Humboldt-Universität zu Berlin, Department of Agricultural Economics, Germany (m.odening@agr.ar.hu-berlin.de).

more than half of the remaining observations due to missing information about price relevant factors, e.g., soil quality. Overall, the final sample includes 26,786 observations with a traded area volume of 116,787 ha in the period from January 2000 to September 2011. Hence, we analyse about 46 % of the original observations with about 36 % of the original area. The number of forced sales within this sample adds up to 284 (1 %) observations over the whole period.

RESULTS

The Mahalanobis metric was calculated with the regular price influencing factors like soil quality, plot size, day of the transaction, county dummies (Landkreis) and the principal characteristic (arable or grassland). The smaller the Mahalanobis metric between two observations is the more similar are the two observations concerning the mentioned factors. The nearest neighbour matching algorithm uses this distance measure to find for each forced sales observation the most similar unforced sale observation. On average over the years, we find a positive forced-sale-effect of 294 €/ha using the matching procedure whereas the average effect based on a simpler mean comparison is 230 €/ha. The results are shown in table 1.

Table 1. Mean prices and forced sale effect based on the Mahalanobis match.

Year	Matched non-forced price (1)	Mean price forced (2)	Mean price non-forced	Forced-sale effect (2)-(1)
2000	3,258	3,246	2,400	-12
2001	2,222	1,151	2,390	-1071
2002	2,392	2,692	2,450	300
2003	2,303	2,368	2,400	65
2004	2,312	1,960	2,340	-352
2005	1,998	2,595	2,450	597
2006	2,303	1,589	2,470	-714
2007	2,502	3,418	2,620	916
2008	2,969	3,437	3,070	468
2009	3,461	3,183	3,470	-278
2010	3,347	4,070	3,610	723
2011	4,289	5,125	3,960	836
Total	2,781	3,075	2,844	294

Source: Own calculations based on data from the OBERER GUTACHTERAUSSCHUSS BRANDENBURG.

DISCUSSION AND CONCLUSIONS

Contrasting land prices realized in foreclosures to prices from regular land sales, we find that forced sales did not sell at a discount on average. According to the most conservative estimate price quotes in forced sales were about 300 € higher than prices in non-forced sales in Brandenburg in the last decade. This result is somewhat surprising but not contradictory to pricing theory. It is known that two opposed effects interact in the price formation of foreclosures, namely the (negative) liquidity effect of a pressured sale and the (positive) effect of auc-

tions. Our results reveal that the latter effect outweighs the former in Brandenburg's land market. Another interesting finding is that the price premium related to foreclosures is not constant over time. We observe substantially higher price premia since 2006, i.e., the beginning price boom in land markets in the new federal states. This result is in line with earlier empirical findings reported in the auction and real estate literature.

What can we conclude with regards to the appraisal of mortgage lending values? In view of the documented price premium of foreclosures it is tempting to conclude that no price shaving from regular sale values is necessary at all. This ignores, however, the variability of the price difference between forced and non-forced sales as well as the variability in the price levels. In 2001, for example, land put up for a compulsory sale sold at a discount of approximately 50 % compared with regular land market transactions. If the mortgage lending value of land in 2000 was fixed at the current sales price (i.e., 2400 €/ha on average) creditors would suffer a considerable loss in case of a debt default in 2001. This situation is the worst case that occurred in the observation period but extremely risk averse debtors may refer to it. As a general rule, we can state that price shaving of the mortgage lending value should be more pronounced in a downturn market for two reasons: first, the expected price level is likely to decrease and second, the price difference between foreclosure prices and normal sales prices may become negative. Moreover, a constant discount on a current land price is usually not appropriate and the mortgage lending value should be adapted to the expected land market conditions in the credit period.

Nevertheless, these findings need to be interpreted in the light of the limitations of the matching procedure. It was not possible yet to test whether the found differences are statistically significant. Even though this is a very popular method to evaluate many types of effects, it remains a major issue discussed in the evaluation literature. Besides this, the reasons for being in the forced sales group cannot be assumed to be fully independent of the price formation process. Particularly, local land market conditions may lead to a different price function for the forced sales that could not be identified due to data limitations. Future work needs to account for that.

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