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AN INSTITUTIONAL ANALYSIS OF LAND MARKETS

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Abstract

For many years, land markets have been analyzed as though parcels of land were being traded in a frictionless market subject to no rules. To the extent that there were rules which could not be ignored – such as land-use regulations – the effect of these was incorporated as ‘distortions’ to the market. An institutional analysis of land markets, on the contrary, starts by looking at the rules which structure the exchange of rights in land. These are the formal rules regulating such things as access to the market, which rights may be traded and which not, land-use and environmental rules, fiscal rules, subsidies, inheritance rules. Then there are the informal rules, customary practices, taken-for-granted ways of doing things. All those rules create a structure which affects the availability of information, transaction costs (for example risk and uncertainty), organizations for buyers and sellers and brokers, etc. It is assumed that people act in a rational way within that structure. The results are the market outcomes: what is traded where, by whom, in what volume, at what price? This paper sets out the method for such an institutional analysis and applies it to two land markets in the Netherlands – for agricultural land and for land on industrial estates. The results of applying this analysis allow market outcomes to be explained better than by an analysis which ignores rules.

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Introduction

With this paper, we want to do two separate but related things. We want to explain certain aspects of two particular land markets in the Netherlands: land for agriculture and land for industry. And we want to argue that new institutional economics gives a better theoretical basis for those explanations than the more mainstream neo-classical economics.

First, we discuss the concept of ‘markets’, as a way of introducing the necessary conceptual clarity. Then we emphasise the importance of rules in markets, especially in land markets. We point out that there are two ways of taking account of rules (institutions) when understanding markets. One way is to derive theories as though there were no rules, then modify the predictions of the theories to take account of the relevant rules: this is the way of neo-classical economics. The other way is to incorporate the effects of the relevant rules from the very beginning: this is the way of new institutional economics. We argue that the second way is better, in any case for land markets which cannot work without rules, certainly not without the rules defining and protecting property rights. Then we subject the Dutch agricultural land market to analysis using a method derived from new institutional economics, followed by an equivalent analysis of the Dutch land market for industry. Finally, we draw conclusions about the appropriateness of the chosen theoretical basis.

Land markets

The theoretical basis which we use is taken from institutional economics. This gives a wide definition to the concept of a ‘market’. This encompasses the interactions between suppliers and demanders, where that interaction is voluntary and where access to the market is open to everyone (Lindblom 2001). With that wide definition, it will be seen that most interactions in which land is exchanged are market interactions, even in a country such as the Netherlands where public authorities set many rules to which exchanges must conform and where public authorities themselves are active in buying and selling land. The most important rule in the Netherlands is a restriction: that the owner of land who wants to change the use of it is restricted by a land-use plan in the choice of the new use. Within that restriction, suppliers and demanders are free to exchange land (the freehold rights and other rights).

The wide definition given to a market does not make any assumptions about the role of the price mechanism in those interactions between demanders and suppliers. Usually a price is paid for the land, and usually (in any case, in the Netherlands) that price is determined 'in the market' and not imposed by a public authority. That does not necessarily mean, however, that the price is at such a level that it 'clears the market': that is, that the amount supplied depends on the price, that the amount demanded depends on the price, and that a price arises at which supply and demand are equal.

There can be two other mechanisms by which suppliers and demanders reach agreement. First, in the structure of a network, where access to the market is controlled by invitation, trust is an important mechanism to get mutual agreement on the exchange and the price. An example of this structure is a family-transaction, where the purchase of land is restricted to family-members. Second, in the structure of a hierarchy, where access to the market is controlled by the one in power, rules are an important addition to the price mechanism. An example is the expropriation of land for public purposes. In both cases, the result is that the price paid is not necessarily that which makes the amount demanded and the amount supplied equal (see also: Needham, De Kam 2004).

