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Owning versus Leasing: Do Courts Matter?

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Abstract

We develop a legal contract enforcement theory of the own versus lease decision. The allocation of ownership rights will minimize enforcement costs when the legal system is inefficient. In particular, when legal enforcement of contracts is costly, there will be a shift from arrangements that rely on such enforcement (such as a rental agreement) toward other forms that do not (such as direct ownership). We then test this prediction and show that costly enforcement of rental contracts hampers the development of the rental housing market in a cross-section of countries. We argue that this association is not the result of reverse causation from a developed rental market to more investor-protective enforcement and is not driven by alternative institutional channels. The results provide supportive evidence on the importance of legal contract enforcement for market development and the optimal allocation of property rights.

JEL Classification: J41, L14, K12, R31

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1 Introduction

The transaction costs literature, which has its origins in the work of Coase (1937), has emphasized the role of contractual incompleteness as a major source of transaction costs (Klein, Crawford, and Alchian, 1978; Williamson, 1985; Hart, 1995). When a relevant aspect of a transaction cannot be verified by a third party, the enforcement of a contract contingent on that aspect becomes infeasible. And that has been found to have many implications for the design of the organizational structure of firms and other institutions.

While most of the literature has focused on the role of non-verifiability, in practice many contracts are de facto rendered incomplete by the inability to enforce them in court in a cost-effective manner. Djankov et al. (2003) provide evidence of a very large dispersion in the level of efficiency of courts around the world. Such differences in performance are likely to account for differences in the way people structure their agreements and, ultimately, in the performance and development of markets. The questions are: to what extent does law enforcement matter, and what are the exact channels through which it does?[1]

In this paper we argue that, lacking alternative means of enforcement such as reputations, market participants will tend to avoid the use of contracts when operating in an environment with very inefficient courts. As a result, the legal system may alter the allocation of ownership rights.

To examine this claim we consider the housing market, where these effects are most

[1]Recent studies have emphasized various related mechanisms through which investor protection and enforcement costs can affect the development of financial markets: expropriation of shareholders (La Porta et al., 2002), the choice of capital structure (Shleifer and Wolfenzon, 2002) or the design of private contracts (Bergman and Nicolaievsky, 2004; Gennaioli, 2005). Eeckhout and Munshi (2005) describe how informal financial intermediaries emerged in India in response to financial regulation.

transparent: essentially, a user of housing services can either buy a house or rent it from another owner or landlord. Hence, studying the prevalence of rental properties will tell us about the use of rental contracts and, hence, the allocation of ownership rights in such a market. To the extent that contracts can be enforced, they will allocate these rights in an efficient manner to maximize welfare. This will involve some individuals purchasing the houses they use, while others will buy access to them from a separate owner on an occasional basis, using a rental contract. But when these temporary transfers of control are costly to enforce, we will see departures from that optimal allocation. In particular, market participants may decide to avoid contractual disputes by relying less on rental agreements and, instead choosing a market structure that displays more direct ownership by the final user.

We start by building a model of the choice between owning and renting.[2] As argued by Sinai and Souleles (2005), a user faces the following trade-off: when renting, he faces the risk in the fluctuation of the rental price; instead, when owning, he avoids any risk if he stays in the same location but faces the price risk for the sale of the house he owns if he moves out. This gives us a theory of the size of the rental market. Those users who are likely to stay in their current location will decide to buy in order to avoid the rental price risk, while those who are likely to leave in the future will want to rent and avoid the house price risk.

We then extend the model to study the effects of the efficiency of the legal system. For this, we assume that enforcing a rental agreement (namely, repossessing one's home in case the renter threatens not to pay) can be done only at a cost. This gives renters bargaining power, which they will use to reduce future rents. As a result, there will be a disparity

[2] Our model is similar to that of Ortalo-Magné and Rady (2002).

between rents for existing and new tenants. While the latter have to pay the market rate, the former have gained access to the property and can use the costly enforcement to their advantage. Furthermore, since rents for existing tenants are lower than market rents, tenants will tend to move less often. Finally, we show that because of the reduced mobility (which eliminates the benefit of renting), and the increased cost for the investors, the size of the rental market will decrease.

We then turn to an empirical test of the theory. What should the *quantitative* importance of legal contract enforcement be? How big is the actual economic cost of repossession? The answer to these questions is by no means obvious, since private substitutes to legal investor protection exist. The Coasian view stresses the ability of interested parties to privately contract in an efficient way. Parties can design private contracts for those aspects not covered by the law, and enforce them through more or less costly alternative means of enforcement (such as reputation, repeated interactions, or other private actions and threats). To examine the empirical bite of our contract-enforcement theory of the own versus lease decision, we obtained data on the size of the rental market in 102 cities in 47 countries and measures of judicial efficiency constructed by Djankov et al. (2003), in particular, the time to repossession and a formalism index. The former variable is an estimate of how many days it takes, on average, for a landlord to regain access to his housing unit in case of rent non-payment. The second variable (the formalism index) "measures substantive and procedural statutory intervention in judicial cases at lower-level civil trial courts," also related to the eviction of a non-paying tenant (Djankov et al., 2003). The index can be seen as an indicator of the extent of legal costs for the landlord in the case of rent non-payment and repossession.

