

Urban land-use regulations and housing markets in developing countries: Evidence from Indonesia on the importance of enforcement



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ABSTRACT

Standard urban economic theory suggests that stringent urban land-use regulation leads to higher housing prices due to both direct impacts on costs and a reduction in the price elasticity of supply. Indonesia has one of the most restrictive land registration and construction permitting systems in Asia, yet housing is affordable, rates of household formation are high, and housing supply is relatively elastic. This paper explores the relationship between land use regulations and housing markets in Indonesia through various analyses; an overview of 90 cities, a direct assessment of the relationship in 15 cities, and detailed case studies of two medium-sized cities. Regulations do impact the production of housing in Indonesia, but they do not affect housing markets in the predicted way because of their flexible enforcement and a widespread and dynamic informal housing-production system. The main impact of the strict land-use regulations in Indonesia is thus argued to be under investment in physical infrastructure related to housing; a substantial detriment to urban development and economic growth. The case of Indonesia demonstrates the importance of regulatory enforcement and local context in the analysis of land use regulations.

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Introduction

The behavior of Indonesia's urban housing sector appears to challenge a large body of economics literature on the relationship between urban land-use regulation and housing markets. Theoretical and empirical evidence in this housing economics literature shows that strict land-use regulations leads to high housing prices through a direct impact on costs and a reduction in the price elasticity of supply. Given that Indonesia has one of the most highly restrictive land registration and construction permitting systems in Asia, we expect housing markets to be tight and housing costly. However, the opposite seems to be the case. Survey data show that, by international standards, affordability is not a large problem in Indonesia (Hoek-Smit, 2008). Age-specific rates of household formation are quite high when compared to nearby countries. Housing supply in the medium run is relatively elastic to price and responsive to population growth. Indonesia has a lower share of its urban population living in slums than neighboring countries do, evidence of its functional housing market (UN Habitat, 2003). Even within the country, the more tightly regulated urban housing markets do not have higher prices on average.

The explanation for this discrepancy is straightforward, but has important implications for academic work and housing policy in developing countries. The case of Indonesia demonstrates the limitations in existing research on the impacts of land-use regulation in countries where there is a lack of, or inconsistency in enforcement of regulations. The data analysis and case studies presented here demonstrate that in the Indonesian housing development system, regulations are applied in a 'flexible manner' – in turn showing that high levels of housing affordability can co-exist in a climate of strict *de jure* land use regulations.

In some ways these observations are not new. Indonesia has long been noteworthy for its dynamic informal housing sector, which allows for families to secure housing outside of the formal system (De Soto, 1986; Struyk et al., 1990; Leaf, 1993). In addition, Indonesia has substantially lower rankings on "regulatory quality" and "control of corruption" in the World Governance Indicators (World Bank, 2006) than comparable countries, such as Thailand, Malaysia, or the Philippines. More recent data and the analysis presented here show that informal, self-built housing continues to constitute the majority of new housing starts in Indonesia. In some respects informal urbanization in Indonesia also fits into frameworks developed by those studying China's land rights systems (Ho, 2001; Hsing, 2006), where it is argued that the ambiguity over land rights is a deliberate urban governance tactic that allows local levels of government greater control over the urbanization process as well

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as potentially allowing them to profit at the expense of peri-urban farmers.

There is a large body of research on the topic of housing informality. The majority of this work focuses on understanding the reasons for the informality phenomenon and potential equity problems with it (Portes et al., 1989); or interpretations of informality as a mode of urban governance in developing countries or as a dominant urban organizing process (Tabak and Crichlow, 2000; Roy, 2005). It remains important to assess the impacts of land-use regulation on housing markets in Indonesia and other countries where informality is prevalent. In the international policy advising arena, the empirically tested conceptual models from the United States and International Financial Institutions (IFIs) often continue to be applied. For example, the World Bank's enabling housing policy strategy (1993) and related research (Angel, 2000), remain important frameworks emphasizing the potential importance of regulations as a constraining factor in housing production and a detriment to housing affordability.

The implications of this study are therefore twofold. First, it draws attention to a limitation in international research on land-use regulation and housing markets, particularly in developing country urban settings. The case of Indonesia does not fit existing theory and thus merits attention. Although strict regulations in Indonesia are not associated with costly housing, the non-price impacts of the regulatory system on the housing sector should be studied. It is probable that the under investment in urban infrastructure in Indonesia that stems from self-build construction, which in turn results in part from strict regulations. Indonesia has lower rates of access to water and sewerage infrastructure than comparable countries like Malaysia, the Philippines, Vietnam, or Thailand (World Bank, 2009). This lack of formal urban infrastructure is argued to undermine human development and the potential benefits from urban agglomeration (World Bank, 2011).

Nonetheless, within Indonesia, the paper provides evidence that *de jure* land-use regulations are actually extremely stringent. Housing development companies and informal house builders interviewed as part of two city case studies – in Semarang and Manado – described a series of cumbersome and complex procedures as well as large unofficial fees that can occasionally be higher than the cost of land itself. Moreover, it must be recognized that informality as a solution to strict regulations will not always lead to a well-functioning housing market and in many countries it does not. More work on why Indonesia's housing sector works in spite of strict regulations is needed.

The paper draws on several sources of data to analyze urban land use regulations and housing markets. A review of international literature highlights the important but often overlooked element of enforcement and then Indonesia's land administration and land-use regulation system is described. Results from empirical analysis of data on housing production and regulation from a large number of cities in Indonesia are presented as well as detailed case studies of the regulatory context and housing markets in two cities – Semarang and Manado.

These cities were chosen because they are representative of medium and large cities in Indonesia. In particular, the median household incomes in both the case settings are close to that of comparable Indonesia cities, but also because in terms of housing markets, they have better than average outcomes. For example, Semarang has much better housing quality than comparable Indonesian cities and higher rates of access to infrastructure, while on the other hand Manado has a very high household formation rate and a housing market that is very responsive to population growth. In both cities we conducted interviews (in December, 2010, and January, 2011) in each city with developers, informal house builders, village and neighborhood leaders, local offices of BPN, and

local governments to understand how the regulatory system affects housing production.

Literature on urban land-use regulation and housing markets

Urban land-use regulations are the diverse range of rules and requirements governing housing and urban development, such as growth management or urban containment (Dawkins and Nelson, 2002); height restrictions and plot ratios (Bertaud and Brueckner, 2005); the length and cost of the permitting process (Malpezzi and Mayo, 1997); standards on plot size or infrastructure (Dowall, 1992); or the number of approvals required for a project (Kok et al., 2010). It has been long theorized that excessive land-use regulations negatively impact housing markets in two ways. First, they increase the price of finished housing directly through fees and indirectly by making the housing-production process take longer or by imposing minimum standards, which leads to developers charging higher prices for finished housing (Malpezzi and Mayo, 1997). Second, regulations reduce the price elasticity of housing supply, both lowering the steady state level of construction and reducing market responsiveness to demand shocks (Mayer and Somerville, 2000). Thus, given two cities with otherwise similar conditions, less development is expected to occur where regulations are nominally stricter and thus housing will be more expensive.