Rules for markets

Institutional economics focuses on the rules which people follow when they exchange something and on the effects of those rules on what is exchanged, on how much is exchanged, between whom, where, and at what price. Rules are particularly important when land is exchanged, for land is a durable good which can be used at the same time for many different and non-exclusive purposes. So when someone acquires land, that person wants to know for how long the land may be used and for what purposes, whether the land may be transferred to other persons, whether others also have the right to use it, whether the courts will protect the rights if someone interferes, and so on. It is for these reasons that most countries have, and have had for hundreds of years, a system of property rights which the courts recognize and uphold.

There are other formal rules which affect land markets, ~~such as~~ regulations about land-use planning, about building, about environmental effects, about traffic effects, and so on. And there are financial regulations which affect both the demand and the supply and, therefore, volume and price. These include fiscal rules, accountancy rules, inheritance rules, subsidies and levies.

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Such rules can erect barriers between suppliers and between demanders, and in that way can segment the land market. A land-use plan, for example, ~~can~~ mean that land with the designation 'housing' cannot be supplied for industrial use. The higher those barriers are, the more the price-forming for that type of land is determined within the segment and the less the influence on the price-forming from other segments.

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Often there are informal rules too, which can have a big effect on the way in which land markets work. A good example is the trust which the citizen places on a public authority when that buys and sells land. If that trust is high, such market actions take place easily; if not, citizens do not cooperate. Then force, such as compulsory purchase, has to be used more. Expectations are an example of informal rules. In the Netherlands, for example, businesses expect that a municipality always has parcels of land on industrial estates for sale, an expectation which is shared by all politicians.

The rules, formal and informal, affect the costs of bringing about a transaction, ~~the 'transaction costs'~~². A full and reliable cadastral register, for example, reduces the costs of acquiring information about who the owner is and if others have rights over the land. Statistics about recent sales prices reduce the cost of reaching agreement on a price. A clear land-use plan reduces the uncertainty about the uses to which the land may be used and uncertainty about how neighbouring plots of land will be used. A predictable legal system gives certainty that the various rules will be upheld. Reliable and well trained professionals can help to settle a deal quickly. In those ways, the rules affect the transaction costs on the land market.

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² Transaction costs are the costs ~~necessary to bring about an~~ exchange or transaction, but not the price paid for the ~~good or service or right~~ itself.

This is important, not only for the effects on those who must pay the transaction costs. For the size of the transaction costs can affect also what is bought and sold, how much, the price, in what way, and by whom. For example, if rights in land are unclear, transaction costs will be high, which will discourage smaller, private buyers. At the extreme, no one will want to acquire land on which the rights are totally unclear, because of the great uncertainty.

Incorporating rules in the analysis of land markets

The usual way of analysing markets within neo-classical economics is to assume that demanders and suppliers interact in the absence of all rules. Depending on the demand curve (which is the sum of all individual demand curves) and on the supply curve (the sum of all individual supply curves) and on the number of actors (competition, imperfect competition, monopoly, monopsony, etc), the amount transacted and the price can be predicted. The way in which the interaction takes place is usually assumed, not investigated. The object of investigation is the market outcomes.

When analysing land markets, it is recognised that ignoring rules is unrealistic. In particular the land-use planning rules about zoning are seen to be important. The neo-classical analysis takes account of such rules by studying their possible effect on the market outcomes predicted first as if there were no rules. In that way, the rules are exogenous to the analysis (Thrall 1987, Evans 1985).

In an analysis based on ideas from institutional analysis, the rules are placed within the analysis: they are endogenous to it. And the object of investigation is not just the market outcomes, but the market interactions as well. All those rules create a structure which affects the availability of information, risk and uncertainty, transaction costs, organizations for buyers and sellers and brokers, etc. It is assumed that people act in a rational way within that structure. The results are the market outcomes: what is traded where, by whom, in what volume, at what price?

