Integrating the “dead capital” in models of cadastral systems

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By

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Abstract

Cadastral Systems have developed during the latest decades, impelled by improved information technology. Cadastral projects have become more strategic in a development perspective, with expected long-term returns in economic growth.

An improvement of an existent information system requires an understanding of the basis of the current model, its coverage and the processes of change. The land unit is the basis for the cadastral system. Real estate rights are agreed between individuals, and the units are officially recognized in the cadastral system. The real estate rights are continuously submitted to changes.

Many research projects on cadastral systems have focussed on comparative or descriptive studies of the current systems. Technical, legal and organisational aspects are examined. Some theoretical approaches analyse models of cadastral systems.

The concept of the "dead capital" of the land assets is fundamental for understanding the backlog of development in Latin America. More than 90 % of the real estate rights in rural areas in developing countries is outside the formal sector of land titling, while developed countries are considered to integrate most real estate rights in the formal sector. This is based on a static and biased perspective of the real estate rights, *within* or *without* the formal sector. However, even Sweden has got "dead capital", outside the cadastral records, but it is sustained by private solutions.

The society is not patiently waiting for the cadastral solutions, but improving the real estate systems as demanded by the citizens. The complementary systems play a crucial role in the market economy, though with limited recognition in the models of cadastral systems. The turnover point to a more advanced cadastral system ought to consider the diversity of market solutions of property rights.

Background

Increased attention has been given to development of cadastral systems. Most countries are facing a need to update the current system. A lot of development projects are started with an overall objective to support the economic development of the country. Convincing reasons for land titling programmes are not missing (Alcázar & Ariza 2003). Despite these reasons, doubts are raised and critics are given to projects with limited results (Lemel 1988 and McLaughlin & Palmer 1996). There is a need for a basic understanding of the processes underpinning the rationale of cadastral development. This paper will analyse some ideas on how the Western European concept of cadastre is transferred to a Latin American perspective (as well as perspectives of developing countries) without a thorough understanding of the cadastral processes "overseas".

The basic theoretical framework

A theoretical framework of cadastral development could be based on various perspectives.

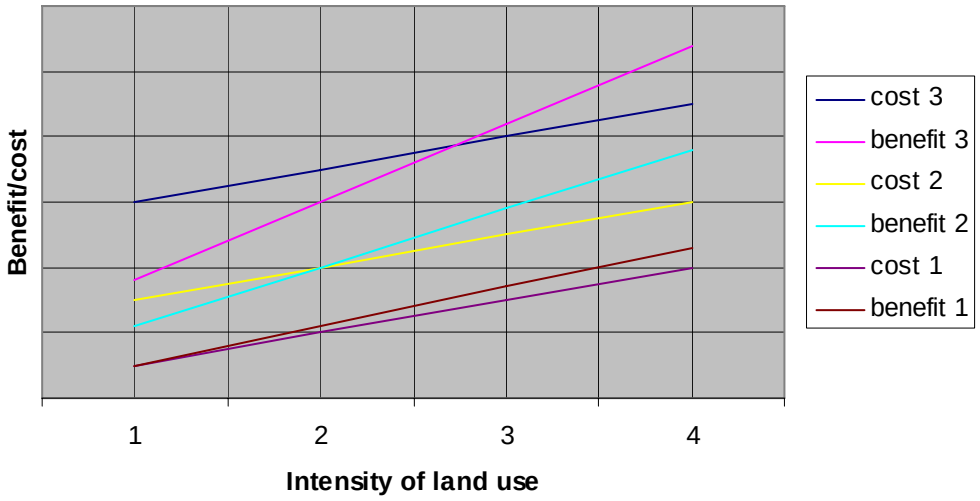
An initial definition of the concept "cadastre" raises some alternatives. FIG (1995) emphasizes the parcel-based perspective, and includes the records of rights. It is further developed in the FIG (1994) policy document Cadastre 2014, with the statement to include all rights in land. The perspective of 20 years, until 2014, was the logic aim for a general worldwide policy document.

Hensen (1995) uses the idea of interrogative pronouns to describe the idea of cadastre, in particular in comparison with land registration. 'Where' and 'how much' are the basic questions of a cadastre, while land registration answers the questions 'who' and 'how'.

