

Changing Views, Values, and Uses of Land

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Lincoln Institute of Land Policy Working Paper

This paper was prepared for the conference, “Toward a 2015 Vision of Land – A Celebration of ICLPST’s 100 Regular Sessions,” held October 24-25, 2006, at the International Center for Land Policy Studies and Training in Taiwan. This paper will be included in a book of conference proceedings to be published by the Lincoln Institute in 2008.

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Lincoln Institute Product Code: WP07GC1

Abstract

In collaboration with the Lincoln Institute of Land Policy, the International Center for Land Policy Studies and Training (ICPLST) decided to invite some of the best thinkers on land and land issues to prepare papers on land-related topics that would be important between the present time and the year 2015. We believe that the papers, now chapters, in this volume have accomplished the initial goal of the conference to encourage decision makers to think about land in the context of a changing world. We think the conference was important and that this book is important because policy makers often do not take the time nor have the time to think either cautiously or creatively about land.

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Changing Views, Values, and Uses of Land

Introduction

The decision made by the leaders of the International Center for Land Policy Studies and Training (ICLPST) to host a conference on land and land-related issues resulted from their desire to recognize the one hundredth course the Center had sponsored. Over the past thirty years, the Center and its training programs have been a launching ground for many good ideas dealing with land and land use. The Center's directors and academic and administrative leaders deemed it important that time and resources be allotted to recognize the contributions of its faculty, staff, and alumni. They also wanted to engage in a public dialogue around land and land use.

In collaboration with the Lincoln Institute of Land Policy, the Center decided to invite some of the best thinkers on land and land issues to prepare papers on land-related topics that would be important between the present time and the year 2015. The assignment to identify and contact the individuals to prepare the papers was given to the academic staff at the Center. The ICLPST staff must be complimented for their efforts. We believe that the papers, now chapters, in this volume have accomplished the initial goal of the conference to encourage decision makers to think about land in the context of a changing world. We think the conference was important and that this book is important because policy makers often do not take the time nor have the time to think either cautiously or creatively about land. We offer the following experience from recent history to illustrate the significance of the volume.

Only seven years ago, most of the world's population was waiting with considerable apprehension for the change in the Gregorian calendar from the year 1999 to 2000. Moving from one Gregorian calendar year to the next is a milestone that had happened thousands of times prior to December 31, 1999. However, many groups and individuals all over the world dreaded this particular day. There was a certain level of predictable alarm promoted by the advocates of a doomsday outcome. Alarming comments from such groups were expected but generally discounted as irrational; unreasonable groups are expected to say and perhaps even do unreasonable things.

Nevertheless, in the final few years of the twentieth century, a novel but factual fear was associated with the approaching calendar change. Interestingly, this apprehension originated with some of the most rational professionals of the twentieth century: computer software programmers and information technology specialists. One difference this group had from the doomsayers is that their alarm came from a logical and understandable source and seemed reasonable to informed individuals. Because of decisions made by software programmers in the middle of the last century, there were widespread concerns that the change in the calendar year from 1999 to 2000 could cause havoc in operational functions controlled by computers. Airlines, banking, credit cards, clocks, payroll systems, tax systems, medical records, and virtually any process that had

been computerized were considered at risk when the calendar change occurred. Fortunately for humankind, by the early morning of January 1, 2000, the electronic world was perceptibly relieved that the concerns around the transition to the new century and software had been successfully resolved. What does the transition to the current century have to do with the topic of this volume—land in 2015?

This historical anecdote illustrates this point: unless a catastrophic event actually occurs or is a “near miss,” societies and cultures have a propensity to overlook the cumulative importance of change. That is, societies discount the importance of time, and we believe societies treat issues around changing land use in virtually the same manner. Unless there is a catastrophic event, the long-term consequences of land-use decisions are ignored; yet land, like time, plays a critical role in practically every aspect of the human condition. We also ignore demographic events that have implications for land and land use, unless a crisis is associated with the event. For example, the world has recently passed the tipping point where the world population in urban areas now exceeds the population of rural areas (World Bank 2003). This event has not received the volume of press associated with entering a new millennium, but the implications of an even more urbanized world for the human condition and for the role and importance of land are significant.