We find that urban areas in countries with less efficient legal contract enforcement (mea-

sured by its high formalism and long times to repossession in the rental market) tend to have a lower percentage of households living in rental units. We are able to rule out reverse causality by using as instruments legal origins and the formalism index of a legal process where the outcome is the collection of a bounced check, which should be unrelated to rental market development. Since regulations and institutions pertaining to mortgage defaults, rent controls, property registration, the labor market, social insurance, and the probability of investors' outright expropriation may all be correlated with both our measure of contract enforcement and the extent of the rental market, we show our results to be robust to the inclusion of variables that capture these factors.

There are two complementary reasons for focusing on the housing market. First, this market is one of the most important in all countries. Housing is a primary consumption necessity and the most important asset for many families that own. Existing research usually relates observable individual attributes to the propensity of a household to own versus renting or other housing arrangements (e.g. Gyourko and Linneman, 1996). Some studies have focused on the importance of credit access to account for housing tenure choices (as in Linneman and Wachter, 1989). Chiuri and Japelli (2003) and Pence (2003) find that defaulter-friendly foreclosure laws are associated with smaller mortgages and, consequently, higher down-payment ratios. In countries with higher down-payment requirements, it takes longer for the young to purchase a home. Chiuri and Japelli (2001), however, point out that "the average homeownership rate does not correlate with the size of the mortgage market, or with other indicators of housing finance." The authors argue that this is "evidence that high down-payment ratios affect the timing of home purchases, but do not discourage people to

become homeowners."[3] More related to this paper, Wasmer (2005) has studied the impact of regulations on the intensity of landlord screening, rents, and vacancy rates in the rental market. He contrasts the more fluid rental market of Quebec with its rigid counterpart in France. The theoretical model in Wasmer (2005) points to *additional* inefficiencies associated with costly contract enforcement in the rental market, conditional on renting. None of the aforementioned papers attempt to address the general equilibrium question on the relative extent of the rental versus property markets.[4] We therefore develop a general legal contract enforcement theory of the rental market that focuses on the individual own versus lease decision.

The existence of a functional and efficient rental market may be a major determinant of economic welfare and development *per se*. In the presence of liquidity constraints, a functional rental market may help young families to obtain adequate housing while saving for a down payment. A thick rental market may also facilitate mobility within a city and across regional labor markets, thus "greasing the wheels" of the national labor market.[5]

[3]This outcome is possible if young individuals stay for longer periods in their parents' homes. It is interesting to point out the possibility that the duration of mortgage foreclosure proceedings may be strongly correlated with the duration of the repossession of a rental unit in the case of rent non-payment. Thus, regulations that are less protective of investor rights in the rental and financial markets might be partially accountable for both low average rental occupation rates and low homeownership among the youth in some countries, such as Italy.

[4]Recently, Fisher and Jaffe (2003) have used data similar to ours to explain the determinants of homeownership rates in a cross section of world countries. These authors argue that their paper is "less successful in providing a single equation model with comprehensive explanatory power of homeownership as a global pattern." We will show here that the extent of legal investor protection in rental contracts is the most robust explanatory variable for rental market shares accross the world.

[5]For instance, in a series of papers, Oswald (1996, 1997, 1999) showed a positive correlation between homeownership and unemployment in several OECD countries. Oswald hypothesized that the correlation may be a result of the lack of mobility in countries without a functional thick rental market. A recent literature has examined the hypothesis in more detail. Flatau et al. (2002) do not find evidence consistent with the Oswald hypothesis using Australian micro and regional data. However, recent studies by Brunet and Lesueur (2003), Munch, Rosholm, and Svarer (2003), and van Leuvensteijn and Koning (2004) all find a positive association between homeownership and unemployment hazard or duration using individual data in different European countries.

Furthermore, the *option* to rent is valuable to households. If this option is not available, some of them may not be able to diversify their portfolio and be forced to "over-invest" in real estate assets in order to satisfy their demand for housing services.

But there is a second reason to focus on housing markets. The law and finance literature has concentrated on the impact of investor protection laws on financial development. This research finds evidence of a positive correlation between investor protection laws and market development (La Porta et al., 2000). This is, of course, consistent with a causal interpretation. Yet, several authors have argued that these correlations may be coincidental.[6] One way of making progress in this debate is by focusing on a different market altogether. Given the big number of market participants, and the limited extent of repeated interactions, alternative means of enforcement may have limited applicability here. Moreover, rental agreements involve relatively simple contracts, compared to corporate or financial transactions. Both these characteristics make the housing market a natural place to test for the shift in the allocation of ownership rights in response to differences in the legal system regulating the market and, more generally, to measure the sensitivity of the impact of legal contract enforcement on market development.

The remainder of the paper is organized as follows. In section 2 we develop a model of the housing market, and we derive the effects of the efficiency of the legal system. Section 3 describes the data and presents the empirical results of the paper. Section 4 concludes. Proofs are relegated to the appendix.

[6] Franks et al. (2003), for instance, show that the lack of legal protection during the first half of the twentieth century in the UK did not hinder the country's financial development. They explain this by the existence of reputational mechanisms that substitute for public enforcement.

2 The Model

Consider a city with a local housing market in which all houses are identical and last for two periods, $t = 1, 2$. After the two periods, all houses are worthless to everyone. For notational convenience, we set the interest rate to zero. At time $t = 2$, there is no difference between buying or renting a house, as it can only be used for that period, and the rental price is known.[7] We take the rent in the second period $\widetilde{r}_2$ to be random and exogenous, with $E[\widetilde{r}_2] = r_2$.