This method of analysis is labour intensive, for information must be collected not just about the outcomes but about the working of the market also. The rules must be investigated, and also how people – the demanders and suppliers - react to them. In the rest of this paper we report the

results of empirical research into two land markets in the Netherlands: for agriculture and for industry. For each of those markets we have investigated:

- to what extent is the market segmented; that is, which other land markets influence it?
- who are the demanders, and why do they demand land?
- who are the suppliers, and what are their motives?
- in what ways do demanders and suppliers interact, through what mechanisms are their wishes co-ordinated?
- which legal rules influence that interaction?
- what rights in land are exchanged, leasehold or freehold, and what are the private law restrictions on the exercise of those rights?
- are there any subsidies, and what rules govern them?
- what are the fiscal and other financial rules which affect the transactions?
- what are the expectations and customs in this land market?
- what are the transaction costs, and who pays them?
- what are the market outcomes: price, volume, location?

There is no room in this paper to report the results in detail: those can be found in 'De markt doorgrond' (Segeren et. al. 2005). The results we do report are those which demonstrate that market outcomes can sometimes be better explained by using an institutional analysis than by using a more traditional neo-classical analysis.

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The market for agricultural land

This is the market for land used for agriculture. It occupies about 68% of the land area in the Netherlands, although only about 3.3% of the working population work on it and only about 2.3% of the national income is earned on it (LEI 2004)³.

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We start with the finding that in most of the country, the price of agricultural land is around twice its worth as a factor of production for agriculture⁴. How can that be explained, and why do farmers not go bankrupt under those circumstances?

³ Value added as percentage of the Gross Domestic Product; data including horticulture but excluding agribusiness.

The explanation begins with the fact that the land market for agriculture is only loosely segmented and that it is strongly influenced by the land market for housing. This is because land-use planning in the Netherlands does not give the legal certainty that it is assumed to do. If a land-use plan ('bestemmingsplan') designates land as agricultural, that does not mean that that land will not in the near future be used for housing, for it is relatively easy to change the plan or to give exemption from it. The value of undeveloped land for housing starts at around three times its worth as agricultural land, depending on the location, the type of buyer and the house market⁵. The Netherlands is relatively small, so large parts of the country are attractive for housing. Part of the higher value for housing hangs as a 'hope value' over much of the agricultural land.

That is re-inforced by a fiscal rule. If a farmer sells his land for urban development, he makes a huge profit. The part of the price which can be considered 'the value of the land in agricultural use' is not taxed if the farmer re-invests it in buying agricultural land elsewhere⁶. The tax on the price on top of that agricultural value can be postponed to the future⁷ if it is the matter of 'expropriation' by the government or 'amicable sale to prevent expropriation' or the equivalent of theses, and if the farmer reinvests within three years⁸. For the land the farmer wants to buy elsewhere in order to continue in farming, he is able to pay more than its value for agriculture and more than other buyers, because he has received such a high value for his previous land. So the development gains spread like a ripple across the country, raising prices in areas different from the initial development.

If prices for agricultural land are so high, who can afford to buy it, besides developers? The fact is that not much land changes hands between farmers: the 'land mobility' as it is called⁹ is only

⁴ An average of € 3,- per square meter (regional differences between € 2,- and € 5,-) in contrast to € 1,50 per square meter for arable crops and € 1,70 per square meter for dairy; the two most important land-based forms of agriculture in the Netherlands (VROMraad 2004).

⁵ The average price for undeveloped agricultural land for housing is between €10,- and €50,- per square meter in contrast to €3,- per square meter for agriculture (Luijt 2002).

⁶ In Dutch this is called the 'landbouwwijziging'; the agricultural exemption.

⁷ In Dutch this is called the 'herinvesteringsreserve'; the re-investment reserve.

⁸ Or 12 months if the sale otherwise in fact causes the cessation of the farm.

⁹ Land mobility is measured as the area of agricultural land which is exchanged in one year as a percentage of the area of all agricultural land

around 4.5% per year and just 2.6% between farmers (Luijt 2002). Nevertheless, agricultural land is bought for agriculture: how does that pay? To understand that, we have to look at who buys it.