FAO (2003) uses a more historically based definition, in emphasising areas and values, as many cadastral systems have developed with a fiscal perspective. The German and Scandinavian historical development of the "Grundbuch" as the basis for land transfers and agrarian reform have been important for the integration of the legal rights, fiscal perspective and planning tools. The development of an increased integration of the land related information systems has been further supported by the information technology. Multipurpose cadastre is sometimes the main vision in a national development perspective (Dale & McLaughlin 1999, p 255)

A very basic idea of cadastral development is presented by Larsson (2000, chp 2). He analyses the turnover point from one system to a more advanced system from the perspective of intensity of land use (figure 1). He uses the theoretical model of Demsetz (1967) of how agreements of property rights are defined through the concepts of internalisation of externalities. The benefits of the internalisation must exceed the costs for the internalisation if a land tenure agreement will be done. It could be applied for an individual agreement for a new property, but also for a land tenure system. Demsetz uses studies from social anthropology in how Indian chiefs made agreements with each other in order to create rules for land use (e g the use of fur tails). As the intensity of land use increases, there is a need to improve the system of agreements between different groups, which is further developed in a basic system of property rights. The demand of a system of property rights is transformed to a national land registration system, including the legal, economic, fiscal and planning perspectives. There is a basic need for a society to provide an efficient system of property rights for the economic activity of the real estate area.

Fig. 1 Benefits, costs and turnover points for three different systems of property rights/property delimitation (Larsson 2000)



The model of turnover points of Larsson is very generic, without an expressed purpose to explain the practical considerations in decisions on change of property systems. The model is just showing the general principle for change of systems. The cost/benefit ratio is shown in the model in the y axis according to the intensity of land use in the x axis. The society of Indians in the 18th-19th centuries represents one early stage of development, with a low intensity of land use, and without a need to establish a technically and legally advanced system, i.e. system no 1 above. As time has passed, the real estate system has developed and a more advanced system is now used – system no 2 above. The turnover point is at 2.5, when the ´benefit-cost' value is approximately the same for system 1 and 2. The next turnover point is when the 'benefit-cost' value for system 3 has reached the same difference as for system no 2, i.e., at 3.5 in the model above.

Is intensity of land use an adequate parameter to understand the development of cadastral systems? The Demsetz theory supports the parameter in a general way. It is obvious that Indians had a very extensive land use at the time of the European settlement of America. The first agreements with the settlers were based on very simple ideas of delimitation of interest and protection of areas for a specific group, tribe or similar. The continued development has raised even further demands on improvement of cadastral systems. Land use is one essential factor in new demands. It might not be the exclusive factor, but still very important in a general model.

The model is still interesting to understand why and when a cadastral system has to be changed. There is no single reason, or a uniform way to define the turnover point. Larsson might not have the reason to reach such a detailed understanding in his model. In chapter 8 he describes feasibility studies in cadastral projects, aiming at understanding the specific conditions and constraints to embark on a cadastral project.

However, we will remain at the general model, as it might be useful for a more complete understanding of the rationale in cadastral projects.

Identify costs and benefits

The costs and benefits of an existent system have to be identified in some way, and faced with costs and benefits of a more advanced system, according to the model of Larsson. The key reason for the need of change should be an increased intensity of land use. Two questions are basic for our analysis of the model:

- How do we reach an understanding of costs and benefits, of the current and a more advanced cadastral system?
- How do we understand that the land use has become more intensive?

The first question is sometimes answered in a general way observing the current system: the land registration system does not work well, it is cumbersome, costly and covering only a minor part of the properties. The situation in developing countries is sometimes used as an example. The emerging land markets of Eastern Europe, previously under the Soviet regimes against private property, have a tremendous need for improved cadastral systems, with emphasis on private property. The shortages in the current cadastral systems are sometimes severe and alarming as a major obstacle for economic growth. It is easy to describe major drawbacks of a current system. It could also be "decorated" with figures, statistics or other indicators.

The costs in the model could be understood for the management of the current system, but it is also relevant to consider the drawbacks of the society and individual landowners with the current defective cadastral system.