Thus, one purpose of this volume is to remind decision makers and policy analysts of the important background issues that surround land use and the role these issues might play by the year 2015. The volume is not bold enough, or from our view imprudent enough, to forecast the role that land will be playing in 2015. What the volume tries to do is alert policy and decision makers to the changing circumstances of how society views, values, and uses land. For example, in one of the chapters in this volume, Professor Daniel Bromley reminds us that society started thinking of land as a garden. Society then put a tractor in the garden, and some elements of society are now trying to remove the tractor from the garden. This latest view of land is referenced in this text as sustainable development.

Some of the issues addressed in this book are raised to help policy makers think about how to utilize land to help govern a community. This includes using land as a revenue source for the funding of government and using land as a tool in economic development. Other chapters offer insight and advice about technical and policy innovations that might improve our understanding of land-use decisions, while other chapters suggest the need for a careful reevaluation of the process of thinking about land and its fundamental importance in a society.

The chapters in this volume cover a wide array of topics that we believe are focused around several issues: land and public finance, land in the context of economic development, institutional changes in land-management policies, and changing visions of land.

Land and Public Finance

Professors Roy Bahl and Jorge Martinez-Vazquez introduce the first of these themes, land and public finance, in their chapter on property tax. The chapter considers the tax revenue that is potentially available from the taxation of land and the improvements to land in the context of both developing and developed countries, though the bulk of their analysis is on developing and transitional countries. The chapter does not just focus on raising revenue from a property tax. Bahl and Martinez-Vazquez consider the important functions that local taxes can perform if imposed on immobile factors. Such local revenue sources can enhance local autonomy and, in turn, enhance the development of the efficiencies associated with political and fiscal decentralization. The obvious, and perhaps only, candidate for such a tax is the property tax.

They identify a number of attributes, in addition to fiscal autonomy, that the property tax offers local governments. These benefits include a tax that achieves adequate and stable local revenue over economic cycles, correspondence between revenues and public expenditures, and minimal compliance costs for most property owners and taxpayers.

Bahl and Martinez-Vazquez also identify challenges that undermine the full use of the property tax. They note that it is a difficult tax to administer, especially in the less-developed regions of the world, because of the lack of professional talent, inadequate information about the land market, and limited financial resources. Making the property tax successful requires governments to commit substantial support to the functions associated with property tax administration. This requirement for resources leaves most governments with a dilemma: while they need to spend their limited resources to collect revenue, in many situations the resources are just not available. There are also human resource constraints. Professionally trained appraisal cohorts will not develop in short amounts of time, and if they did arise, the likelihood that the professional appraisers would move away from the public sector to work in the private sector is high.

In addition, even with sound tax policy combined with reasonable property tax administration, Bahl and Martinez-Vazquez acknowledge that serious political issues surrounding property tax remain. They note several situations in developing countries where improved administrative practices result in less, rather than more, revenues after the implementation of the reforms. Aggressive enforcement and collection procedures may result in an initial increase in the public revenues collected, but over time such actions may become ineffective by creating a political backlash or a culture of noncompliance or outright tax deception. Essentially, taxpayers respond to aggressive tax administration with equally aggressive noncompliant actions.

The authors offer several noteworthy observations about the future of the property tax. Among these is their speculation that information technology will make property tax administration less daunting. If property tax administrations take advantage of information technology, they will have access to data on land and land improvements that could substantially improve their ability to track changes in ownership, use, and values,

improving the overall accuracy of tax valuation outcomes. Information technologies may also lead to better compliance and collection outcomes.

The chapter confirms that the financial and administrative benefits that can accompany the increased reliance on a local property tax have been slow in coming because the use of the property tax has also been deliberate in development. In this regard, the chapter is discouraging to true believers in both the property tax and in the benefits of fiscal decentralization. However, without describing the needed organizational changes, Bahl and Martinez-Vazquez illustrate how modest improvements in the key steps of administrative practices dealing with property tax have implications for substantial increases in revenue. Thus, perhaps the most promising aspect of this chapter is that minor adjustments in property tax administration can have important revenue implications.

Professor Sally Wallace's chapter focuses on real property as a tax base; however, she does not consider the use of a traditional property tax but instead examines the policy issues of applying a capital gains tax to real property. Proposing a policy that identifies, captures, and taxes capital gains from real property may seem unrealistic, but Wallace reports that a capital gains tax on property does produce tax revenue in several countries. However, the motivation of this chapter is not only about securing a source of more revenue to feed the public leviathans, but also about the growing economic globalization and the resulting mobility and potential of diminishing revenue from many existing tax bases. Wallace notes that taxing mobile tax bases for revenue in a globalizing economy, where international boundaries are less important, is a slippery slope and that tax revenues from mobile bases are inevitably moving towards the bottom of the slope.