There are two types of individuals: users, who value housing services, and investors, who do not. Investors are wealthy and risk neutral. They do not consume housing services, but they are willing to buy a house as long as they get a non-negative return by renting it. A rental agreement is a contract by which the owner of the house sells access to that asset to the user for a single time period in return for a payment at the beginning of the period.[8] Since there is competition among investors, the rental rates in the first period will guarantee zero profits and satisfy the equation: $p = r_1 + r_2$.[9] Notice we are assuming there are no frictions, such as search costs, in the rental market.

Users, on the other hand, are risk averse, with CARA utility $u(x) = -e^{-\rho x}$ and no time discounting.[10] In period 1 they consume only housing services, and in period 2, they enjoy their housing consumption plus the leftover money. To obtain these services, they have two options: either they buy a house or they rent one from an investor. We further assume that

[7] If the asset was infinitely lived, the equivalence between buying and renting would not arise in any period.

[8] We rule out the possibility of signing a long-term contract. These contracts are rarely used in practice.

[9] Alternatively, we could assume that the rental prices r_1 and $\widetilde{r}_2$ are exogenous, and the adjustment takes place through the price of the house. This yields equivalent results.

[10] By assuming CARA utility, we rule out income effects.

the user always stays in the city at $t = 1$, and hence we normalize his first period valuation of the location to zero. We will denote by π a user's risk premium for the rental price risk, so that $E\left[u\left(\widetilde{r}_2\right)\right] = u\left(r_2 - \pi\right)$. With exponential utility, this premium is independent of the level of income and valuations of the user.

At $t = 2$, a user values a house in the city at $\widetilde{v}$, which is random. This value may depend on certain eventualities that can arise in the future, such as changes in preferences, or geographic and amenity shocks. However, some of these eventualities may also depend on certain individual characteristics, such as age, experience, and occupation. We model these two aspects of mobility (general vs. idiosyncratic) by assuming two types of shocks. With probability q, the value of staying in the city is $\widetilde{v} = \overline{v} - x$, where x has distribution $F\left(x\right)$. With probability $1 - q$, the value is $\overline{v} - \delta$, with $\delta \geq 0$. The population of users is heterogeneous, with δ being distributed continuously in the interval $[0, \Delta]$.[11] The user also has the option to move to a different city at $t = 2$. For simplicity, this alternative location has a fixed value of $\underline{v}$ and fixed rental rates of r_2.[12] Hence, with probability $1-q$, some users will have a very stable valuation for a house in the city, while others receive very negative shocks and, hence, would like to leave for the alternative location.

We assume the user learns the realization of the valuation at an intermediate date $t = 1\frac{1}{2}$, at which point he must decide whether to move or not, before knowing the realization of the rental price. This allows us to examine mobility in a parsimonious way.[13] We further

[11] The first type of shock allows us to discuss mobility in a continuous way, while the second introduces heterogeneity among users. Most of the results in the paper (most notably, propositions 1, 2, and 3) are true under very general assumptions about the structure of the shocks to the valuation of the city. Adopting this particular form simplifies and makes more intuitive the analysis in proposition 4.

[12] The model generalizes to the case of a random rental price in the alternative location, as long as this price is not perfectly correlated with that of the city.

[13] If the user learns the valuation at $t = 2$, the mobility decision must take into account the realization of the rental price as well, which, for the purpose of this paper, adds unnecessary complications to the model.

assume that $\overline{v} - \pi \geq \underline{v}$, so that a user with $\widetilde{v} = \overline{v}$ would rather stay than leave both when owning and when renting.

2.1 Owning vs. Renting

As long as housing prices (p) satisfy the condition $p = r_1 + r_2$, investors make zero profits and are willing to supply as many rental properties as demanded by the users. Hence, the rental market is determined by the number of users who prefer to rent rather than own at the prevailing house price p and rental prices r_1 and r_2. The decision of whether to own or to rent is made at $t = 0$, before the realization of the valuation and rent shocks.

At $t = 1\frac{1}{2}$, a user must decide where to live in the next period. If he is renting from an investor-owner at $t = 1$, he gets value $\widetilde{v}$ when staying but must suffer the rental price risk π. Instead, if he leaves, he gets the value $\underline{v}$. Hence, he will stay at the same property if $\widetilde{v} - \pi \geq \underline{v}$ and will leave for the alternative location otherwise. If we let $\widehat{\delta} = (\overline{v} - \pi) - \underline{v}$, then the user stays whenever the shocks x or δ are below $\widehat{\delta}$. The ex-ante expected utility of renting takes the following form:

$$\begin{aligned} U^R(r,\delta) &= q \cdot \left[\int_0^{\widehat{\delta}} u(\overline{v} - x - r - \pi) \cdot dF(x) + \left(1 - F\left(\widehat{\delta}\right)\right) \cdot u(\underline{v} - r) \right] \\ &\quad + (1-q) \cdot \max\left\{ u(\overline{v} - \delta - r - \pi), u(\underline{v} - r) \right\} \end{aligned} \tag{1}$$

where $r = r_1 + r_2$. With probability q, the user receives a continuous shock. He stays if the shock is low ($x \leq \widehat{\delta}$) and leaves if it is high. Alternatively, with probability $1 - q$ he receives his individual shock δ. If that shock is low ($\delta \leq \widehat{\delta}$), he will stay, but otherwise he leaves.