In recent years, empirical tests of the relationship between land-use regulation and housing markets have not rejected the hypothesis that cities with strict regulations on land-use and development have lower supply elasticities and higher prices (Saiz, 2010; Glaeser and Ward, 2009; Kok et al., 2010; Hilber and Vermeulen, 2010; Jaeger et al., 2012). However, due to data requirements, these econometric tests have been carried out only in the United States and the United Kingdom, where enforcement of land use regulations can be reasonably assumed to be consistent. Yet in many countries, this is not the case. There is no econometric test of the economic theory regarding land-use regulations and housing markets in places without strict enforcement. The empirical work in developing countries is mostly limited to a single case analysis (Green et al., 1994) or comparison of a handful of cities or countries (Malpezzi and Mayo, 1997; Dowall and Monkkonen, 2007), and theoretical models that do not consider enforcement have generally been upheld.

However, in places where strict land-use regulations are not enforced, their impact on housing markets is not clear. The most commonly observed impact of stringent regulations without enforcement is that households acquire housing outside of the legal system, through squatting or simple illegal land subdivision (De Soto, 1986; Dowall, 1992; Duranton, 2008; Biderman et al., 2008; Brueckner and Selod, 2009). Informal housing development has been rightly characterized as both a problem and a solution (Mangin, 1967) – it can provide households with affordable shelter, but this shelter can be unsafe structurally, or located in unhealthy and environmentally vulnerable areas. Informal housing is also often conflated with the incremental production process, a self-managed process through which houses are built in stages (Keivani and Werna, 2001). However, legal status and housing production processes have different causes and generate distinct problems.

Informality has been a vibrant topic of scholarly work for decades, originating with work on employment (Hart, 1973). Yet much of the research on informality focuses on its causes, motivations for actors involved, and the implications for understanding urban life, rather than the impacts on markets. For example, Gilbert (1990) discusses the multiple reasons governments are averse to altering laws which they are unable to enforce in the context of housing and urban development. Often, however, it is not an

inability to enforce laws that leads to informality, but rather the use of selective enforcement as a tool to manage urbanization (Ho, 2001). The notion of selective or flexible enforcement is one in which local officials use the threat of regulation as a means to extract resources from participants in the process, a form of rent-seeking.

The housing market outcomes of a lack of compliance with regulations have not seen sufficient study in the Indonesian context and elsewhere. Much of the research focuses on the impacts of insecure tenure, which is found to lead to under investment both in housing and in agricultural infrastructure (Feder and Nishio, 1999; Galiani and Scharfrodsky, 2004). Insecure property rights have also been found to be associated with larger households, lower educational investment, and worse health outcomes for children (Galiani and Scharfrodsky, 2004); as well as with an impaired ability to work outside of the house and thus has been argued to result in lower employment success (Field, 2007).

Incremental housing processes, on the other hand, results mostly from a lack of financing mechanisms for the purchase of houses and their construction and can produce a number of negative externalities (UN Habitat, 2003; Feler and Henderson, 2008). Most of these impacts stem from the inefficiency of building housing and neighborhoods in stages, their habitation before being completed, and the building of houses before infrastructure is installed. For example, it has been shown that incremental housing development leads to a lower urban densities (Monkkonen, 2011), which in turn has such negative impacts such as higher transportation costs and reduced access to services (Kironde and Lusugga, 2006). Not only is networked infrastructure more costly to install *after* housing has already been built, it is systematically more costly in low-density neighborhoods. Thus access to urban amenities and infrastructure such as water, sewage, electricity, or even the postal system becomes much more expensive in incrementally developed informal settlement areas arguably resulting in consequent negative social impacts (Smolka, 2003).

Most empirical work on the housing market impacts of land-use regulation in developing countries draws upon case studies to examine regulatory cost in one locale or compares regulations and market indicators in a relatively small number of countries or cities. For example, Bertaud and Malpezzi (2001) examined why the costs of housing production are so high in the formal sector (relative to household incomes) in Malaysia by identifying the constraints on production. Similarly, using a cost-benefit framework, Bertaud and Brueckner (2005) evaluated the impacts of various regulatory restrictions in Bangalore, India. Although these analyses are important as studies of policy reform, they do not provide conclusive tests of the hypothesized impacts of regulations on housing prices. It is perhaps true that prices in Malaysia and Bangalore are quite high and regulations are strict, but testing for a causal relationship is a more complex effort.

Other researchers have attempted to employ data on several cities or countries. Malpezzi and Mayo (1997) compared supply elasticities in the more strictly regulated housing markets of South Korea and Malaysia with the less regulated environments in Thailand and the United States and found that the former are much higher. Yet, the results of these comparisons depended heavily on the choice of cases. Moreover, these studies do not address the question of enforcement. A case study of Accra, Ghana, utilized a similar strategy. Buckley and Mathema (2007) showed that Accra has a lower supply elasticity than the comparable African cities of Dar es Salaam, Addis Ababa, and Nairobi. In this work the evidence fits the theory of the impacts on regulation on housing prices quite well, yet it remains a comparison of only a few cases and therefore a limited test. Similarly, Dowall and Monkkonen (2007) showed that the land and housing markets of the highly-regulated portions of the Capital City Brasilia much expensive and qualitatively different

Table 1

Steps, time and cost of two regulatory indicators in 10 Asian countries.

Country	Getting a construction permit			Registering property		
	Steps	Time (days)	Cost ^a	Steps	Time (days)	Cost ^b
Cambodia	23	709	54	7	56	4.4
China	37	336	579	4	29	3.1
Indonesia	14	160	195	6	22	10.7
Japan	15	187	19	6	14	5.0
Korea, Rep.	13	34	136	7	11	5.1
Lao PDR	24	172	144	9	135	4.1
Malaysia	25	261	7	5	144	2.6
Philippines	24	203	82	8	33	4.3
Thailand	11	156	12	2	2	1.1
Vietnam	13	194	248	4	57	1.1

Source: World Bank (2010a).

^a Cost as a share of income per capita.^b Cost as a share of property value.

from those of other Brazilian cities of a similar size, but they also rely on a small number of cases.

The case of Indonesia shows that more work is needed in this area, as it does not fit theory about the impacts of land-use regulation on housing markets. Understanding the Indonesian case therefore yields an insight into assumptions about the enforcement of regulations, assumptions that do not hold in many places.

Land-use regulation and land administration in Indonesia

Indonesia arguably has one of the most costly construction permitting and property registration processes in Asia. Table 1 compares Indonesia to other Asian countries for two measures of regulatory strictness or stringency related to housing production: securing a construction permit and registering property. Although Indonesia is not more restrictive in the number of procedures required or the time it takes to complete them than comparable countries such as the Philippines, it is much more expensive. When measured as a share of property value, the cost of registering property in Indonesia is the highest in Asia and the cost of a construction permit is among the highest.

Although the land registration and construction permitting can be measured and discussed separately, in Indonesia, as in many places, they are interconnected. According to World Bank (2010b) data, the fourth step in obtaining a construction permit is the presentation of the land certificate. Additionally, transaction costs, which include property registration costs, legal fees, real estate agent fees, sales tax, and transfer tax, are higher in Indonesia than most other countries in Asia. Cruz (2008) estimated that total transaction costs in Indonesia can be as much as 47 percent of property value. The interviews with developers in the case studies described later in the paper, however, revealed that the processes of registration and permitting overlap considerably. In fact, it is common for developers to acquire land only *after* they have obtained development permits. Interviews with housing developers also confirmed the large time and monetary costs of registration and permitting in the Indonesian context – and these regulatory costs were frequently found to be higher than the price of land itself.