It is difficult to generalize what level of government would suffer the most harm from declining tax revenues, but we assume in a central-versus-subcentral scheme of governing, the subcentral governments are at the greatest risk of a fiscal disadvantage. The problem would be especially severe in the developing and transitional governments where own-source revenue at the local level is already limited.

Adding to the challenges that a race to the bottom would create for fiscal decentralization are several basic questions about efficient tax policy. First, there is a concern that current tax schemes distort market and economic efficiency. For example, not taxing the capital gains on real assets (property and improvements to property) and taxing the gains on other capital assets (financial instruments) may alter the allocation of capital. The outcome could be an underinvestment in the taxed productive capital goods and an overinvestment in the non-taxed consumption goods.

Next, not taxing capital gains may also contribute to an uneven distribution of wealth with higher income groups likely to benefit from a tax system that did not tax the capital gains on real assets. A capital gains tax would likely reduce or mitigate the financial bubbles that now confront the housing markets in the United States. In addition, while the primary motivation of this chapter is not revenue, there is a substantial revenue flow associated with a tax on the capital gains dealing with land and improvements. Wallace

reports that a capital gains tax just on residential housing in the United States would generate \$40 billion annually.

There are economic positives associated with a capital gains tax, but there are also some important reasons why the capital gains tax would prove difficult to implement, even on a partial basis. As with any new tax regime, the political acceptance of the capital gains tax would most likely be quite low. This outcome is true of any tax but would be especially true if the tax were applied to residential land and housing. However, as we alluded to earlier, Wallace identifies countries where versions of a capital gains tax do exist and have been in place for a number of years. These countries include Jamaica, Korea, the Russian Federation, and the United States. Still, none of these taxes approach a true capital gains tax. In the United States, for example, the first \$500,000 gain in the value of a residential home is exempt from the tax, and this policy exempts the majority of residential units in the United States. The country that is the closest to having a capital gains tax on land is Taiwan (Republic of China). Taiwan taxes capital gains on property and applies them to the gains' progressive tax rates, ranging from 20 to 40 percent on the inflation adjusted gains. Acknowledging the political challenges is important, but it is also important to realize that this proposal has been put into practice and has achieved a certain amount of success.

Wallace's chapter is important to policy makers for several reasons. It reminds them that the world economies are globalizing and that taxes on non-mobile factors offer the potential of having governments with stable revenue sources. A pattern of stable tax revenue seems to be especially important for subcentral governments interested in achieving fiscal decentralization. In addition, while there will always be opposition to any new tax scheme, this chapter offers hope that at least a portion of the political opposition can be offset by examining the versions of a capital gains tax on lands that currently employ its use.

Local Economic Development and Land

In this section of the book, three chapters examine the function of land policies and land-use patterns in determining patterns of development. All three of the chapters offer a non-conventional view of land and economic development. Professor Gerrit Knaap presents a series of arguments that the market mechanism may not achieve the most beneficial outcome concerning land use. He argues that the market may actually lead to a distortion of efficient land use during periods of growth or redevelopment in a community. Professor John Lin examines the role of land use in the context of redevelopment of urban and non-urban areas. To demonstrate this idea, Lin uses the example of the economic redevelopment of an island in Taiwan that would benefit from a development policy based on sustainable development. Professors Michael Luger and Nicholas Maynard examine in considerable detail the economic and political policies surrounding local economic development and the function that land and land policies can play in development. Knaap's chapter questions the standard argument that market-derived land prices—and thus a market-based allocation of land—will produce an efficient outcome in land development patterns. As an economist, Knaap obviously understands the

importance of market prices in directing resource allocation. However, he also realizes that there are asymmetrical outcomes in many markets, including land markets, that result in situations where land might be misused. The neoclassical economist would recommend that the remedy for such issues is to internalize the prices so that they reflect the full cost of the production factor, in this case land, to an economy or society. Thus, an economist would add to the market price of land-compensating taxes and fees and do it in a manner that would allow the market price plus the additional charges to provide the correct market signals on the consequences of land use.