An analysis of this case can be found in Ortalo-Magné and Rady (2002 and 2005).

Notice that the user faces the rental price risk only when he decides to stay in the same location.

In contrast, if a user owns the house, he faces a different type of risk when changing location: uncertainty about the final price obtained from the sale of the house. Since π is the risk premium, the user-owner leaves if and only if $\widetilde{v} \leq \underline{v} - \pi$. He remains in the initial house more often than when renting, giving up the higher value of the alternative location in order to avoid the risk of selling the house. Letting $\overline{\delta} = \overline{v} - (\underline{v} - \pi)$, the user stays if the shocks are lower than $\overline{\delta}$. His expected utility of owning is:

$$\begin{aligned} U^O(p,\delta) &= q \cdot \left[\int_0^{\overline{\delta}} u(\overline{v} - x - p) \cdot dF(x) + \left(1 - F\left(\overline{\delta}\right)\right) \cdot u(\underline{v} - p - \pi) \right] \\ &\quad + (1-q) \cdot \max\left\{ u(\overline{v} - \delta - p), u(\underline{v} - p - \pi) \right\} \end{aligned} \tag{2}$$

It is easy to see that U^R is decreasing in r. Therefore, a user is willing to buy a house at $t = 0$ whenever $U^O(p,\delta) \geq U^R(r,\delta)$ at $p = r$ (at the rental price offered by an investor, the user values buying more than renting). We will assume that $U^O(p,0) \geq U^R(r,0)$, so that a user with $\delta = 0$ prefers to own rather than rent.[14]

As in Sinai and Souleles (2005), this gives rise to several trade-offs that determine the desirability of owning versus renting. When owning, the user avoids the rental risk as long as he stays in the same location ($u(\widetilde{v} - p) > u(\widetilde{v} - r - \pi)$ when $p = r$). However, he faces the additional price risk of selling the house when moving ($u(\underline{v} - p - \pi) < u(\underline{v} - r)$ when $p = r$). Furthermore, since he moves less often, he misses out on some gains from higher

[14] This would be the case, for instance, if q is sufficiently close to zero, since $u(\overline{v} - \delta - p) > u(\overline{v} - \delta - r - \pi)$ when $\delta = 0$. It can also be shown this holds when $F(\overline{v} - \underline{v}) = 1$, so that the shock x is not too large.

valuations in a different location. The size of the individual shock δ determines the balance of these trade-offs at $t = 0$. When δ is low, the user would value ownership highly, as he rarely sells the house. In that case, the user would rather avoid the rental price risk by buying the house. In contrast, when δ is high, the user is more likely to move. Renting can then eliminate the risk associated with selling the house. The following result follows:

Proposition 1 *There exists an individual type $\delta^* > \widehat{\delta}$ such that the user buys a house if $\delta \leq \delta^*$, and rents otherwise.*

Proof. *See the appendix.* ■

Renting gives flexibility to those who may not be staying in the same location in the future, by allowing them to avoid the risk associated with selling a house. On the other hand, owning provides security for those who plan on staying in the same house for the long term, by allowing them to avoid the rental price risk. This result provides a theory that predicts when we should see a user-owner and a user-renter. Furthermore, since we assume that the users' δ's are continuously distributed on $[0, \Delta]$, δ^* provides a measure of the size of the rental market. The higher δ^* is, the smaller the rental market.

2.2 Ownership and the Efficiency of the Legal System

Until now we have made two implicit assumptions. The first, is that property rights are protected. In effect, we are assuming there is an effective police force that prevents others from taking ownership away from either the user or the investor. We will maintain this assumption for the rest of the paper.

A second assumption, which we relax now, entails the enforcement of the rental agreement. When an investor acquires the house, it signs a contract with the user by which he is allowed access to the property (and its use) in return for the payment of the rental price. This can be easily enforced by requiring advance payment. After the first period, the investor may require the user to vacate the house (or have the user pay the rent for the following period). However, once the user has been granted access to the property it may be difficult for the investor to evict him. This may involve a contract dispute that has to be resolved in court. To the extent that the legal system is perfectly efficient, the investor would be able to regain access to the property quickly and rent it to a new user. But this process may be slowed down if the system is inefficient.

To model the effects of the efficiency of courts, we assume the investor must pay a cost c if he wants to gain back access to the property when the tenant does not pay rent for the second period and would not leave the property (without paying this cost, the investor cannot evict the tenant). Notice that this is a problem that affects the rental market exclusively, since a user-owner does not contract with anyone. Therefore, the actions of the user-owner are unaffected, and his expected utility is still given by (2).