Although land administration and land-use regulations in Indonesia are cumbersome, the prevalence of informal housing and the dynamism of the sector have also been widely recognized (De Soto, 1986; Struyk et al., 1990; Leaf, 1994). In fact, Hernando De Soto (1986) used the case of Indonesia as an example of the efficiency of informal systems of land ownership in his argument for the importance of property rights in the development of capitalism. The reasons for this efficiency are multiple. One is that the reason regulations are cumbersome in Indonesia is not overly high standards

such as large minimum lot sizes (Dowall, 1992; Hoek-Smit, 2008). Formally developed houses on lots of 21 square meters are common for the lower price brackets. Rather, it is the process of land acquisition, registration, and permitting itself that is restrictive, but this process is more easily modified than strict rules on lot sizes or FAR.

Additionally, the country's dynamic informal sector has its origins in the colonial period (1602–1942), during which time the Dutch administration did not extend its land registration system across the entire country, but only in the areas where they had economic interests (Leaf, 1993). Thus, the traditional or customary system of land ownership claims in place beforehand was maintained and continues to be recognized today. This is one probable reason for the high-functioning informal system (De Soto, 1986; Struyk et al., 1990) and a condition that will not necessarily be found in all countries.

Contemporary Indonesian land ownership continues to be governed by Law No. 5 on Basic Agrarian Affairs, which was enacted in 1960 and provides for several legally recognized tenure claims in relation to land uses and rights, including: *Hak milik* or right of ownership, *Hak guna usaha* or right to cultivation, *Hak guna bangunan* or building rights, *Hak pakai* or use rights, *Hak sewa* or rental rights, *Hak membuka tanah* or land clearing right, and *Hak memungut hasil hutan* or forestry extraction right. A variety of extra-legal land tenure types, such as *Hak girik* or customary tenure, and use of purchase receipts as land claims are also in effect. However, *Hak Milik* is necessary for procuring urban development permits as well as for garnering financing from government or private sector institutions.

Land administration in Indonesia is carried out by the National Land Agency (Badan Pertanahan Nasional or BPN), traditionally a ministry under the Minister of Agrarian Affairs. During the beginning of the decentralization period after 1998, the government considered decentralizing land administration to the city level duties along with other governmental functions but in the end it was retained as a centralized agency (Rieger et al., 2001). BPN was declared a non-ministerial centralized institution in 2006 and is one of a small number of centralized agencies with no direct coordination with local governments. The Agency is directly responsible to the president through a minister and regulations on land administration are uniform in all parts of the country, being formulated at the central level.

Local offices of BPN follow directives from the central government office in Jakarta. Regional offices or *Kantor Wilayah* (Kanwil) are responsible for guiding, monitoring, and evaluating land administration and coordination at the provincial level (in Indonesia's 34 provinces), while local offices or *Kantor Pertanahan* (Kantah) actually provide services to the community. Implementation of national policies varies across Indonesia's cities in spite of the centralization, especially in the time it takes to register land. For example, although the requirements for land registration are identical across the country, the World Bank (2010b) – in a survey of business indicators – found that it took between 12 and 54 days to register property in 14 cities that were surveyed in Indonesia.

Property registration is just one component of the overall land-use regulation system, and to some extent indicators of time and costs of permitting or registration do not capture the challenges generated by the overall regulation of land development. The most frequently discussed constraint on housing development in Indonesia is the permitting system (Ferguson and Hoffman, 1993; Firman, 2004). Government Regulation No. 12/2010 requires developers to obtain a location permit (*Izin Lokasi*) and building permit (*Izin Mendirikan Bangunan*) from the local government before acquiring land. By law, the location permit should be revoked if the developer fails to use the land within one or [to?] three years depending on the case, according to BPN Regulation No. 4/2010.

Table 2

Housing acquisition method for owner households in 2007.

Acquisition method	City category				
	JMR ^a	Large	Medium	Small	Towns
Households moving 2002–2007					
Bought from a developer (%)	15.0	7.8	9.8	3.5	3.4
Bought new other source (%)	11.7	9.7	7.4	6.9	5.7
Bought second hand (%)	19.5	15.5	12.6	16.1	11.2
Self-built (%)	40.2	52.2	55.4	60.1	63.2
Other ^b (%)	13.7	14.7	14.9	13.4	16.4
Total	100.0	100.0	100.0	100.0	100.0
Households (thousands)	459.6	911.8	391.9	342.9	349.6
Households moving before 2002					
Bought from a developer (%)	14.9	5.2	7.8	3.4	2.2
Bought new other source (%)	6.8	3.2	4.5	2.5	3.1
Bought second hand (%)	12.7	7.4	9.7	7.9	7.3
Self-built (%)	43.2	64.5	53.1	68.1	68.3
Other ^b (%)	22.4	19.7	24.9	18.2	19.2
Total	100.0	100.0	100.0	100.0	100.0
Households (millions)	2.6	5.9	2.3	1.9	1.4

Source: Badan Pusat Statistik (2007).

^a JMR stands for Jakarta Metropolitan Region which in addition to Jakarta includes the regencies of Bogor, Bekasi, Tangerang, Depok, and Cianjur.

^b Includes inheritance, bequest, administrative allocation and official housing.

However, the permit is renewable, and in practice the time limit is not always enforced.

According to surveys in 14 municipalities, it takes almost a half a year and costs more than twice the per capita national income to obtain a location permit (World Bank, 2010b). In addition, the development permitting system effectively removes developable land from the market while developers are acquiring parcels within their permitted development area. This adds to the time it takes to formally develop housing. Moreover, this gives them a *de facto* monopsony over the area for which they have been allocated a permit and small landowners within the permitted development area can be forced to sell, often for a reduced price (Firman, 2004). In theory, this monopsony land assembly would raise prices elsewhere in the metropolitan area (Quigley and Swoboda, 2007) and in practice it arguably abets speculation (Goldblum and Wong, 2000).

Housing production in Indonesia

This section examines housing production in Indonesia, and the relationship between affordability, supply elasticity, and regulations. The number of housing units built by private sector developers in Indonesia has grown proportionally with the urban population, which roughly doubled between 1990 and 2010. Formal developers produced about 100,000 housing units in 1988 and in 2005 nearly 200,000 (Hoek-Smit, 2008). The dominant form of housing production in Indonesia remains self-built incremental housing, which was responsible for more than 70 percent of houses produced between 2002 and 2007 (Badan Pusat Statistik, 2007). The absolute number of developer-produced housing units has been growing, although their share of total new supply has remained fairly steady.

Table 2 reports data on owner households from 2007 according to the way in which housing was acquired. Recent movers, those who moved between 2002 and 2007, are compared to those who moved before 2002 in order to examine changes in the housing production process. Note that because several categories are not new houses, these percentages do not represent housing production *per se*. Data are from the National Indonesian Socioeconomic Survey (SUSENAS), a household survey that asks questions about housing and human settlements every four years (Badan Pusat Statistik, 2007).