Knaap also offers counter arguments to pricing along with a series of examples to support the importance of non-market-driven processes that affect land-use decisions. A useful illustration shows the role of public investment in infrastructures such as roads, water systems, and sewer systems in influencing land- and urban-development patterns. Knaap offers remarkably striking visual evidence of development patterns that appear to be strongly influenced by the patterns of public investment in infrastructure. The visuals include urban patterns from the nineteenth century and urban patterns in the last few decades of the twentieth century.

While many economists, including urban economists, dismiss the use of procedural rules or legislative actions to control markets, including the land market, Knaap contends that imposed policies may lead to more aesthetically appealing development patterns and more efficient housing patterns and transportation. He again offers as evidence of these assertions, visual examples of housing patterns and the accompanying transportation outcomes. The term he uses to describe the improved transportation processes, including pedestrian traffic, is *network connectivity*. He concludes that a market-driven allocation of land will not achieve the most efficient network connectivity possible.

Some of the stronger arguments that Knaap makes originate from research that examines the importance of the visual aspects of neighborhood design and investigates how people value different design configurations. The chapter gives evidence that density, open space, signage, and proximity to transportation nodes and even road design are positively capitalized in land values. Moreover, Knaap asserts that these visual aspects are unlikely to develop without applying non-market methods to guide decision making. This chapter will be interesting to legal experts, planners, public managers, economists, and non-economists concerned with land use.

Lin. Lin's chapter centers on the role that a land policy can have in influencing local economic development. Lin considers the possibility of using unique land configurations as engines to foster economic development. Unique land configurations are normally associated with naturally occurring wonders of nature, but in Lin's view unique land qualities can also result from location in a commercially active area, historical patterns of land use, and man-made improvements to land. He also believes that uniqueness can develop around issues such as air quality, efficient use of resources, and alternative patterns of land use. He believes that a sustainable environmental policy may contribute not only to the quality of life but also to the economic well-being of residents living in a community. His views of land use correspond with at least one of the eight Millennium

Development Goals of the World Bank—ensure environmental sustainability (World Bank 2000). Like the World Bank, his views are not limited to rural or remote plots of land; he also reviews the role that unique land and improved areas can play in the sustained economic development of urban areas.

This chapter will especially resonate with those interested in unconventional approaches to economic development, such as tourist-led economic transformations of urban and rural areas. Under this approach to economic development, unlike the more familiar method of an economic development policy for the creation of jobs, additional jobs are almost secondary to an improved use of the existing assets of an area. As with other chapters, a key concept in Lin's model is the promotion of an environmentally sustainable development.

Because Lin looks at economic development in terms of economic and environmental sustainability, the chapter is also useful to individuals and groups who support urban economic development but have seen past efforts at urban renewal fail. Lin offers a process that may create not only economic benefits to the participants but also political advantages as public and private partnerships are created.

Luger and Maynard's chapter is a comprehensive review of the multitude of techniques used to generate economic growth and development within a community. Generally, the processes used by subcentral governments to promote economic development have been specific and direct economic incentives offered to business firms. Examples of these incentives include focused tax breaks, low interest (subsidized interest) loans, and acquisition and assembly of land parcels. Of the development techniques identified, the ones most related to land are the policies that assist in the assembly of land for developers and deal with property tax breaks.

The literature and the examples reported in the chapter generally come from the United States; nevertheless, we believe that the reported analysis also applies to developing and transitional countries. We think it quite likely that the strategic arguments and the tactical steps used to encourage local governments in the United States to adopt policies that encourage economic development, will become as common in the developing regions of the world as they currently are in the developed regions. The often-referenced flattening of the world applies to virtually all economic policies, including local economic development schemes.

Luger and Maynard present a general framework that can guide decision makers during the analysis of economic development programs. Their framework considers the influence of policy choices on hoped for or intended economic and social outcomes, as well as a conceptual process that facilitates the consideration of the unintended outcomes. When unintended consequences are discussed, they generally carry a negative connotation. However, in many situations the unintended outcomes may be positive but go unrecognized or underreported. We believe the use of the frameworks articulated in this chapter will add structure and conceptual strength to the analysis of local government development policies.