On the other hand, the user-renter will pay the first period rent. But he may threaten the investor with non-payment at $t = 2$ unless the rent is reduced. If he is evicted, he could still rent another property at the ongoing rate. The investor, in case of non-payment, could pay the cost c to evict the user and rent it to someone else at the market rate, making $\widetilde{r}_2 - c$. However, paying the enforcement cost is inefficient, and they will therefore renegotiate the rent. If the user has all the bargaining power, the final second period rent will be $\widetilde{r}_2 - c$.[15]

[15] We assume this for simplicity. It would be enough if the user had a positive bargaining power for the

Foreseeing this renegotiation, the user will decide to leave at $t = 1\frac{1}{2}$ only when $\widetilde{v} + c - \pi < \underline{v}$. Hence, compared to the case of a perfectly efficient legal system, he stays in the same property too often, to benefit from the low future rents.[16] This results in the following expected utility:

$$\begin{aligned} U^R(\delta, c) &= q \cdot \left[\int_0^{\widehat{\delta}(c)} u(\overline{v} - x - r - \pi + c) \cdot dF(x) + \left(1 - F\left(\widehat{\delta}(c)\right)\right) \cdot u(\underline{v} - r) \right] \\ &\quad + (1 - q) \cdot \max\left\{ u(\overline{v} - \delta - r - \pi + c), u(\underline{v} - r) \right\} \end{aligned} \tag{3}$$

where $\widehat{\delta}(c) = \overline{v} - \underline{v} - \pi + c$ denotes the new threshold for the mobility choice.

We can summarize this in the next proposition:

Proposition 2 *The rental price for first-time renters is higher than for those who remain in the same house, and this difference is increasing in the inefficiency of the legal system. Furthermore, for a given δ, the mobility of the renter is decreasing in the inefficiency of the legal system.*

The inefficiency of the legal system increases the bargaining power of a renter once he has been granted access to the property (as it is costly for the investor to regain access). As a result, leaving that house becomes more costly for the user, as he must give up a property with a rent below the market price. Unless the benefits of leaving are large, he will not do so, and hence mobility is reduced.

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results to hold.

[16] Notice we are assuming that the Coase theorem fails here, since mobility is inefficient. The landlord could try to bribe the user to leave when efficient by offering a payment of $\widetilde{v} + c - \pi - \underline{v}$ whenever $\widetilde{v} + c - \pi \geq \underline{v}$ and $\widetilde{v} - \pi < \underline{v}$. This, however, would be infeasible if the landlord does not observe the realization of the shock, and hence there is ex-post asymmetric information (even if, ex-ante, the landlord is perfectly informed about the distribution of shocks). Making this assumption would give us inefficiently low mobility as well, but would unnecessarily complicate the model. For simplicity, we assume no bribe is offered at all.

To gauge the effects on the size of the rental market we study two cases. First, we consider the possibility that investors can discriminate among different types of users. When investors can charge different rents $r_1(\delta)$ to different users, these satisfy:

$$p = r_1(\delta) + r_2 - c \cdot \Pr\left(\widetilde{v} \geq \overline{v} - \widehat{\delta}(c) \mid \delta, c\right)$$

where $\Pr\left(\widetilde{v} \geq \overline{v} - \widehat{\delta}(c) \mid \delta, c\right)$ is the probability that a user-renter with a shock δ stays in the same property at $t = 2$, given the value of c. In this case, users end up paying the total (expected) cost of the inefficiency in the form of higher ex-ante rents. Consequently, an increase in c does not change the expected rent payment to the landlord but decreases the desirability of renting for two reasons. First, the increase in c shifts consumption of the renter from the low utility state where he leaves (he pays higher first period rents and high second period rents), to the high utility state where he stays (lower second period rents outweigh the increase in first period rents). Because of risk aversion, such a shift in consumption ought to decrease utility.

More important, an inefficient legal system decreases the mobility of renters and, hence eliminates the benefits renting has over owning the house (namely, the flexibility of being able to move without suffering extra risks). Indeed, if c is large enough (in particular, bigger than δ and the upper support of $F(x)$), the user never leaves the property. In that case, the rent the investors require satisfies $p = r_1 + r_2 - c$, and the utility of renting becomes $q \cdot E_x\left[u\left(\overline{v} - x - p - \pi\right)\right] + (1 - q) \cdot u\left(\overline{v} - \delta - p - \pi\right)$, which is clearly lower than the utility of owning. Hence, the user would rather purchase the house and avoid the rental price risk in the case of staying in the same location while still enjoying the benefits of having some

mobility.

While the first effect (risk aversion) is stronger when the inefficiency is small, the second becomes more relevant as the inefficiency increases. Together, both these effects make the size of the rental market decrease with the inefficiency of the legal system.

Proposition 3 *When investors can discriminate among users, there is a* $\delta_D^*(c)$ *such that a user buys a house if and only if* $\delta \leq \delta_D^*(c)$*. Furthermore,* $\delta_D^*(c)$ *is increasing in* c*, so the size of the rental market is decreasing in the inefficiency of the legal system.*

Proof. *See the appendix.* ■

In the previous discussion we have emphasized the role of the moral hazard problem that arises when the legal system is inefficient (namely, the fact that the agent renegotiates the rent down, and hence he is less likely to move out). However, when investors cannot discriminate among users, they must offer the same rent r_1 to all, so that

$$p = r_1 + r_2 - c \cdot E\left[\Pr\left(\widetilde{v} \geq \overline{v} - \widehat{\delta}(c) \mid \delta, c\right)\right]$$

where the expectation is taken over all δ's that rent a property. This can give rise to adverse selection effects that complicate the analysis. An investor foresees the average behavior of a user-renter. And this determines the first period rent. But the user that benefits the most from the rent drop at $t = 2$ is the one that is least likely to leave. The specification of the shocks in the model makes the analysis more intuitive, since $\Pr\left(\widetilde{v} \geq \overline{v} - \widehat{\delta}(c) \mid \delta, c\right)$ can only take two values: $q \cdot F\left(\widehat{\delta}(c)\right)$ and $q \cdot F\left(\widehat{\delta}(c)\right) + (1-q)$, when $\delta \geq \widehat{\delta}(c)$ and $\delta < \widehat{\delta}(c)$, respectively. When c is low, users with low mobility needs (who have $\delta < \widehat{\delta}(c)$) find owning

more desirable, and the lower rents they might get when renting do not compensate them enough. Then, any renter must have $\delta \geq \widehat{\delta}(c)$, and since the probability of staying, $q \cdot F\left(\widehat{\delta}(c)\right)$, is the same for all of them, the first period rent fully reflects the expected reduction in future rents. This resembles exactly the perfect discrimination case, and therefore, the same effects push the size of the rental market down.