The costs of a new, more advanced system are primarily identified as the running costs for the new cadastral system. The benefits could be described in an increased activity at the land market. Steudler & Kaufmann (2003) describes further a number of ways to benchmark cadastral systems. Various indicators could be used, e g, number of transfers, total value of mortgage and its percentage of the total value of real estates and coverage of the cadastral system.

The difficulties to develop an indicative benchmarking study are well known, but we might assume that it is possible to assess values in some ways, in order to qualitatively quantify the current and new cadastral systems.

Two African examples

The model of Larsson does not comment upon the transfer costs from one system to a more advanced system, except the more practical views in the chapters on feasibility studies, adjudication, cadastral surveying and special problems. The transfer costs are not marginal. They could be quite substantial, in particular in developing countries with a low coverage of the governmental cadastral system. An example from Guinea-Bissau is illustrative. A total area of 36,126 km² and a population of about 1.2 million inhabitants had less than 6,400 registered property files in 1997, many of them just in an initial processing phase. About half of the applications date back to the colonial period (before 1974). The updating of the cadastral system was not efficient after 1974, and it was logic to assume that many of the 6,400 properties were not showing the real situation of real estate rights. Assuming an average of 5 persons per household, and only one property per family (in reality more than one), there should be at least 240,000 properties. It is easy to understand that the 6,400 registered properties covered just a tiny part of the land tenure situation in Guinea-Bissau. Most people and families have got their properties in another cadastral system than the official one (Borges & Nafantcham-na 1998).

Mozambique had a similar situation: a total area of about 800,000 km² and a population of 18 million people, with a similar low rate of registered properties. The well populated province of Nampula in Northern Mozambique had about 8 % of the land area as registered land at Independence in 1975, but most of these titles were issued earlier than 1950, with many uncertainties in up-dating . Political efforts to colonize the countryside supported the European settlers, while the original Mozambicans were more or less excluded from the rights to land through titling. Except the 8 % titled land, there was another 24 % of the land area of the Nampula province with applications for titling, i.e., without a completed titling process, mainly due to a cumbersome process. Superimposed claims on land, e g, the colonizers claim of land held in customary tenure by indigenous people, were also impeding a smoothly titling procedure. It clearly indicates the effects of colonization, i.e., a high political ambition without an effective implementation in the land tenure situation, and the indigenous population by and large excluded from the official system (Borges & Doto 1995).

After Independence in 1975 the idea of titling land was not politically supported, until the Land Law Regulation was enacted in 1987 and a fundamental revision of the Land Law was approved in 1997. A general characteristic is that the official cadastral system does not show the real land tenure situation. The economic activity of people is managed without the official basis of properties in the official cadastral system. Sometimes, this is described as a sign of the failure of the current system, indicating the need for a more advanced system, i.e., a descriptive, not numerical way to express the costs and benefits.

The two African developing countries provide low figures of titled land. Latin American countries might have better figures, but there is still a considerable uncovered area of property rights, not included in the official cadastral system.

The model of Larsson (2000) predicts a change of the cadastral systems if significant benefits could be identified with a more advanced system, compared to the costs for the current and new systems. We might find some indications of costs and benefits, e g, in benchmarking studies (Steudler & Kaufman 2002). It will still difficult to clearly understand the magnitude of the chosen indicators and the conclusive analysis of them. The complexity of the assessment is paramount, but still important to penetrate for a decision of a change of systems.

Intensity of land use

Back to the second question above of the model of Larsson (2000) – on the intensity of land use. The parameter of the ‘x’ axis, the intensity of land use, is used by Larsson as the key factor in the understanding of how land tenure systems develop. The extensive land use of American Indians, as analysed by Demsetz (1967) is the classical example on how land tenure systems developed. Being a basic historical example, it is useful in student lecturing to explain the development of land tenure systems, e g, by identifying this extensive land use as being the cadastral system no 1 of the Larsson model. De Soto (2000) develops further the ideas of recognized and coherent legal systems of land tenure, using jurisprudence of the USA. The historical lessons of guarantee of contractual agreements are valid elsewhere. The conflicting titling systems in colonial Mozambique is just one example on how existing customary systems were put aside by the political ambition to provide conditions for European colonizers. The post-Independence development has not been able to change the colonial titling system to another one that includes all the customary land tenure situations in rural Mozambique. The current cadastral system – system no ‘1’ in the Larsson (2000) model, is not easily recognized in the cadastral reforms, if the system is operating through an oral

tradition (Borges & Doto 1995). The change to a more advanced system, model no '2', requires a change, i.e., to substitute something legally valid - in the customary system - to a more advanced system. It is not explained by the model if the "lower" system is used as a basis for the new system, or just dissolved.