Results are disaggregated by metropolitan areas¹ of different sizes given the common differences in housing market conditions. The five categories are: the Jakarta Metropolitan Region (JMR)²; 15 large cities with more than one million residents; 20 medium-sized cities with between 500,000 and one million residents; 56 small cities with between 75,000 and 500,000 residents; and a final category of towns, which includes the remainder of the population classified as urban, living in places with fewer than 75,000 residents.

More than half of new houses in almost all Indonesian cities were self-built, and a large share were acquired through “other” means, such as inheritance or as a gift. A small share of recent movers purchased new housing from a developer or other type of builder. The comparison between recent movers and the existing stock shows a gradually diminishing importance of self-build. A greater share of households now acquires housing by purchasing it either new or on the secondary market. The share of new housing produced by developers has not increased by as great a magnitude as the other sources of new housing purchase and in the Jakarta Metropolitan Region and small cities it has barely increased at all.

Next we examine the characteristics of housing markets most likely to be affected by strict regulations: affordability and the elasticity of supply. A simple indicator of housing affordability is the share of monthly expenditures dedicated to housing expenditures. The average household is well below the standard rent-to-income ratio considered unaffordable by international standards (i.e. 30%), and less than one-fifth of urban households in Indonesia were in an unaffordable situation in 2007 (Badan Pusat Statistik, 2007). Although this metric of affordability increased between 2001 and 2007, it is still quite low; for example, in comparison to the United States where in the year 2000 more than 40 percent of renter households spent more than 30 percent of their income on rent (Quigley and Raphael, 2004).

Another measure of affordability is a housing price-to-income ratio. This is useful in the Indonesian context as it introduces housing quality into consideration. Rather than summarizing individual level numbers, price-to-income ratios compare median prices to median incomes. In this type of calculation, data availability generally limits the analysis to formal housing prices. Hoek-Smit (2008) estimated the price-to-income ratio for formal housing in Jakarta to be between 3 and 3.6, which is not high by international standards. She concludes that although housing is relatively affordable, high development costs and limited access to financing limit the expansion of the formal market.

Aggregate numbers are important, but housing markets are local. Housing conditions and rents vary widely between regions and cities in all countries, and considering these differences is important to understanding regulatory impacts, especially where regulation varies across markets. Perhaps to a greater extent than many countries, the Indonesian archipelago is heterogeneous and has pronounced regional inequalities. For example, of the municipalities with more than 50,000 residents in 2002, the one with the lowest average household income (Kabupaten Lumajang, East Java) was 800,000 Rupiah per month, while in Jakarta it was roughly 3 million Rupiah.³

Housing expenditures are strongly correlated with incomes across cities. Fig. 1 presents data on housing expenditures and

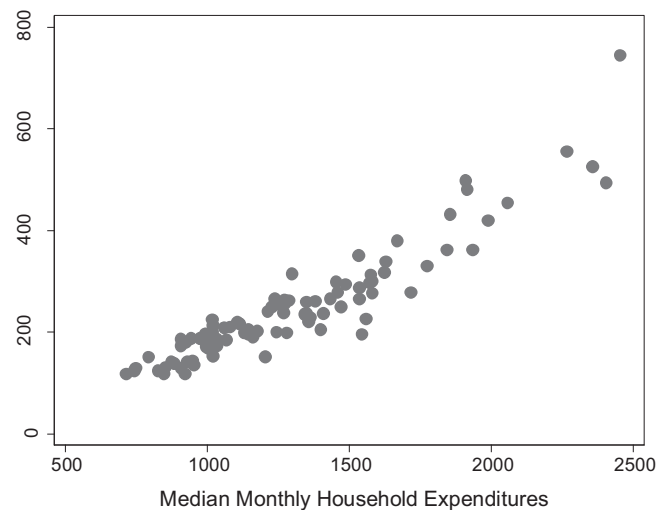


Fig. 1. Median household incomes and housing rent in 90 cities, 2007. Source: Author's calculation with Badan Pusat Statistik (2007).

incomes from SUSENAS as well as for 90 metropolitan areas. The relationship is similar to that observed in most countries, stemming from the fact that housing markets are local and people can move between cities. To some extent, city-level incomes determine housing prices and rents through their impact on the land market (Mills and Hamilton, 1994).

Although high-income cities in Indonesia have incomes slightly more than three times low-income cities, high-rent cities have rents roughly five times larger than low-rent cities. This is not unusual and due in part to the fact that housing is of higher quality in these higher income cities and also because the demand for housing is income elastic.

Variation in housing prices and housing supply across cities can be understood within the standard assumption of spatial equilibrium across cities in urban economics (Rosen, 1979). Workers with mobility amongst cities will choose the optimal mix of wages, housing costs, and amenities. More productive cities and those with a higher quality of life attract migrants. This means that population growth from migration will not affect housing prices excessively if housing supply is elastic, but if supply is inelastic, prices will increase and the city will become less attractive to new migrants.

The responsiveness of housing supply to population growth (the change in households over the change in population) for Indonesian cities was found to be close to unity on average (0.87), demonstrating the validity of an assumption of the above spatial equilibrium scenario. Moreover, a calculation of the price elasticity of housing supply in urban Indonesia from 2001 to 2007 shows that it was, in fact, quite elastic overall; at about 1.7. This indicates that a 10 percent increase in price is associated with a 17 percent increase in houses supplied.

A final indicator of housing market efficiency is age-specific headship rates, or the share of an age group that is household head or spouse of head. Among 30- to 34-year-olds in urban areas they were almost 80 percent in 2001 in Indonesia (Badan Pusat Statistik, 2001), as compared to roughly 70 percent in Malaysia and 60 percent in Thailand (Minnesota Population Center, 2011). A high rate of household formation is strong evidence that the housing market is well-functioning. If affordability were a problem fewer people would be able to create new households.

The relationship between median house value and population at the level of individual housing markets is straightforward in Indonesia; higher value (and higher income) areas experienced greater population growth. Fig. 2 presents a scatterplot of this relationship across cities. The strong positive correlation is expected.

¹ Metropolitan areas (also referred to as cities) in this section are defined in similar way as Metropolitan Statistical Areas (MSAs) in the United States. Municipalities (*kota/kabupaten*) with an urban core of more than 50,000 people are first designated and adjoining municipalities with urban residents may be added if the urban area is within 10 miles. Many urban areas span more than one municipality.

² This includes nine municipalities in addition to Bogor, Tangerang, and Bekasi.

³ This difference is only slightly greater than regional income differences found in the United States (Glaeser and Gottlieb, 2009).