As c increases, however, investors may start to face adverse selection problems. If all renters have $\delta \geq \widehat{\delta}(c)$, r_1 will reflect the low probability of suffering the cost c. Then, those with $\delta < \widehat{\delta}(c)$ may deviate and start renting. If they pass for a highly mobile user, they will pay low first and second period rents. Indeed, when $F\left(\widehat{\delta}(\pi)\right) = 1$, all of them will start to deviate at the same time.[17] This, however, cannot be an equilibrium as the investors would make negative expected profits. Rents would have to be adjusted upward to discourage "bad" users from renting and make sure that only those who really value mobility do rent. However, this will further motivate more of the initial renters to drop out of the rental market and buy instead. The possibility of facing adverse selection can therefore make matters worse for the investors and further constrain the development of the rental market as rents are pushed higher. The following result then follows:

Proposition 4 *Suppose that* $F\left(\widehat{\delta}(\pi)\right) = 1$ *and the mass of users with* $\delta > \widehat{\delta}\left(\frac{\pi}{1-q}\right)$ *is small. Then, when investors cannot discriminate among users, there is a* $\delta^*_{ND}(c)$ *such that a user buys a house if and only if* $\delta \leq \delta^*_{ND}(c)$*. Furthermore,* $\delta^*_{ND}(c)$ *is increasing in* c*, and there is a* $\overline{c}$ *such that* $\delta^*_{ND}(c) = \delta^*_D(c)$ *for any* $c \leq \overline{c}$*, and* $\delta^*_{ND}(c) \geq \delta^*_D(c)$ *for any* $c > \overline{c}$*.*

[17] This condition states that the shock x cannot be too large ($x \leq \pi$). It is sufficient to guarantee that any $\delta < \widehat{\delta}(c)$ strictly prefers to rent if and only if $c > \pi/(1-q)$. As a result, when $c \leq \pi/(1-q)$ they would rather own. But as soon as c goes slightly above $\pi/(1-q)$, all $\delta < \widehat{\delta}(c)$ would want to start renting.

Proof. *See the appendix.* ■

In general, it is still going to be the case that there is a $\overline{c}$ such that $\delta^*_{ND}(c) = \delta^*_D(c)$ for any $c \leq \overline{c}$. The two conditions in the proposition guarantee that only those with $\delta > \widehat{\delta}(c)$ ever rent, even though the possibility of an adverse selection problem constrains the equilibrium and depresses the rental market further when $c > \overline{c}$. When these conditions fail, some pooling may start to arise, by which some users with low mobility rent alongside those with high mobility. But eventually, as c grows larger, the rental market will again decrease.

When the legal system is inefficient, the investor is held up by the user-renter. This makes it more likely that a user will want to own the house, instead. Moreover, the disparity that arises between the second period rent and the market rent decreases the mobility benefit of renting and generates adverse selection effects when investors cannot discriminate among users, as those that stay more often try to rent in order to capitalize on the inefficiency. Both these inefficiencies hinder the development of the rental market.

There may, however, be additional reasons why the rental market is negatively affected. For instance, investors may not be able to fully charge the expected future costs up front through higher initial rents. This would reduce their return and, therefore, their willingness to invest in property. Additionally, bargaining over future rents may be very costly. This could arise if the user can make threats of non-payment, delay the payments, abuse the property, and so on. The landlord, on the other hand, can threaten with legal action, stop making repairs, or make unpleasant unexpected visits to the property. These will add to the costs of renting, further depressing this market.

3 The Data

The main dependent variable of interest is the percentage of households that rent (i.e., the relative size of the rental market). This variable, which we call tenancy, is obtained from three related sources. The 1998 Urban Indicators Database (UID) from the UN provides an estimate of this variable at the city level for a sample of major world cities in 1998. The same database provides other variables on the cities' characteristics. As a robustness test we also use the 1993 version of the UID. Although the legal system data set that we use corresponds to a somewhat later period, the 1993 UID includes specific detail as to the size of the private rental market in each city, which allows us to address the issue of publicly provided rental housing. Moreover, the city coverage is not the same as in the 1998 UID, which provides us with an out-of-sample test for our econometric model. Data with estimates on homeownership rates at the country level are obtained from the UN Habitat database for a small sample of countries.