What is the real meaning of *intensity* of land use? An extensive land use in rural Mozambique, e g, grazing and hunting areas, held in commons of families in tribal societies, is easily recognized. The value of land could be defined by the production value of the used natural resources, confirmed by the absence of alternative land uses with a higher assessment of the land. The turn to agricultural production demands a new land tenure system, with some kind of individual, family, community and/or tribal conditions on the allocated land tenure right (Borges & Doto 1995). This means a change in the customary land tenure system, as the intensity of land use increases. The European colonizers had a key role in this change of land use, introducing cash crops in land submitted to the land titling process.

Turning to suburban areas in developing countries, the land use is becoming more intensive, with a higher pressure on land and an increase on the land market. Residential plots are available at the market at a significant amount. Many of these suburban areas in developing countries are not included in an official cadastral system, but considered as informal areas, without a recognized land tenure system. The Santiago squatting area of 'La Toma de Peñalolén' is one of the headline areas, but there are many other areas outside the official system. How would we identify the land tenure system of 'La Toma'? The legal answer is clear – it is adverse possession, without legal rights for the settlers. We hesitate to recognize such a possession, as it contradicts the legal rights of the formal cadastral system. The owner of the area of 'La Toma', Mr. Nasur, has the exclusive right to the area, confirmed by the title in the cadastral system (as a general expression of registration of rights to land in Chile).

The interesting contrasting view of the property of 'La Toma' is that the intensity of land use was low as long as Mr Nasur "used" the land. However, the potential land use of the area was defined by municipal urban planning, justifying an advanced cadastral system. Even if the specific area would be kept as a recreational area (e g, football fields), the demand of the cadastral system has to be viewed in a metropolitan urban context.

The change of land use by the illegal settlers demands that the cadastral system is well supported by the legal system to act towards such kind of extralegal actions. The intensity of land use has apparently increased with the settlers' occupation of the area. An assessment of the values of the illegal plots and houses would reveal considerable property values, despite the threat of extinction of the land tenure of adverse possession. How do we understand such a value and its demand on the cadastral system? The community organisation of 'La Toma' established a land tenure structure, as a way to manifest its adverse claim on rights to the area. The official view on the land tenure system of 'La Toma' cannot recognize any property value of the area, despite all individual investments. The actual intensity of land use in an official perspective is null, i.e., a non-existing land use, but with a potential land use as defined in the urban plan. This means a contradiction between the cadastral system of the property of Mr Nasur and the real land use of the illegal settlers. A coherent implementation of the land tenure system, as defined by formal cadastral system, is argued by de Soto (2000) as a key issue for the development of a society. We could hardly deny it, regardless an eventual compassion to the settlers.

Our choice must be to recognize the formal situation of the cadastral system, in order to defend the compliance of the system. If applied to the Mozambican situation (the province of Nampula in our example above), 8 % of the land area is formally titled, leaving 92 % of the land outside the official system. Even with an increased rhythm of titling, there will remain

large areas outside, but still with existing customary land tenure systems. Should we reject them as non-existing holders, as in the more evident case of 'La Toma'? The settlers of 'La Toma' and the indigenous people of Mozambique have a common situation of non-recognized claims to areas with a certain intensity of land use. They use the land, and make de facto contractual agreements on land tenure, but they still remain outside the cadastral system we want to protect.

The illegal settlers do have a land tenure system – as they organize themselves and allocate tenure rights within the area, and protect it towards foreign claims, in particular the authorities. Their choice was to occupy the area, as the most attractive alternative in their search for shelter. The Demsetz (1967) perspective is that a change of land tenure systems requires that the benefits exceed the costs. The settlers' occupation of 'La Toma' is an expression of their assessment of a more advanced system (i.e., their own community organisation) with more benefits than costs. The comparison of the current system is also focussed by Larsson (2000), with a turnover point when the benefit/cost difference is higher in the new system (at the intensity of 3.5 for change to system no 3 in the model above). The micro format of 'La Toma' is one illustration of how people assess the current system and a new system, even in an area of adverse possession. The threat of extinction is real, but the potential chance of survival during a period of time (even the short term perspective) was apparently enough for the people without a realistic chance to land tenure rights in the official cadastral system.