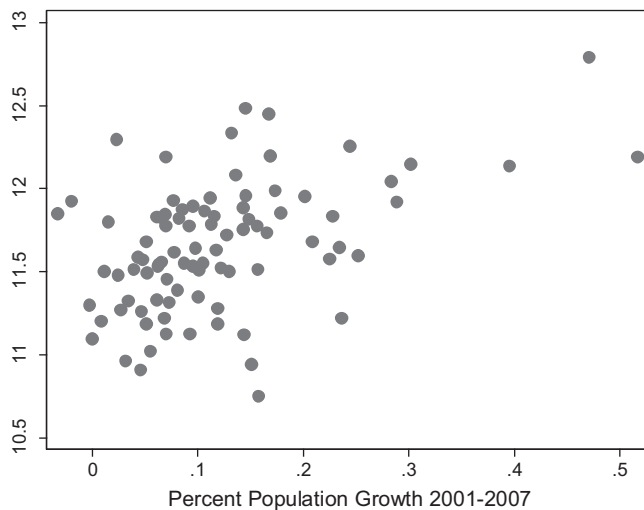


Fig. 2. Estimated housing value and population growth in 90 cities, 2001–2007. Source: Author's calculation with Badan Pusat Statistik (2001, 2007).

There is no evidence of constrained supply in any particular market, as is found in the United States, where many cities with high housing values like San Francisco or Boston saw very little population growth (Glaeser and Gottlieb, 2009).

Two sources of data provide more direct evidence of the relationship between regulation and housing markets in Indonesia. First, in terms of land management, SUSENAS records the type of land ownership claim households possess. This allows for an examination of the demand for different forms of land claims at the household level and a city-level comparison according to the prevalence of formal land claims. The former analysis is carried out using a standard hedonic model and year 2007 data for each city in Indonesia (Rosen, 1974; Badan Pusat Statistik, 2007).

Household housing expenditures are regressed on a set of characteristics of the house itself, house size, lot size, building materials, access to infrastructure, and dummy variables for each of the four possible non-BPN land ownership claims—purchase receipt, customary title, other claim, and no claim. Not surprisingly, housing with one of these three extra-official ownership claims or no claim was significantly less expensive on average, between nine percent less for purchase receipts and 19 percent for no claim. However, the estimated impact of less than full land title varied greatly across cities, and depending on the type of claim there was no significant difference between housing with full title and housing with an extra-official claim in 20 and 40 percent of cities.

At the city level, we use the share of houses that hold full land title as a proxy to assess the efficiency and reach of the local land administration. We assume that a greater share of housing being

titled indicates a more strongly enforced and strict land management system. Yet, the correlation between the share of houses with full land title and the share of households in an unaffordable situation is not statistically significant. Fig. 3 depicts this relationship in a scatterplot of affordability and the prevalence of BPN registration.

Secondly, using survey data from the report, *Doing Business in Indonesia*, we are able to examine associations between land-use regulations and housing market outcomes. Although a test of the impacts of regulations on housing supply and prices requires more sophisticated analysis than is possible with the limited data available, associations are not even suggestive of a relationship. Fig. 4 is two scatterplots of housing costs as a percent of total household expenditures and the two measures of land-use regulation recorded by the *Doing Business* report (World Bank, 2010b).

In sum, despite data limitations the relationships between regulations and housing market in Indonesian cities are not apparent in the current data as discussed above. The next section further examines two specific urban markets to identify how issues about regulatory enforcement and informality merit further consideration in the analysis of emergent urban housing markets.

Land-use regulation and housing production in two Indonesian cities

Semarang, the capital of Central Java Province, had a metropolitan population of almost 3 million in 2007 (Badan Pusat Statistik, 2007). The northern part of the city is built on a coastal plain, thus flooding is common. Historically, Semarang was part of Demak Sultanate. Semarang is the center of a metropolitan region known as Kedungsepur, which includes the municipalities of Kendal, Demak, Ungaran, Salatiga, Semarang, and Purwodadi. According to the local BPN office, approximately 50,000 of the city's roughly 70,000 parcels of land have been registered with BPN. Land is relatively expensive in the inner city or old area of Semarang municipality, about 1–5 million Rupiah per square meter as compared to suburban areas where the cost is between 400,000 and 500,000 Rupiah per square meter for developed land and 15,000–100,000 Rupiah per square meter for undeveloped land.

Manado, which is the capital of North Sulawesi Province, had a metropolitan population of almost 700,000 in 2007 (Badan Pusat Statistik, 2007). The municipality experienced a jurisdictional extension in 1989 and now consists of nine subdistricts. The local office of BPN in Manado currently has 63,895 parcels of registered land, of which 52,855 have the *Hak Milik* claim. Most land is held by this right of ownership, though traditional ownership, known as *pasini*, is recognized and the government plans to convert it to HM status. The local government also has small area of land with a status of "*Tanah Negara*" (state owned land). Envisioned to be the city's new business area, the coastal zone is the fastest growing part of the city and undergoing massive land reclamation and a rapid increase in prices. The land price in the center of the city and the coastal

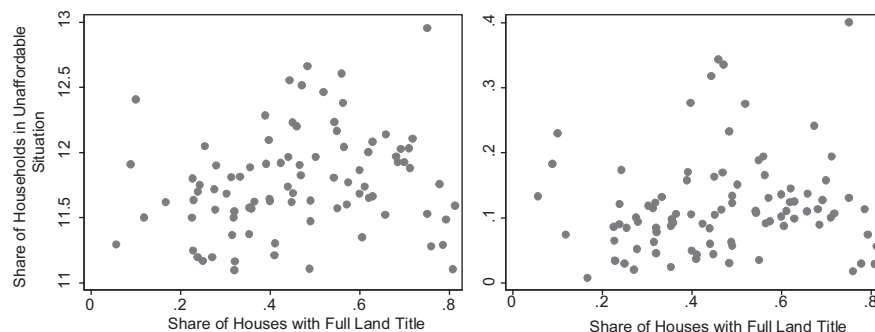


Fig. 3. Housing prices, affordability and official land title in 90 cities, 2007.

Source: Author's calculation with Badan Pusat Statistik (2001, 2007).