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Partly, it is existing farmers with profitable businesses who already have a lot of land and who want to expand their production. Firstly, new agricultural practices mean that it is no longer financially necessary to have all your land in one location: so parcels can be bought which are not contiguous. Secondly, the farmers have heavy investments in plant and machinery¹⁰, which are not being used optimally because the existing land holding is too small. They have also a surplus in labour because production gets less and less labour intensive. Increasing the area of land in production means that existing investments and labour can be used more efficiently. That gain offsets the loss from paying such a high price for the land.

A second group of buyers are hobby farmers. They buy small farms and do not expect to work them profitably. The valuation of the land is not based on the productivity but on their 'pleasure' to own it, to live on it and to enjoy the view of the countryside. Although very much depending on economic growth and (the change of) spatial planning rules, this group is expected to be growing in the next years.

A third group of buyers are investors, taking advantage of changes in rights in agricultural land. Until recently, if agricultural land was leased, this was according to a system which gave such advantages to the tenant that leasing was not attractive to the landlord. At this moment, the system of agricultural leases is being revised, possibly strengthening the position of the landlord. Moreover, an increasing number of farmers are deciding to put their capital into the 'core business': producing food rather than owning land. This is attracting investors with a long time horizon into this land market. The financial constructions developed by the investors can be interesting for farmers, depending on the location and the quality of the land and supported by the fiscal treatment of the construction by the tax authorities.

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The last, but biggest, group of buyers are family members. Much of the land mobility is agricultural land exchanged within the family. In fact, most of the newcomers are sons and

¹⁰ Machinery gets bigger and bigger and more expensive as well.

daughters succeeding their parents. This is almost the only way to start a farming business, because of the heavy investment in land and buildings. That succession is in most cases only possible as a result of fiscal rules concerning the termination of a farming business. For if the farm is transferred to the children, only the 'going concern value' of the farm is paid. This is much lower than the market price for the various assets. The other children will be left a lower inheritance in the future. Parents, successor, possible other children and the tax authorities have to reach an agreement on the valuation of the property. One thing is clear: someone who wishes to become a farmer and who does not come from a family which already owns farming land cannot buy land at a price which will enable him to farm profitably.

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Quite a large amount of agricultural land is transacted every year in connection with the large-scale plans of public authorities. There are three types of such plans, each with enormous consequences for land use in rural areas. There are plans for the re-adjustment of agricultural land holdings. Farmers and farming tenants in a large area are asked to pool their land, as it were, after which the land is re-allocated in such a way that it can be farmed more efficiently. Such schemes can take 15 to 20 years, and there is a government agency – the DLG - which buys and sells land in order to facilitate the exchanges. Secondly, there is a plan for creating an 'ecological main structure' across the whole country. This will provide good conditions for a healthy flora and fauna and will, when complete, occupy about 728,500 ha which is about 21% of the land area of the Netherlands. About 60% of it is existing nature, but on the other 40% some kind of nature development has to be accomplished. It is not necessary to take all of that land into public ownership: an alternative is to make legal agreements with existing owners about ecologically friendly practices. In the current plans about half of the land for nature development has to be acquired by the government. The other half will have subsidies for nature management by the owners, in many cases farmers or owners of rural estates. But it nevertheless has a great effect on the market for agricultural land. Thirdly, there is a plan to give 'more room for the rivers'. Because of climate changes and rising sea levels it is expected that the main rivers will have to carry more water, which will increase the risks of flooding. That can be combated by raising the levels of the existing dykes. But that is not a secure solution. So plans are being made to give more room for the rivers, by increasing the width of their beds and/or by creating areas which can be deliberately flooded if necessary. That extra room has to be taken from agriculture.

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Each of those three types of plans can have huge effects on the regional market for agricultural land, each takes very many years, and each is accompanied by frequent changes in policy.