Transfer costs

The model of Larsson does not explicitly distinguish the costs of transfer from one system to another one. Demsetz (1967) makes this requirement quite clear. In planning theory, the transaction cost is one essential issue in understanding the relation between the free market and the public sector intervention (Alexander 1992). It is logic that a change of systems requires considerable costs, but are we really submitting all costs and benefits as a market assessment, or do we restrict them to some more graspable and politically adapted values? The costs of the current systems could be assessed in the administrative costs of running a cadastral system, and an estimate of the costs of a badly working system, e g, uncertainties, delays, outdated data and underestimated property values and a general inertia in the real estate market. Such costs are difficult to assess in a classical cost/benefit analysis. The estimated future costs and benefits of the two systems (the current and a new system) should also be assessed, with an additional challenge to capitalize the future outcomes to a net present value.

De Soto (2000) provides a vivid exposure of the costs of a badly working cadastral system. His examples of procedures to formalize an area to a real estate unit in various developing countries show the lengthy and uncertain process. The example from Peru with 207 steps of the procedure is convincing of the administrative costs for the authorities, but also for the individual rights, either as a holder of some land tenure rights, or as applicant to acquire formal rights in land held by somebody else. The 207 steps contrast completely to the idea of "one-stop-shopping" (for the individual) as an objective the renewal of European cadastral systems (van der Molen & Lemmen, 2003).

Swedish perspectives on cadastral systems

The cases of Mozambique and Chile might appear peculiar, and at remote distance from the European situation (at least Northern Europe). We do not face similar situations, and might

not understand how other countries face disintegrated situations of land tenure. Swedish land surveying students have a perspective of the operational and smoothly working Swedish cadastral system. The perspective is even declared in the portal article of the Land Code (Ch. 1, Sect. 1): “Real Property is Land. This is divided into property units. ... Unofficial parcelling of land is null and void”. The 450,000 km² Swedish territory is thus entirely divided into property units, i.e., 100.0 % of the land and water area (except the four major lakes as public water area). Compared to the Mozambique figure (8 %), or a higher Chilean figure, it is difficult to really grasp how land tenure could operate smoothly(?) for people outside the official system. We do understand the need of some kind of land tenure for their livelihood.

What is the “European” answer to countries with a reduced or even rudimentary cadastral system? We understand that a complete (100 %) coverage of the system cannot be established in a short time perspective. But what do we aim at and argue for such a perspective - consciously or unconsciously? Probably we do. And countries with a need of change of cadastral systems, i.e., with a “mess” in the current situation, as described by de Soto (2000) or elsewhere, might believe that the turnover point (Larsson 2000) for a new system has been reached. The ultimate aim of the new system should be to reach the same coverage as well-developed countries in Europe or elsewhere.

There use to be realistic aims in the design of cadastral development projects, with a variety of indicators, with an ultimate aim expressed by using percentages of different units, e g, land area. The practical project design could choose between systematic or sporadic adjudication, with a strong recommendation by Larsson (2000) for the systematic way. The economic, per unit cost, is one reason. The concept of systematic adjudication also communicates the idea of a complete coverage.

In a project work of a Swedish course for UTEM, the students were given the task to work on development a cadastral system. The choice of pilot area was left open to the students. The expected choice was a geographically defined area, e g, La Toma or Aldea Ecologica de Peñalolén. One group chose the properties of inheritance, with the huge Chilean problem of ‘posesión efectiva’. The choice surprised me as course leader at a first glance, as it was not within a defined area, but properties situated at disperse locations and during a limited period of time. The choice surprised me from my Swedish perspective, but the UTEM student group had identified a specific problem that the cadastral system seems unable to solve. The legal system of inheritance is not supporting the formal cadastral system or vice versa. De Soto (2000) argues for operational legal systems for land tenure. This indicates that the turnover point, as developed by the UTEM student group, is not mainly depending on a critical deficient cadastral system, but the on the legal system that is supposed to support the cadastral system.