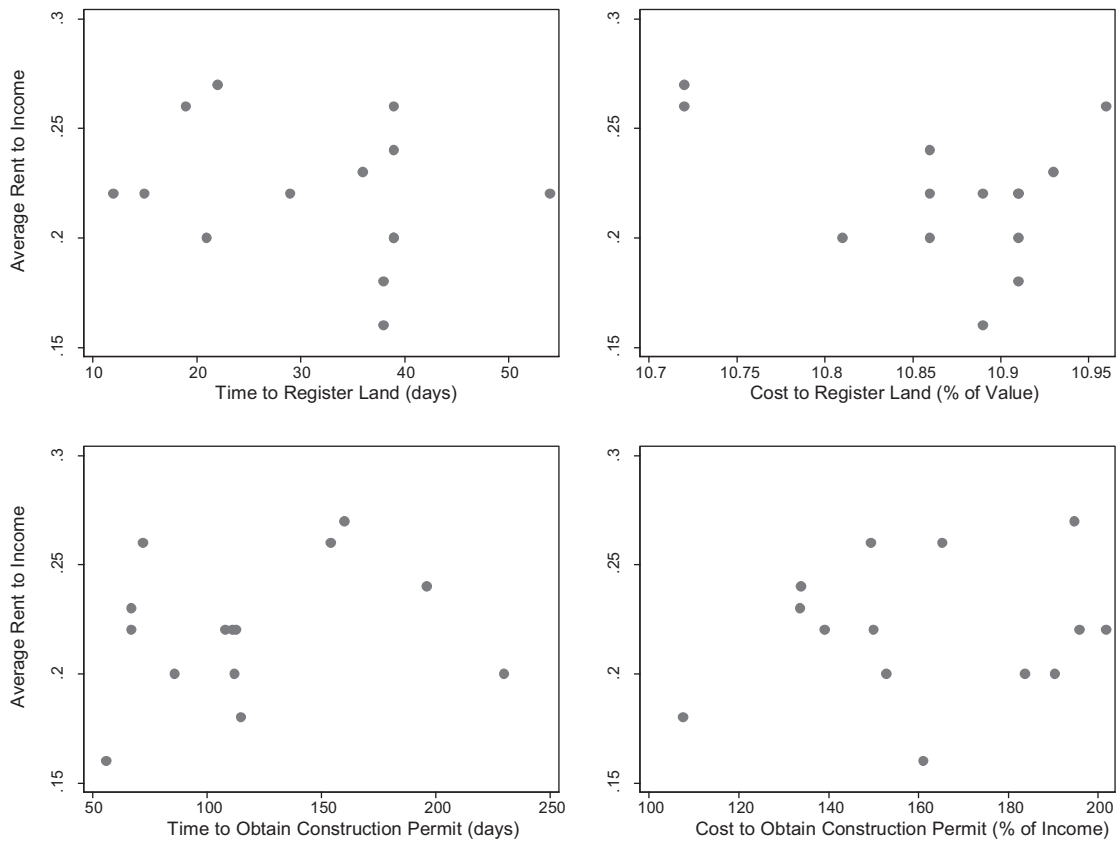


Fig. 4. Time and cost to register property and secure a construction permit and housing affordability for 14 Indonesian cities. Source: World Bank (2010a,b); Author's calculation with Badan Pusat Statistik (2007).

zone may range from 1.5 to 3.5 million Rupiah per square meter, while in the peripheral areas prices range from 500,000 Rupiah per square meter for developed land to 30,000–50,000 Rupiah per square meter for undeveloped land.

It is difficult for low-income households in both cities to obtain safe and secure land for housing in the central part of the urban area or other than in *kampung* (former villages that often lack basic infrastructure and have poor environmental conditions). In the case of Manado, there are also some low-income housing along riverside areas with right to use titles (HP). The local government in Semarang has built several flats (*rusun*) close to the older *kampung* in an attempt to upgrade their living environment and tenure security. Thus, most find accommodation in peri-urban areas, as far as 20 km from the city centers. To capture this demand, several private developers have recently focused on building small houses targeted for low-income people. The next sections, examine the role of housing developers – both large companies and smaller informal builders – in both Manado and Semarang.

Informal house builders in Indonesia

Interviews were carried out with ten households and three village heads in each of three informally developed neighborhoods in both Manado and Semarang, in order to better understand acquisition and ownership claims along with the housing construction process. As anticipated, these interviews revealed the heterogeneous nature of most housing acquisition and construction in Indonesia. For example, it was identified that households frequently acquire land through squatting, purchase, inheritance, or sometimes a loan from a family member. Frequently inherited land had been split between siblings and it took some households 10 or 20 years to build their house but others less than a year or had

even purchased a completed house. Many households reminded interviewers of plans to add rooms or floors.

This heterogeneity makes it difficult to characterize this sector of housing production. Measuring new units depends on whether splitting a house into two or adding several rooms to accommodate family members counts as new units being added. Measuring price changes is complicated because many of the transactions are non-monetary, such as inheriting land from one's parents, borrowing, or squatting. Interviewees were not sufficiently well-informed about the market beyond their experiences to make statements about trends or changes.

Nonetheless, most households interviewed expressed concern over the cost and cumbersome nature of regulations, similar to the views of developers. A lack of transparency or information about the process seemed to be the major challenge for households, more so than for developers, and this exacerbated the abuse of extra-legal fees. One example mentioned by several households was the payments of “thank you” money to local government officials for papers required for application to BPN, papers that should be free.

Although survey fees are regulated by Government Regulation 13/2010, interviewees consistently reported that actual fees charged are higher than the official cost. Unofficial fees are also needed to expedite the certification through notaries. Total registration fees were reported to reach 8 million Rupiah in some cases, whilst the nominal fee is only 120,000 Rupiah. Similar to developers, households paid larger sums in order to expedite the process. Several of the households mentioned the importance of free or discounted mass land registration programs such as *Proyek Operasionalisasi Nasional Pertanahan* (PRONA), the National Land Operation Project, and have benefitted from them.

Access to land is one of the most important elements for assessing the efficiency of a housing production system for

low-income households in a country like Indonesia (Angel et al., 1983). Yet the price of un-serviced and un-subdivided land is not high in either Manado or Semarang. Raw (unserviced) land was estimated by developers to cost between 30,000 and 50,000 Rupiah per square meter in both cities. As median monthly household incomes are 1.2 million Rupiah per month in Semarang and 1.3 million in Manado (Badan Pusat Statistik, 2007), a 60-square meter plot would cost only two months of income. Yet, slightly less than half of the 20 households interviewed had purchased their land directly; the remainder had either inherited the land, were renting, or had acquired it through a family member or family friend. The availability of cheap land is a key ingredient to the efficient informal housing sector in Indonesia that operates in spite of stringent regulations.

Indonesian housing development companies

Interviews with four separate housing development companies in Manado, four in Semarang, and a focus group with the directors of Real Estate Indonesia (REI) in Jakarta provided insights into the way the regulatory process affects housing markets in urban Indonesia. Responses in all cases consistently identified the biggest constraints to housing production as being infrastructure and materials as the two most costly elements; and the land registration and permitting process as the next most important.

The most striking finding was that land registration and permitting were consistently identified as being more costly than the land itself. Developers reported that prices for raw land ranged from 30,000 to 50,000 Rupiah per square meter, which implies that a house on 66 m² lot, a common size for small houses, would be less than five percent of the final sales price of 55 million Rupiah. This is much less than the estimate of land costs reported by Hoek-Smit (2008) (a quarter of the total cost of a formal sector house), which is likely due to the differences between land prices in the large metropolitan area of Jakarta as compared to the medium sized Indonesian cities of Semarang and Manado.

Moreover, the costs of registration and permitting described by developers did not include the cost of delays due to the uncertain permitting timeline. It was reported that it can take several years for a full housing project to be registered and permitted. In many cases, land development permit rules are not followed, and although developers were reluctant to give details about unofficial costs for different steps in the process, they reported that these can be high and necessary to facilitate the process. The land registration and subdivision process was consistently described by developers as cumbersome, costly, and time consuming.

Dealings with the offices of BPN were described as often requiring unofficial payments and it is standard practice to use notaries as intermediaries to fast track the process. Yet, even within the formal procedures for land registration and subdivision there are clear inefficiencies. To sell housing on individual lots, land must be subdivided and each lot assigned a freehold title or *Hak Milik* (HM). In order to generate these subdivided lots with HM, even if the assembled parcels already had HM, developers must first legally bind the entire project's land into one master parcel with a building rights title, known as *Hak Guna Bangunan* (HGB). Only after the master HGB is issued can developers apply for the splitting of the master HGB into individual parcels. On paper, the procedure of combining freehold rights to the master HGB is supposed to be completed in 15 days but in practice, developers may spend about 45 days. Parcels must be re-measured, surveyed, mapped, and processed before the final splitting of the master HGB.