We match these housing data with the "Courts and Judicial Efficiency for 109 countries" data set from Djankov, La Porta, Lopez-de-Silanes, and Shleifer (2003). The data set contains several variables that are of vital importance for our estimation. The main explanatory variables of interest will be the time to repossession and the formalism index. The former variable is an estimate of how many days it takes on average for the landlord to regain access to his housing unit in case of rent non-payment. A faster execution of the repossession judicial process will be interpreted as a measure of better contract enforcement. The second variable (the formalism index pertaining to the repossession process) "measures substantive and procedural statutory intervention in judicial cases at lower-level civil trial

courts. The index ranges from 0 to 7, where 7 means a higher level of control or intervention in the judicial process" (Djankov et al., 2003). The index can be seen as an indicator of the extent of legal costs for the landlord in the case of rent non-payment and repossession. Thus, the higher the indicator, the lower the efficiency of contract enforcement in the rental market. The index is formed by weighting the following elements of the legal process: (i) professional vs. laymen involvement in the process, (ii) use of written vs. oral elements, (iii) legal justification, (iv) statutory regulation of evidence, (v) control of superior review, (vi) engagement formalities, and (vii) independent procedural actions. Djankov et al. (2003) also provide data on the formalism index of a legal process where the outcome is the collection of a bounced check. We will use this variable as an instrument for contract enforcement in a country that should be unrelated to outcomes in the rental market. Botero, Djankov, La Porta, Lopez-de-Silanes, and Shleifer, (2004), provide the data on labor market regulation. Similarly, we obtain data from the Heritage Foundation's index of property rights in 1997, from La Porta et al. (1999).[18] Data on the protection of creditor's rights in collateralized lending are obtained from the World Bank "Doing Business" (DB) database, 2005, and Djankov, McLiesh, and Shleifer (2006). The data are based on the study of existing laws and survey responses. We construct an index that measures the degree to which laws facilitate collateral lending. The original DB index is formed by adding several bankruptcy law and collateral law subindexes. By subtracting the bankruptcy subindexes in Djankov, McLiesh, and Shleifer (2006) we obtain an index that is solely focused on collateral lending practice and therefore germane to mortgage markets. The DB database is also the source for our

[18]The index has been previously used in empirical research and correlates well with other indicators of property rights protection (e.g., Acemoglu and Johnson, 2005).

measure of the efficiency of the property registration process in each country. Additionally, we obtained data on rent controls for a set of 53 countries from Malpezzi and Ball (1991).

Finally, we also use other country data from the World Bank. A more detailed description of the data and their sources for all variables used in this paper can be found in the Data Appendix. Figures 1 to 3 show plots with the share of renter households (Figure 1- UID 1998), share of households in private rental housing at the city level (Figure 2 - UID 1993), and urban homeownership rates at the country level (Figure 3 - UN Habitat 2001) on the vertical axis, and the legal system formalism index of rental contract enforcement on the horizontal axis. It is apparent that in countries with less efficient contract enforcement the share of rental housing is substantially smaller. The next section verifies that, indeed, this initial impression is both statistically and economically significant.

3.1 OLS and IV estimates

Our estimates correspond to the basic model in:

$$tenancy_{ki} = \alpha + CE_i\beta + X_i\lambda + Z_{ki}\delta + \varepsilon_{ki}$$

where the subscripts k and i denote city and country, respectively, *tenancy* is the share of renter households, CE stands for the (alternate) measures of *contract enforcement* efficiency in the country, X is a vector of country characteristics, Z denotes city characteristics, and ε is an error term. Estimated standard errors are clustered by country to take into account the correlation between outcomes within the same country (note that the CE indexes do not vary within a country). We perform the regressions with some of the relevant right-hand-side

variables in logs. We have a sample with 102 cities in 47 countries.

Table 1 presents the results from our baseline specification. In columns 1, 2, and 3 we simply correlate the two measures of contract enforcement with the tenancy rate in 1998 and find that the coefficients are generally significant and have the expected sign: countries with poorer enforcement of rental market contracts (longer times to repossession and higher formalism indexes) tend to have relatively smaller rental markets. In column 4 we add other major country characteristics: GNP per capita and population density and obtain similar results. The results in column 4 suggest that the broader measure - the formalism index - may capture better the quality of contract enforcement. Therefore, we focus on this measure in the remainder of the paper.[19] The impact of efficient contractual enforcement is economically significant: a one-standard-deviation change in the formalism index is associated with a -0.33 standard deviation change in the rental market share (a reduction of about six percentage points). In columns 5 through 12 we include other explanatory variables at the city level: crime (related to general enforcement of property rights), average travel time to work, access to water, under 5 mortality, median income, and government taxation.[20] Since there are many missing observations for each of these explanatory variables, we include them one-by-one sequentially. None of these variables enter significantly in the regressions (except for the logarithm of local government revenue per capita – the larger the local government, the smaller the rental market). While the country sample sizes change in each estimation,

[19] Both measures are highly colinear proxies of the actual extent of contracting investor protection in this market. We always obtained similar results when using the duration measure instead.

[20] We tried including other country-specific variables such as life expectancy, death rates, the Gini index, percentage urban population, percentage population aged 15-64, percentage of population aged 65 and beyond, rule of law and order, corruption, latitude, and continent fixed effects. These never significantly altered the results for the main variables of interest. In all cases (except for the measure of corruption) these variables did not enter significantly in the regressions.

and estimated coefficients on the regulation variables change accordingly with their standard errors, the qualitative conclusions do not change at all. Efficient legal contract enforcement is associated with more developed rental markets.