A “Southern” Perspective on the Swedish Cadastral System

The opposite perspective, the “Southern” view on European cadastral systems, is not mine, but yours (e g the Chilean congress participants). Anyway, I will describe some characteristics of the Swedish cadastral system.

The formal division of land, as defined in the Land Code, is clear. The land and water area is entirely divided into property units. These units area defined in a negative, indirect way: they originate from “land”, the 450,000 km² of Sweden. No land is left besides the division of land. There are 3,126,696 property units and 176,831 joint properties, as by 30th of June, 2004 (Lantmäteriet 2004). The consequence for formation of a new property is that an existing, residual property has to be divided into two, or several parts, in order to produce a new

property. The requirements are defined in the Real Property Formation Act. As all new properties origin from an existing residual property unit, there is no adjudication of properties in Sweden, according to the Larsson (2000, quoting Lawrance 1985) definition of adjudication: "the process whereby all existing rights in a particular parcel of land are finally and authoritatively ascertained". The concept 'parcel' is defined as a piece of land, still without the legal definition of the property unit, being the aim of the adjudication process.

The Swedish situation is thus in an advanced phase of cadastral development, which could be expressed as phase 3 in the Larsson (2000) model. There is no final phase, as the model is a general way to express how we identify the turnover point of land tenure systems. The European FIG seminar on renewal of cadastral systems (van der Molen & Lemmen 2003) is an expression of the need of continuous development. The next phase in the cadastral development of a country is identified as a renewal strategy, when the cost/benefit ratio has reached a new turnover point.

How do we identify the next phase and the turnover point? In Sweden we have 3.1 million property units covering 100.0 % of the land and water area. In Mozambique or Guinea-Bissau, they have less than 30 %, maybe less than 10 % of the land area as property units. The remaining areas are a major challenge, simultaneously with the task of updating the current property units. The conditions are different, but the global objective is to increase the coverage (until 100 %)?

The Swedish cadastral system has been developed during centuries. A crucial reason for development was the rural land consolidation reforms in the 18th and 19th centuries. The improvement of agricultural production techniques facilitated an increased intensity of land use, which made the existing cadastral systems inadequate, i.e., a turnover point had been reached. In the early 20th century further changes of the cadastral systems were done, including new Cadastral Acts for urban and rural properties. The IT development of the cadastral system started in the 1960's, and was completed in 1995, with all properties units transferred from the manual land register books to the digital cadastral system. It has been further developed with buildings, addresses, urban plans and regulations, digital mortgage deeds, etc. We have no reason to describe this development more, but just summarizing in a series of (continued) improvements. They are not only caused by new technological conditions, but also fomented by an idea of increased intensity of land use. What is our (Swedish) concept of land use? Is it different than a Mozambican or Chilean concept? We might force the concept even more, to even more applications and uses of land.

The information model of cadastral systems

The conceptual model of Yvan Bédard (1986a) of the land information system as a communication model defines three categories of agents: the observers, gatekeepers and users. The observers are those who provide information to the information system, e g, land surveyors, quantity surveyors, lawyers, and registration officers. The users are those who retrieve information from the system, e g, individual house buyers, real estate agents, civil servants at taxation authorities, newspapers, statistic agencies. The gatekeeper has the key role to define conditions for the observers to provide reliable and standardized observations, and to provide accessible information to the users regarding the content of the information system. The gatekeeper develops further the ideas of reduction and absorption of the inherent uncertainties of the system, enabling the users to assess the quality and guarantee of the retrieved data of the system, and for the gatekeeper and the decision makers to decide on the uncertainties in the communication system, with different ways to reach low remaining uncertainties for the user (Bédard 1986b). An efficient gatekeeper is not only the one who

succeed to reduce uncertainties to a minimum, but also to manage a medium level system of remaining uncertainties by providing information for the users. The users take action on the available data, and turn the data into their production systems. One example of such applications is a joint webpage of the real estate agents of Sweden, with offers of houses at the web-market (www.hemnet.se). As customers, we could create a search profile of the offers with characteristics of size, localization, price level, etc. Some parts of the files of the properties are provided by the agents themselves, but their use of the cadastral system is an fundamental basis for their credibility.