It is apparent that Luger and Maynard, along with most analysts who publish economic development literature, view the effectiveness of direct economic development incentives with considered reservation. Conversely, they also believe that economic development processes are important components of a local government's success, perceived or real, in a competitive world. Like many public policy questions, there are few clear answers on the effectiveness of economic development policies. Luger and Maynard are intrigued with the concept of using the provision of adequate public services as an indirect incentive for economic development. For example, in the long run, a quality workforce trained in demanding public schools might do more for economic development than a direct tax incentive. The authors view higher education and the associated research that follows as important instruments of economic development.

Luger and Maynard's review and discussion of the recent United States Supreme Court case (*Kelo v. New London*) on land takings is also important because it considers the political repercussions associated with this decision. The decision and the fallout remind everyone that while policy battles are fought in the courts, the policy wars are decided in elected legislative bodies. Consequently, several state governments in the United States have attempted to limit the impact of this decision by adopting laws that minimize the ability of a government to participate in a taking.

Institutional Reforms and Land Management

The next three chapters in this volume cover institutional reforms that are associated with land and its management. Each of the reforms—estimation of the value of land and improvements to land, information technology applied to land records, land management, land registration, and land record and titling programs—represent important yet practical challenges in land use.

Two real-estate finance economists, Peter Colwell and Joseph Trefzger, wrote the first chapter, which deals with institutional reform. The chapter reemphasizes the importance of accurate and reliable valuation of land and improvements. It underlines how essential it is that accurate estimates of value are used in ad valorem property taxation, financial compensation for land takings, and even arm's length market transactions. As Colwell and Trefzger note, the current processes of estimating the market value of land and improvements to land have emerged over a four-decade period, and as the technology of appraisal changed, the institutional function of appraisal also evolved.

The chapter reviews the technological advances, including software, computing capacity, and statistical innovations, now used in estimating the value of land and improvements to land, or real-estate valuation. It is clear that the technical progress in estimating land is revolutionizing the valuation practice and profession. The regression models and methods currently employed in real estate valuation are substantially more robust and nuanced than the early models. However, the authors acknowledge that there are many complex valuation challenges that remain to be resolved. They suggest that part of the remaining challenges faced in valuation practice remain because the academic community,

including econometricians, statisticians, economists, and real estate economists, has not invested significant effort in resolving land and building appraisal questions.

Even with the noted shortcomings, hedonic regression models do dominate much of the valuation models. The application of regression models to valuation has benefited from the advances in computing power, including the declining cost of acquiring computing power. Low-cost computing power in the United States has allowed small appraisal districts the opportunity to develop either their own hedonic model or the ability to contract for such results from commercial appraisers. While not directly discussed in the chapter, the growing affordability of computing power is one reason that an ad valorem property tax may become more realistic in developing and transitional regions.

Colwell and Trefzger observe that econometric modeling has yet to exploit the insights that spatial econometrics brings to real estate valuation. This includes developing models or employing variables that can robustly distinguish between subtle, spatial characteristics. They also caution the blanket application of spatial variables to estimated land values. Their concern is that without careful model development, regression modeling that uses spatial variables may report values but not necessarily explain the cause. They also caution the application of geographical information systems (GIS) to valuation models. Their primary concern is the “black box” nature of the GIS; that is, values are determined more on averaging processes than on econometric foundations. One intriguing observation offered in the chapter is that population characteristics (socioeconomic) may become important and accepted variables in real estate valuations.

This review of the technological applications currently used to value land and improvements to land along with the discussions of developing technologies is recommend to professional appraisers in the public and private sectors as well as academics who are developing new or enhancing current econometric models to assist valuation. The chapter also offers an insightful evaluation of many emerging and still unresolved valuation questions. These include questions about takings, partial property rights, and the correlation of multiple appraisal methods.

Professor Ian Williamson’s chapter reports on the startling increase in the application of information systems and information technology to land records, land information, and land administration processes. The view of the dust-filled land office is clearly inaccurate in most countries. The emerging technological advances that are applied to land records have transformed the land office into a dynamic and exciting center of information and policy.

The use of land records is not new; in the majority of the world’s regions land-ownership documents have existed for generations. These records have generally been formally recorded physical documents, but in some situations, informal records serve roles somewhat similar to the formal records. For most property records, formal or informal, the focus has been on identifying location and ownership.