The parcel splitting process is greatly complicated by Head of BPN Regulation No. 1/2010, which rules that a parcel of land can only be split into a maximum of five smaller parcels, even if developers plan to build hundreds of houses at one project site. Thus, large parcels must be split into five smaller parcels and then each of

these further divided into another five and so forth until the desired number of parcels is obtained. This multiple splitting process is time consuming and costly, as each splitting takes several days and requires fees. Costs are higher if the developer would like to receive the legal documents faster. Some developers pay hundreds of thousands of Rupiah per unit while others pay millions. A final major regulatory constraint is the purchase tax, or the Revenue Acquisition of Land and Buildings (BPHTB). This tax is five percent of the property's sale value if the value is less than 20 million Rupiah and 10 percent if higher than 20 million Rupiah.

Conclusions

Indonesia is an important case for the growing body of literature on regulations and housing markets as it provides a counter example to theoretical predictions of standard economic theory. The paper seeks to provoke future work in this area. Not only is work needed on the housing market impacts of land-use regulation in a greater variety of contexts, but also more rigorous analysis of the relationship between regulations and housing markets in countries where rules are not enforced consistently.

A second conclusion from the work relates to the impact of strict land use regulations with flexible enforcement on the quality of urbanization. In Indonesia, formally built housing will be a minority of total housing production for years to come, and the majority of the population will acquire housing through an informal, incremental process. Although incremental building is an important housing solution around the world, it is inefficient in several ways. Thus, in addition to regulatory reform, housing policies should focus on improving the existing incremental production system through, for example, the promotion of housing microfinance and government-facilitated access to land (Greene and Rojas, 2008). Indonesia would also benefit from efforts to expand the reach and service of utilities.

In spite of it having a relatively functional housing market, reform of land-use regulation in Indonesia is important. Some clear policy reforms emerged from the case studies of Semarang and Manado. First, the permitting process for housing development should be streamlined and reformed. A one-stop permitting center would reduce coordination problems, and dealing with multiple local agencies creates more opportunities for corruption. The inconsistency and lack of coordination between requirements of BPN and the local government permitting offices was cited as a problem.

Secondly, legal procedures should also be changed to reduce the cost and time to obtain necessary permits for land urbanization and housing development. For example, the location permit system as it currently stands removes land from development unnecessarily and abets speculative practices. The order of development is inverted compared to other countries, with permits for development acquired before the purchase of land. Also, the Head of BPN Regulation No. 1/2010, creates unnecessary steps in the subdivision process and could be streamlined.

The case of Indonesia is similar to some African countries in that informal land tenure systems predominate. In these systems, focusing only on the formalization of land without acknowledging the probable nature of housing development on the land can have negative impacts on access to land for informal housing development (Angel et al., 1983). Additionally as land becomes more expensive due to urban growth, the state does not benefit through taxes or better planned urban areas. Rather, actors within and connected to the state (such as notaries) enrich themselves through rent-seeking activities associated with bureaucratic steps in development permitting (Jenkins, 2001). Thus, streamlining regulations and reducing the process of incremental housing development should not negatively impact the state.

The decision to dedicate scarce resources to land registration and regulatory reform should be carefully weighed against other possible uses of government funds (Feder and Nishio, 1999). Yet the limited institutional capacity of the land administration offices was apparent in the offices of BPN in Semarang and Manado, where employees remarked that they were understaffed and suggested they needed an additional 50 per cent their current complement of staff. The limited success of land-titling efforts by BPN thus far suggests the decentralization of land administration should be duly considered.

A country with stringent urban land-use regulation, rapid urbanization, and an affordable, well-functioning housing market demonstrates a missing consideration in theoretical models; enforcement. However, it is not true that flexible enforcement of regulations will necessarily lead to better functioning housing markets in all cases; examples of developing countries with strict regulation, high levels of informality, and constrained housing markets have been presented in the literature review. Thus, more research is needed to be done to understand how and why the system of extra-legal land tenure characteristic of Indonesia provides housing affordably and whether it contains lessons for other countries.