Is the cadastral system with a complete coverage an ultimate condition for a well developed information system for the society? De Soto (2000) finds the backlog of many cadastral systems in developing countries a key factor of the limited economic development. The issue is not only to complete the physically parcel-based cadastral system, but to provide legal systems that support the cadastre.

How is the Swedish cadastral system of the 3.1 million property units working? The system is active, searching further applications for the users. A detailed description of the Swedish cadastral system could include a series of details of great importance for the users, as stated by the National Land Survey of Sweden (Lantmäteriet 2004):

1) The 176,831 joint properties, as mentioned above. These are crucial annexing units to the property units.
2) 1,379,727 property units legally removed from the cadastral system. Lantmäteriet states the exact number of these property units, in order to provide correct information of 'dead' property units, including historical reasons. The figures from Mozambique and Guinea-Bissau do not make the distinction between active and removed property units, which creates considerable high uncertainties for the users. The real estate market does estimate a clear distinction of the valuable and not valuable property "products".
3) 9,874 new property units and 1,996 new joint properties, created in a property formation procedure during the first semester of 2004.

The list could be further extended. Lantmäteriet is the gatekeeper of the cadastral system. It is therefore important to provide accurate and exhaustive information for the different users, and for the observers as well. There are other links at the webpage of Lantmäteriet on requirements for property formation, joint properties, easements, demands on observations, etc.

This part of the information system seems to be well developed and could serve as a model for countries with a more limited cadastral system. An observant analyst raises the question on what the system does not communicate. Using the Bédard (1986a) terminology we should express it as remaining uncertainties. A distant view of the description above could uncritically assume that the system does not include uncertainties, i.e., it works without any problem.

Remaining uncertainties of the cadastral system: is the intensity of land use optimised?

Healey (1991 and 1992) uses a basic concept of resources of urban development process. Rights in land and buildings ('land'), labour and capital are the key roles in production of the development process. She also calls the roles the factors of production, which are met by roles in consumption, e g, clearly identified holders of property rights. The cadastral system provides information of the asset of land, as the basic condition for change. The Peruan example is one warning lesson of how the asset of land is turned to an obstacle, instead of a

resource. If labour and capital are available, the land is the third factor of production, if available. In a market economy, the assets of capital and labour are searching the best areas for intervention, in a similar way as active shareholders do not stay with the same portfolio, but they continuously take actions to optimize the portfolio. Healey defines the (land) development process as "the transformation of the physical form, bundle of rights, and material and symbolic value of land and buildings from one state to another, through the efforts of agents with interests and purposes in acquiring and using resources, operating rules and applying and developing ideas and values (Healey 1992, p 36). Our concern is to provide "land" as a production mean. We offer "land" at the market to the agents with capital and labour as their production means. As focused in the quotation of Healey, 'land' is not only a physical asset. We need to provide land for the development process, as efficient and attractive as possible. Silva & Stubkjaer (2002) also emphasise the need of integrating the physical property unit in a wider perspective of the demands of the society. An isolated view on the physical parcel as the main object of the cadastral system will undermine the potential of development of land as emphasised by Healey (1992).

We will continue with some examples of how the Swedish concept of 'land' is not easily accessible through the official cadastral system. The pivotal idea of the existing property units is to provide the optimal legal and economic unit for the development process. A simple example is a single property unit for a residential house, to be acquired and owned by a legal and economic unit of the society, e.g., the family. In our conception of the cadastral system we easily imagine this single property unit as the ideal unit for development. Mostly it is the one, but there are important exceptions. These exceptions are essential for our understanding on how the land tenure structure has to be an integrated part of the cadastral system. In the Mozambican or Peruan cases mentioned above we find an evident disruption between the land tenure situation and the cadastral situation.