Williamson describes the transformation of land records from text to digital form and highlights the resulting advantages. First among the advantages of digital land records is that they no longer require a physical presence to access and evaluate land information. Remote site access allows a more diverse group of researchers to study land issues and analyze land-use patterns. However, the digitization of land records is substantially more than just having easier access to land records, and the electronic recording of land records now extends beyond just listing location, ownership, and ownership transfers. Where implementation has progressed, the resulting digital land records now describe the associated rights of land and land usage. Examples of the additional dimensions that are being included in the description of land parcels include concepts of height and time. Examples of the increased information now contained on land records include carbon credits, unit trusts, waste discharges, and complex commodities that are now being associated with land. Williamson argues that the inclusion of information beyond ownership is a necessary progression and relates to the complex land market that is emerging in developed and some of the developing regions of the world.

The use of the supplementary land information, according to Williamson, will facilitate the growing desire to use land in a manner that encourages sustainable economic and environmental development. Such development is more probable when the effects of a land owner's action on other land owners are articulated before land decisions are made. With additional and readily available information, land use and land management is likely to become more comprehensive, including the consideration of partial land rights. Likewise, the development of land markets that are now trading in partial land rights will become more transparent. These new markets allow such rights to resemble commodities and result in new methods leading to the securitization of these rights.

The chapter highlights the growing openness of land information and land records. Detailed land records are accessible by almost anyone with access to a computer and the Internet. This includes information about the natural, built improvements and the intangible matters connected to land use. Williamson emphasizes that land markets become more efficient when information about land and land use are accessible to citizens and government policy makers.

John Bruce's chapter reviews the critical role that land records play in the development of an economic and property rights reform. He acknowledges the contribution of Hernando de Soto in bringing the importance of land titles to the forefront of the current development debates and practices. De Soto made the case that titling land would facilitate access to capital markets for individuals in poverty, because with titled land, they would have an asset that could be collateralized in a mortgage process. As Bruce notes, this reasoning was not new to most international assistance organizations; for example, it is a key part of the most recent World Bank Development Report (2006). The widespread efforts to title land is a significant institutional watershed in many countries, especially for the underprivileged throughout the world. (We note that Daniel Bromley's chapter that follows in the next section of this book raises a series of questions about the implied institutional changes associated with land titling.)

International organizations have been working for a long time to aid developing and transitional countries in their efforts to validate individual property rights. Bruce stresses that these groups are more focused on property rights now than at any other time in their history. However, the increased emphasis on land titling has been questioned. Bruce reviews several recent works that raise substantial challenges to the assertions that private ownership of land increases the productivity of land.

The World Bank, where Bruce has worked as a legal expert in land issues for several decades, is in the position of being unable to compel countries to do much regarding land titling. What the World Bank can do—and is doing— in its efforts to title land is to create incentives that encourage changes in practice and laws. Another approach is policy lending. Policy lending expects that the recipient government meet criteria before the lending takes place or before all of the funds are released to the target country. In the case of titling, the release of lender funds is triggered by the actions of the government to facilitate the titling of land.

The bank uses direct investment in projects that assist in the development of land titling. These projects have taken place in Eastern Europe, East Asia, and Latin America. There has been less involvement in Africa, arguably the most challenging area of the world in terms of economic development and land registration, due to obstacles including the culturally and historically important role that communally held land represents in Africa.

Bruce also identifies other challenges that complicate the process of land titling. Examples include not having sufficient political stability to ensure that land rights will be enforced once they are established. Another complication is that land policy and administration are parsed out to numerous public institutions with each agency having some control over the status of land. The problem with having numerous land authorities is that no institution sees the situation exactly like other institutions, and no institution has the ultimate authority to act, but one institution can limit the decisions of the other institutions. Bruce describes several situations where multiple national agencies operate parallel titling functions that undermine the efforts of other agencies. He also identifies some of the technical problems of land titling.