Moreover, the policies are pursued by different agencies of different government bodies, ~~which~~ do not always co-ordinate their actions. That creates great uncertainty and high transaction costs. Part of the transaction costs are paid by the government bodies. They have huge interest and maintenance costs for holding large quantities of land and they carry the costs of the agencies which buy and sell the land. But the farmers also carry transaction costs. The existing farmers react to the uncertainty by holding onto their land and not moving, unless forced to do so by retirement, bankruptcy or ill health. The costs of uncertainty are difficult to calculate, but it is clear that this can grow when the plans take a long time to be realized. On the other hand it has become clear that for some farmers the government actions gave them the opportunity to get a decent price for their land and stop their otherwise loss-making business.

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The market for land for industry

This is the market for the land used for industrial estates, on which about 30% of the country's labour force work. It occupies more than 94,000 ha. and the growth was almost 19,000 ha in the last 10 years. The area of land used for industrial estates is growing twice as rapidly as the area of land used for housing (Schuit et. al. 2004).

The market outcome with which we start is that most land on industrial estates is supplied by municipalities: about 80% in 2003. How can we explain this? We ask this question not only because in other countries commercial actors supply much more of the industrial land. For it is well known that in the Netherlands, contrary to most other countries, most development land is supplied by municipalities. However, it is not so well known that that practice changed radically about 10 years ago. Nowadays, most development land for housing is supplied by commercial developers. Why has the customary practice not changed for industrial estates also?

The answer can be found in the motivation of the suppliers, that is the municipalities. These supply land on industrial estates for a number of reasons. The first is as a necessary condition for employment and economic growth in their area. Municipalities see it as their duty to ensure that

there is always serviced industrial land readily available. The second is that many municipalities are actively looking for housing land and are looking to improve conditions in residential areas. So if there are firms within housing areas, those municipalities want to displace them. If the municipality has industrial land available, that displacement is much easier.

Those motivations are anything but commercial. It is not clear whether the price which the municipality asks for the land always covers the costs: but it is clear that in most cases the price is too low to be attractive to a commercial developer. Moreover, the municipality bears heavy transaction costs which a commercial developer would not want, or could not afford, to bear. These are the costs of carrying out research into demand for land, of providing publicity to attract firms, of displacing firms onto new estates, of co-ordinating policy with other municipalities, of holding a large supply of land readily available, etc. The estimated costs just for holding the land are between €150 and €185 million a year for the country as a whole. The other costs have never been estimated. All these costs might be paid out of the general municipal budget and are not always charged to the development of the industrial estate. When displacing firms onto new estates, the costs can be partly covered by the income from the new development on the old site.

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The transaction costs of the demanders, the firms considering buying land on an industrial estate, are low. The firms have no uncertainty about planning permission etc. They have excellent information about the supply of industrial land in the whole country, provided by a national annual survey (IBIS) paid for by the central government. So a firm can buy land as a factor of production as easily as it can buy bricks or energy.

The market outcome is that much land is bought for industry, at fairly low prices. And this keeps the practice unchanged, for the low prices and the heavy transaction costs make the market unattractive for commercial developers. The market for industrial land is 'contestable' (Baumol e.a. 1982). It is a near monopoly in the hands of municipalities, but no-one wants to contest it.

The same market situation (contestable but not contested) existed in the market for housing land. Then, starting around 1994, commercial developers began to contest the municipal monopoly, with success. Why were they successful on that market, and not on the market for industrial land?

The reason lies partly in the actions of the suppliers, that is the municipalities. It was decided by central government that housing land should be made scarcer, to increase the intensity with which it was used. And it was decided that the public sector should withdraw from the housing market, making room for commercial actors. Those decisions have not been made for industrial land. Another reason lies in the method of calculating the price for serviced land. For housing land, the residual value is calculated: this is not done for industrial land. When the residual value has been calculated for industrial land, the value is considerably higher than the asking price set by municipalities (Inbo 2001). Commercial developers are price takers in this market, and they have to follow the prices set by municipalities: those prices are too low to be commercially attractive.