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References

- Angel, S., 2000. *Housing Policy Matters: A Global Analysis*. Oxford University Press, Oxford.
- Angel, S., Archer, R.W., Tanphiphat, S., Wegelin, E.A. (Eds.), 1983. *Land for Housing the Poor*. Select Books, Singapore.
- Badan Pusat Statistik, 2001. *National Indonesian Socioeconomic Survey (SUSENAS), Core and Housing Module*. Badan Pusat Statistik, Jakarta.
- Badan Pusat Statistik, 2007. *National Indonesian Socioeconomic Survey (SUSENAS), Core and Housing Module*. Badan Pusat Statistik, Jakarta.
- Bertaud, A., Brueckner, J.K., 2005. Analyzing building-height restrictions: predicted impacts and welfare costs. *Regional Science and Urban Economics* 35 (2), 109–125.
- Bertaud, A., Malpezzi, S., 2001. Measuring the costs and benefits of urban land use regulation: a simple model with an application to Malaysia. *Journal of Housing Economics* 10 (3), 393–418.
- Biderman, C., Smolka, M., Sant'Anna, A., 2008. Urban housing informality: does building and land use regulation matter? *Land Lines* 20 (3), 14–19.
- Brueckner, J.K., Selod, H., 2009. A theory of squatting and land-tenure formalization in developing countries. *American Economic Journal* 1 (1), 28–51.
- Buckley, R.M., Mathema, A.S., 2007. Is Accra a Superstar City? *World Bank Policy Research Working Paper No. 4435*.
- Cruz, P.C.R., 2008. Transaction costs and housing affordability in Asia. *International Real Estate Review* 11 (1), 128–150.
- Dawkins, C.J., Nelson, A.C., 2002. Urban containment policies and housing prices: an international comparison with implications for future research. *Land Use Policy* 19, 1–12.
- De Soto, H., 1986. *El Otro Sendero [The Other Path]*. Instituto de Libertad y Democracia, Lima, Peru.
- Dowall, D., 1992. Benefits of minimal land-use regulations in developing countries. *Cato Journal* 12 (2), 431–444.
- Dowall, D.E., Monkkonen, P., 2007. Consequences of the plano piloto: urban land markets in Brasília. *Urban Studies* 44 (10), 1871–1887.
- Duranton, G., 2008. Viewpoint: from cities to productivity and growth in developing countries. *Canadian Journal of Economics* 41 (3), 689–736.
- Feder, G., Nishio, A., 1999. The benefits of land registration and titling: economic and social perspectives. *Land Use Policy* 15 (1), 25–43.
- Feler, L., Henderson, V., 2008. The effects of exclusionary housing policies on urban development: evidence from Brazil. In: *United Nations Expert Group Meeting on Population Distribution, Urbanization, Internal Migration and Development*, United Nations Secretariat, January 21–23, New York, NY.
- Ferguson, B.W., Hoffman, M.L., 1993. Land markets and the effects of regulation on formal-sector development in urban Indonesia. *Review of Urban & Regional Development Studies* 5 (1), 51–73.
- Field, E., 2007. Entitled to work: urban property rights and labor supply in Peru. *Quarterly Journal of Economics* 122 (4), 1561–1602.
- Firman, T., 2004. Major Issues in Indonesia's urban land development. *Land Use Policy* 21, 347–355.
- Galiani, S., Schargrodsky, E., 2004. Effects of land titling on child health. *Economics and Human Biology* 2 (3), 353–372.
- Gilbert, A., 1990. The costs and benefits of illegality and irregularity in the supply of land. In: Baross, P., van der Linden, J. (Eds.), *The Transformation of Land Supply Systems in Third World Cities*. Gower Publishing, Aldershot, pp. 17–36.
- Glaeser, E.L., Gottlieb, J.D., 2009. The wealth of cities: agglomeration economies and spatial equilibrium in the United States. *Journal of Economic Literature* 47 (4), 983–1028.
- Glaeser, E.L., Ward, B.A., 2009. The causes and consequences of land use regulation: evidence from Greater Boston. *Journal of Urban Economics* 65 (3), 265–278.
- Goldblum, C., Wong, T.C., 2000. Growth, crisis and spatial change: a study of hazardous urbanisation in Jakarta, Indonesia. *Land Use Policy* 17, 29–37.
- Green, R.K., Malpezzi, S., Vandell, K., 1994. Urban regulations and the price of land and housing in Korea. *Journal of Housing Economics* 3 (4), 330–356.
- Greene, M., Rojas, E., 2008. Incremental construction: a strategy to facilitate access to housing. *Environment and Urbanization* 20 (1), 89–108.
- Hart, K., 1973. Informal income opportunities and urban employment in Ghana. *The Journal of Modern African Studies* 11, 61–89.
- Hilber, C.A.L., Vermeulen, W., 2010. *The Impacts of Restricting Housing Supply on House Prices and Affordability*. Department for Communities and Local Government, London, UK.
- Ho, P., 2001. Who owns China's land? Policies, property rights and deliberate institutional ambiguity. *China Quarterly* 166, 394–421.
- Hoek-Smit, M.C., 2008. *Housing Finance Mechanisms in Indonesia*. United Nations Human Settlements Program. UN-Habitat, Nairobi.
- Hsing, Y., 2006. Brokering power and property in China's townships. *Pacific Review* 19, 103–124.
- Jaeger, W.K., Plantinga, A.J., Grout, C., 2012. How has Oregon's land use planning system affected property values? *Land Use Policy* 29, 62–72.
- Jenkins, P., 2001. Strengthening access to land for housing for the poor in Maputo, Mozambique. *International Journal of Urban and Regional Research* 25 (3), 629–648.
- Keivani, R., Werna, E., 2001. Modes of housing provision in developing countries. *Progress in Planning* 55, 65–118.
- Kironde, J., Lusugga, M., 2006. The regulatory framework, unplanned development and urban poverty: findings from Dar es Salaam, Tanzania. *Land Use Policy* 23, 460–472.
- Kok, N., Monkkonen, P., Quigley, J.M., 2010. *Economic geography, jobs, and regulations: the value of land and housing*. Berkeley Program on Housing and Urban Policy Working Paper No. W10-005.
- Leaf, M., 1993. Land rights for residential development in Jakarta: the colonial roots of contemporary urban dualism. *International Journal of Urban and Regional Research* 17, 477–491.
- Leaf, M., 1994. Legal authority in an extralegal setting: the case of land rights in Jakarta, Indonesia. *Journal of Planning Education and Research* 14, 12–18.
- Malpezzi, S., Mayo, S.K., 1997. Getting housing incentives right: a case study of the effects of regulation, taxes, and subsidies on housing supply in Malaysia. *Land Economics* 73 (3), 372–391.
- Mangin, W., 1967. Latin American squatter settlements: a problem and a solution. *Latin American Research Review* 2 (3), 65–98.
- Mayer, C.J., Somerville, C.T., 2000. Land use regulation and new construction. *Regional Science and Urban Economics* 30, 639–662.
- Mills, E., Hamilton, B., 1994. *Urban Economics*. HarperCollins College Publishers, New York, NY.
- Minnesota Population Center, 2011. *Integrated public use microdata series. In: International: Version 6.1 [Machine-Readable Database]*. University of Minnesota, Minneapolis.
- Monkkonen, P., 2011. Do Mexican cities sprawl? Housing finance reform and changing patterns of urban growth. *Urban Geography* 32 (3), 406–423.
- Portes, A., Castells, M., Benton, L.A. (Eds.), 1989. *The Informal Economy: Studies in Advanced and Less Developed Countries*. Johns Hopkins University Press, Baltimore, MD.
- Quigley, J.M., Raphael, S., 2004. Is housing unaffordable? Why isn't it more affordable? *Journal of Economic Perspectives* 18 (1), 191–214.
- Quigley, J.M., Swoboda, A., 2007. The urban impacts of the endangered species act: a general equilibrium approach. *Journal of Urban Economics* 61, 299–318.
- Rieger, T., Djalal, F., Pamuncak, E., Ramon, R., Soewardi, B., 2001. *Decentralising Indonesia's Land Administration System: Are Local Governments and Land Offices Ready? Evidence from 27 Districts. Final Report. COMO GmbH/PT COMO Konsultindo*, Jakarta.
- Rosen, S., 1974. Hedonic prices and implicit markets: product differentiation in pure competition. *Journal of Political Economy* 82 (1), 34–55.
- Rosen, S., 1979. Wage-based indexes of urban quality of life. In: Mieczkowski, P., Straszheim, M.R. (Eds.), *Current Issues in Urban Economics*. Johns Hopkins University Press, Baltimore, MD.

- Roy, A., 2005. Urban informality: towards an epistemology of planning. *Journal of the American Planning Association* 71 (2), 147–158.
- Saiz, A., 2010. The geographic determinants of housing supply. *Quarterly Journal of Economics* 125 (3), 1253–1296.
- Smolka, M., 2003. Informality, urban poverty and land market prices. *Land Lines* 15 (1), 4–7.
- Struyk, R.J., Hoffman, M.L., Katsura, H.M., 1990. *The Market for Shelter in Indonesian Cities*. The Urban Institute, Washington, DC.
- Tabak, F., Crichlow, M.A. (Eds.), 2000. *Informalization: Process and Structure*. Johns Hopkins University Press, Baltimore, MD.
- UN Habitat, 2003. *Slums of the world: the face of urban poverty in the new millennium?* UN Habitat, Nairobi, Kenya.
- World Bank, 1993. *Housing: Enabling Markets to Work*. The World Bank, Washington, DC.
- World Bank, 2006. *Governance Matters V: Governance Indicators for 1996–2005*. The World Bank, Washington, DC.
- World Bank, 2009. *World Development Indicators*. The World Bank, Washington, DC.
- World Bank, 2010. *Doing Business Indicators*. Available at: www.doingbusiness.org/ (last accessed 05.10.10).
- World Bank, 2010b. *Doing Business in Indonesia 2010*. The World Bank, Washington, DC.
- World Bank, 2011. *Indonesia Urbanization Review*. The World Bank, Washington, DC.