Changing Visions of Land

The study of land is the study of a dynamic factor of production. Society views land in a continuous cycle of change. The economic role of land is changing, and the way that we treat land is changing. The last four chapters in this volume highlight the differing and evolving views of land and its importance. Professor Daniel Bromley's chapter challenges some of the assumptions that now motivate land reform issues. An important set of themes is that land continues to matter to the human condition, but the way land is viewed has changed dramatically over the centuries, and land's role in the economy will change. Professor Tony Bebbington's chapter considers the role that information plays in land-use decisions. He uses a case study from Peru to describe how land-use decisions are becoming international in their implications. Professor Kuo-Ching Lin describes the evolving role of land in Taiwan, the host country for the conference. Taiwan owes much

of its early development to agricultural innovation in land use and land reform. However, the new challenge is to maintain a role for land in a rapidly changing economy where the market suggests that if agricultural production is left to just the market, it will likely dramatically decline. Finally, Professor Robert Evenson reviews the role that agricultural innovation has played in the development of transitional and developing countries.

Daniel Bromley's chapter addresses that how we think about land has had a profound effect on the development of accepted wisdom, with respect to production and markets. Land has had an important role on the development and evolution of economic theories and models. Giants in the field of economics made theoretical contributions to economics that were developed from an analysis of land as a factor of production. These economists included David Ricardo, Thomas Malthus, Karl Marx, and Henry George. This group viewed land and its role in a society as an asset to be managed in order to maximize production and earn an economic return. Other individuals of influence who were not trained to think as economists, like Henry David Thoreau and John Muir, also used their views of land to shape the collective views of land in societies. These individuals have contributed to the view of land not as a consumption asset but as an "amenity" that provides non-market-driven returns. Briefly, this latter set of players provided the foundation for the model of sustainable development. Bromley's quick review of the eighty-year history of the journal *Land Economics* confirms the current role of land in the framework of sustainable development.

Bromley raises concerns with the standard assumption that the titling of land will be beneficial to land occupants in some of the poorest regions of the world. He offers evidence that calls into question the robustness of some of the work that he cites in support of the assertions around land titling. He suggests that the informal titling systems contribute to multiple uses of land and that formal titling might undermine the current efficiency of these multiple uses of land.

Bromley concludes his chapter with a series of challenges. He argues we need to rethink the economic development model that dominates the policies concerning land use. As noted, he questions the benefits of land titling in some regions of the world. He also argues that the concept of land is in a constant state of flux. As he states, "land is always in the process of becoming."

Professor Tony Bebbington's chapter offers a partial confirmation of several of Williamson's arguments and a first hand look at the emerging intricacies of land-use decisions. As Bebbington explains, the complexity surrounding land use and land-use decisions is enlarging. One reason this is occurring is that information on land and its use is now being shared beyond local communities within a country and even beyond national borders. In the not-very-distant past, public and private discussions around land use or the use of resources from the land, were local concerns or perhaps regional issues but rarely countrywide issues. For example, owners of land or mineral rights could make choices and then implement their decisions relatively independent of forces outside of the host community or the ownership of the firm. Bebbington presents a model and some

case illustrations on why this description of the decision process is no longer an accurate reflection of how the process works with respect to land and land-use markets.

Bebbington's chapter starts by reviewing the concept of sustainable development; the normative paradigm that argues economic transformations and development should consider issues beyond the use, consumption, or transformation of physical resources. This paradigm is different from past economic development practices in the following way: in the past, macro- and microeconomic strategies were tilted towards benefiting actors who were inclined to think of development only in terms of its effect on factors they controlled. They were focused on the economic return on the physical asset they controlled, and they were less likely to consider the effects of their decisions on factors beyond their own assets. Sustainable development suggests the factors that should be considered in the calculus of analysis around land use should include human capital, social capital, physical capital, financial assets, and cultural capital.

Bebbington uses the concept of social dimensions to reconsider how resources are used in rural areas. He argues that as decisions about land use are debated in the context of social dimensions, the scale of the discussions—and the arguments that accompany the dialogue—will go well beyond the borders of the rural area and well beyond the boardrooms of the owners with the rights to extract natural resources from an area. The new ease with which information about land use can be shared is altering the land-use process. Using a case from Peru, Bebbington illustrates how citizens in a rural area were able to frame a debate on land use, specifically mining, that went far beyond the immediate area where the mine was planned. The information from this debate found its way to the Internet, and eventually even the outcome of the national election was influenced by the questions raised over mining in the rural highlands of Peru.

Bebbington's chapter illustrates how land-use decisions now go well beyond the borders of the area and even the country where land concern is sited. We are not naive enough to argue that an inappropriate taking of land would be reversed by adverse information blogged around the world. However, we find that the examples with respect to sustainable development in Bebbington's chapter do suggest that land issues are no longer just local issues.