Conclusions

The limitations of a neo-classical economic analysis of land markets are clear. Namely, that assumptions are made which everyone knows to be untrue. Those assumptions are made in order to allow the construction of econometric models of land markets – what has been called the shift from ‘urban land economics’ to ‘urban economics’ (Clapp, Myers 2000). However, the obvious unreality of that assumption need not lead us to reject that type of analysis, for it is possible that the analysis nevertheless has a high predictive value. By this we mean that the theory, when applied to certain initial conditions, predicts outcomes – such as a geographical pattern of land use and/or land prices – similar to that found on the ground.

In order to discuss this further, we need to be clear about what we mean, logically, when we use a theory to explain observed phenomena. The reasoning is:

- a) according to the theory, B is the outcome of A, in all cases and as long as certain conditions are met. This is a general rule;
- b) this theory has been empirically tested and found to be reliable;
- c) in a particular case, which has been observed, the certain conditions were met and B was observed;
- d) we can trust the general rule;
- d) so we can conclude that, in this particular case too, B was caused by A.

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If we look at the results of applying neo-classical economics to land markets, we have to conclude that they do not satisfy the second step (b): that is, they do not predict very reliably (see e.g. Maclellan 1982; 20, [Buurman 2003](#)). This in itself is a good reason for trying a different theoretical approach.

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The approach using the 'new' institutional economics is attractive, and allows market outcomes to be plausibly explained which the more traditional analyses cannot explain. This has been illustrated above. However, the criticism can be levelled: are the explanations offered by institutional economics any more than applied common sense. In the terms used above: does the new institutional economics allow one to make predictive statements of logical type (a); that is, that if the certain specified conditions are met, A will always lead to B?

We have to admit that the new institutional economics when applied to land markets does not have a high predictive value. It is good at offering plausible explanations for observed phenomena. And it lends itself to making predictions of the consequences of marginal changes, such as changes in one or a few of the rules. This in itself is of great importance in understanding how the market works and what the consequences of a new rule will [be](#). Moreover, to a limited extent is it possible to apply institutional economics to land markets in such a way that statements with a general applicability (or applicability within specified conditions) can be made. In particular, there are two branches of institutional economics which have a proven ability to make predictive statements and which can be applied to land markets. One is law and economics, the other transaction cost theory.

Law and economics is the application of micro-economics to explaining how people react to legal rules (Cooter, Ulen 2004: 3 et seq.) and its theorems have a good predictive value. A very important application to land markets is the focus on the exchange of rights in land, where the value of the rights is affected by the precise way in which the rights are defined, delimited and protected.

Transaction cost theory says that partners who want to effect a transaction have a choice of 'governance methods' which they can use for that, and that their choice is affected by the

transaction costs, which are in turn affected by certain characteristics of the transaction. The best known application is to the ‘governance’ which a firm chooses when deciding how to acquire inputs (Williamson 1975), but it has been applied also to public policy decisions (Williamson 1999). Transaction cost economics has been applied to land markets also, and the indications are that it has a predictive value (Needham, de Kam 2004).

Nevertheless, we have to recognise that new institutional economics does not lend itself to constructing econometric models of land markets, whereby the geographical distribution of land uses, land prices, lot sizes etc can be predicted. If that is so, and if neo-classical economics also cannot do that satisfactorily, then we might have to conclude that land markets cannot be modeled using economic theory, perhaps because rules are so important in those markets. Then our ambitions for economic analyses of land markets might have to be scaled down, for example to making predictions of the effects of changes to an existing situation.

The argument of this paper is that new institutional economics does that better than neo-classical economics. This statement must not be read as a rejection of the latter, for it will be clear that new institutional economics builds upon many theorems derived from mainstream micro-economics. The difference between the two approaches is that the initial conditions, to which the theorems are applied, are more realistic in new institutional economics than in neo-classical economics.

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