At a first glance, the 3.1 million property units and the 100.0 % coverage indicate that the land tenure situation is defined and ideally accessible in the cadastral system. However, we do find a huge number of properties owned by a tenant ownership association. The association is jointly constituted by individual (family) holders of rights to a specific apartment of the association, including the right of the holder to transfer the right of use of the apartment, i.e., (almost) without restrictions. The legal framework of the associations is well regulated in a special Act. We are not surprised that this is one example on how a property unit in fact consists of several individual rights (right of use and transfer). Comparing to 'La Toma', we might find similarities, but some crucial differences. Except the adverse possession, we will also find differences in how the agents with 'capital' and 'labour' face the existing property unit. The development process is not easily characterized in 'La Toma' in the way Healey (1992) demands. Too much of doubts and uncertainties exist, repelling both capital and labour to participate in the transformation. The individual settlers do participate with their capital and labour, but they do not benefit from all resources and conditions available in an ideal land development process.

Are the Swedish tenant ownership units drawing the maximum benefit from capital and labour? The economic and legal unit, the family unit, is only a fraction of the property unit. However, 17 % of the residential units of Sweden are part of a tenant ownership association, which means that the capital market cannot be inactive. The banking sector is offering credits for the investment of the purchase cost of the individual, i.e., the share of the tenant ownership and to the tenant association. The association is the legal person, signing mortgage credits for the entire property unit, and charging the tenants with a monthly fee. The individual shares are sold to the first tenants, who dispose them for subsequent transfer, with a free market value of the apartment. The value of the individual share, i.e., the right of use and right of transfer of the apartment, is the not property unit as defined in the official cadastral

system, as the property unit embraces the entire association. This means that the cadastre "hides" 17 % of the Swedish households with a legal economic value (ordinary tenancy agreements do not have an acquisition value for the tenant).

Our key question is: what is the answer of the credit market to the tenant owners? Without an individual property unit (of the 3.1 million properties in Sweden), are the tenant owners submitted to the "dead capital", i.e., outside the formal system, as in 'La Toma'? It would be a huge surprise if Sweden had 17 % of the population abandoned to arrange "dead" capital for acquisition of the (legal) right of use.

The banking sector *has* indeed provided credit schemes for the tenant owners. The magnitude of the sector (17 % of the households) is highly attractive for the banks. But until autumn 2003, the interest rates were not as beneficial as for ordinary property mortgages. A difference of 0.5 % was charged by the banks. One of the arguments of the higher interest rate was a higher risk in mortgage contracts, as the tenant ownership right was not registered by the same gatekeeper as for the cadastral system, and without the same reduction and absorption requirements. We don't need to develop all the specific reasons, but just state that the 'capital' did not assess the 'land' as completely attractive. However, in 2003, one of the main Swedish credit institutions lowered the interest rate to the same level as for ordinary real estate mortgages, despite a continued absence of the tenant ownership rights in the cadastral system. Most of the other credit institutions followed the initiative. Some uncertainties remain, but we can conclude that equal conditions have been reached at the market. There are two main national organisations of tenant ownership associations, with a private cadastral system.

There are other Swedish examples of how a property unit is divided into several individual rights, i.e., besides the cadastral system. There are allotment gardens, with leasehold contracts for the individual allotment gardeners, but held by a Municipality as owner of the property. The leasehold contract includes a right to construct a leisure house with rules of maximum area and seasonal use. The important issue in our analysis is the right of transfer and mortgages. The gardener lessee has no major restrictions to transfer the right at a free market. However, only one bank has a general credit agreement for the allotment gardeners, but with higher interest rate than for ordinary property units. The value of the allotment gardens and the house is about 10 % of the value of an ordinary house with freehold right. No special claims are raised to equal the conditions. The national association have more than 30,000 members, and the European Federation has 3 million members. Such a magnitude of allotment gardeners represents a considerable capital (and labour), with access to land on certain leasehold conditions. The 'capital' is either 'dead' as defined by de Soto (2000), or at least not optimized, in the theoretical perspective focussed by Healey (1992). It might be difficult to reach further in the market economy, but if we as gatekeepers consider such conditions as some kind of backlog of our own cadastral system, we have at least reached an understanding of land, capital and labour in a development perspective.

In developing countries, we could easily find similar situations of land tenure values of 10 % of "normal" properties, embracing 50-90 % of the population (McLaughlin & de Soto 1994). The total value of all these tenure rights, legal, informal or customary rights – represents values that are our professional challenge today, to be continued tomorrow…

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