Williamson's chapter on the growing importance of information systems for land management and land use will undoubtedly have an important role in developing credible legal records on the physical attributes of parcels. To use a comparison from telephone communications, land-use decisions will skip the "land line" step in implementing modern communication systems and move directly to a "wireless"-driven model.

Professor Kuo-Ching Lin, an agricultural economist, reviews land-use issues in the host country of Taiwan. The chapter presents a case study of a country historically recognized as a leader in land reform and a country that owes much of its economic success to innovative agricultural practices. At the same time, Taiwan is a country under significant pressure concerning its land use. Its population density is the third highest in the world. Land prices are very high, and the subsequent financial return to agricultural investment

is low. The market pressure is to convert land to activities with higher returns, which generally means conversion of land to urban uses. The result in Taiwan is a fundamental policy issue addressing if and how land-use patterns will change.

This policy issue will not be easily resolved. Regardless of the low return on agricultural investments and the market's demand for alternative uses of land, the political pressure to maintain an agricultural sector in Taiwan is strong. There is the ever-present power of the agricultural lobby, a powerful political force in most regions of the world. However, in Taiwan the constant threat of Chinese intervention creates additional political support for security-based production of food, especially rice. The result is that some direct and indirect subsidies go to farming. Nevertheless, even the political support is shifting. For many years there was at least a political equilibrium in the governmental support of agricultural land use.

The changing political pressure is coming from several sources. Now that Taiwan has gained access to the World Trade Organization, there is countervailing pressure to curtail the support of rice farming. Taiwan is now importing rice. Plans are forming to make a shift away from agricultural subsidies, but to do so slowly and to give financial protection to the displaced farmers. There is also pressure to reforest land in Taiwan due to the recent storms that caused substantial damage in many areas of urban Taiwan. After these storms, it was obvious that it was not feasible to continue to remove trees from steep hillsides or to build residential or commercial buildings in flood plains without safety and financial risks.

Professor Lin's chapter describes the challenges that will eventually face many countries as the world economy continues to see trade barriers lowered. Subsidies to marginal agricultural operations will become more difficult to maintain. Price pressures on land, as population increases, will further reduce the return to farming. However, Professor Lin is not certain that the market process will have the final say in land use. He recognizes the importance of non-price or policy-directed outcomes.

The chapter by Professor Robert Evenson reviews the effect of technology on the production of food and fiber for human consumption and use. He reviews the impact of the Green Revolution and the Gene Revolution on the productivity of land and the resulting consequences for regional and country economic development and change.

Reviewing technological and biological breakthroughs and their consequences is important since not all segments of society have embraced their implementation. There has always been a concern that technological advances would be available to only large farms and that small and undercapitalized farms would be left behind and even further disadvantaged. Furthermore, there was a concern that the size of the existing successful farming operations would increase. A related concern was that farm workers would see a reduction in real wages. Evenson thoughtfully responds to each of these major concerns.

The patterns of technological adoption have not followed the feared path of benefiting only large agricultural operations. Large operations did adopt technological advances

earlier than small operations, but over time the improvements in productivity have been widespread. Failure to adopt has had much more to do with the country- or region-specific concerns than the inherent size of the agricultural operations. Farm size in some regions actually has declined, and the wages of farm workers have increased, as have the number of farm workers. The chapter reports a variety of data showing that both revolutions have increased the return on agricultural investment across a wide spectrum.

That does not mean that the adoption of technology has not had negative consequences. Fertilizer use has increased, insecticide use has increased, and herbicide use has increased. Each of these factors carries some negative implications for sustainable land use. However, Evenson grades the influence of both revolutions as positive when measured by a host of socioeconomic factors. His chapter concludes with a review of the trend in USAID funds for agricultural assistance. The reported trend reflects a shift by USAID away from the support of the agricultural sector.

Conclusions

This volume offers a series of papers that review the many important issues surrounding land and land use. On many dimensions, the chapters in this book offer optimistic outlooks for the future of land. Technology is changing the way land is now managed and used. The evidence of improvements in land records, agricultural technology, the estimation of land values, and the dissemination of information about land use is encouraging. The suggestions to consider land decisions without an absolute reliance on the market are worth considering. Nowhere is this notion more evident than in the frequently repeated need to consider sustainable development and an acceptable policy goal.

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