An obvious problem with the interpretation of the results in Table 1 is that the causation may be the opposite of the one we propose. In countries with a more developed rental market, we may expect landlords to constitute a more effective pressure group for the enactment of protective investment regulations related to contract enforcement in the rental market. Thus the causality may be going from market development to the law. This causality issue is similar to that in the literature on the impact of legal systems on financial development. To address this issue we use the formalism index applicable to the case of a bounced check as an instrument in Table 2, columns 1 and 2. This variable captures how difficult it is to obtain enforcement of collection of monies after a check used for the payment of goods and services is bounced. This is an interesting variable for our purposes. It is clearly related to the general climate of investment protection and efficiency of the court system in a country. However, it is unlikely to be driven by the percentage of households that live in rental units.[21] For ease of exposition, we omit the regressions that use city-level controls.[22] In Table 2, columns 3 and 4, we also present the results of regressions that use dummies for the legal origin of each country as instruments for the investor protection variables in the housing market. We are agnostic about the assumption of exogeneity of the legal system adoption with respect to *general economic development*. However, this seems to be a good set of instruments with

[21] Incidentally, it is interesting to point out that if we include both measures of contract enforcement in the OLS regressions, only the rental market one is significant. It is the specific legal contract enforcement environment in the rental market that matters for rental market development.

[22] The results of these regressions are largely unchanged and, as earlier, city controls are never significant at the 5% confidence level.

respect to housing outcomes. Moreover, it facilitates the comparison of the results in our paper to others in the literature. All IV regressions are consistent with a causal interpretation of our results: legal systems that are more protective of investor rights through more efficient legal contract enforcement tend to have more developed rental markets.

3.2 Contract Enforcement or Alternative Policies?

A potential challenge to our interpretation of the results is that the coefficients on rental contract enforcement may be capturing the effects of a highly regulated labor market. Countries that heavily regulate the rental market may also be countries that heavily regulate the labor market. Since more rigid labor market regulations may hinder the mobility of workers, the correlation between rental market legal efficiency and ownership rates might only reflect the impact of lower worker mobility on housing ownership rates. To address this issue, in Table 3 we introduce the data on labor market regulations used in Botero, Djankov, La Porta, Lopez-de-Silanes, and Shleifer (2004). Columns 1 through 3 introduce several measures of labor market regulations: an index measuring the degree of protection of collective relations laws, the level of protection of labor and employment laws, and the level of protection of social security laws as defined by Botero et al. (2004). The introduction of these labor-regulation-environment variables does not affect significantly the coefficient of interest. Interestingly, a more developed social insurance system (with more extensive old age social security payments, unemployment insurance, and disability payments) is associated with a thicker rental market, although this result is based on a small sample of 19 countries.[23]

[23]The results are certainly consitent with the idea that individuals with less risky income streams have less of an incentive to "hedge" housing rent risk via ownership (à la Sinai and Souleles, 2005).

A similar concern is that the formalism index be correlated with, and therefore capturing the impact of, the general level of protection of property rights. Acemoglu and Johnson (2005) have recently suggested that, whereas legal contract enforcement and general property rights protection levels are positively correlated, the latter variable may be more important to account for salient economic outcomes, such as GDP per capita. In the context of this paper, it may be easier for individual households to defend one's property against expropriation from neighbors, the state, or warlords, than for absentee landlords to avoid such confiscation. It would therefore be possible *a priori* that the coefficient on contract enforcement protection was simply capturing the impact of general property rights protection on the ability to purchase and rent out properties. Column 4 in Table 3, where we control for the degree of property rights protection, shows that this is not the case, but the evidence is certainly consistent with the idea that the protection of property rights is *an additional* important explanatory variable for rental market development.

Another potential issue is the interaction with collateral lending regulations and institutions. It is plausible that in countries in which repossession after rent non-payment is difficult, foreclosure on default of a mortgage is also more costly. Poor enforcement of collateralized credit contracts may actually make being a landlord more attractive relative to being a creditor. Therefore, there is the potential for the omission of credit market legal enforcement to make us *underestimate* the negative impact of rental contract enforcement on the extent of the rental market, *ceteris paribus*. We show that concern not to be of much empirical substance in column 5. These results are consistent with those of Chiuri and Japelli (2001), who also demonstrate that mortgage laws do not have an impact on the own-versus-rent margin.

Column 6 controls for the rent control index in Malpezzi and Ball (1991) to show that rent control regulations are not biasing the results in our regressions. Despite the fact that rent control legislation may be an *additional* factor affecting the size of the rental market, their correlation with contract enforcement in the data is relatively mild (about 0.25). Finally, in column 7, we also control for the financial and time cost of the property registration process, which we interpret broadly as another proxy for the inefficiency of the regulations and public services related to the housing market.

None of the seven alternative policy and regulation variables change the conclusion that lease contract enforcement has a major impact on the development of the rental market.

3.3 A Very Robust Result: Alternative Data Sets

In Table 4 we use the 1993 UID data and our baseline specification, focusing on the formalism index. The advantage of the 1993 data is that we can concentrate on the size of the *private* rental market, for which we have disaggregate estimates. Countries that enforce rental contracts inefficiently may opt for providing public rental housing as a substitute for the lack of a private market, which could bias our previous estimates downward. The disadvantage of using the 1993 UID is that the Lex Mundi data was collected somewhat later (1999). However, laws and legal systems cannot be expected to change much during this period (we do exclude from the regressions the post-Communist transition countries, for which this assumption is not as sound). Column 1 provides the basic estimate, which is similar to that obtained with the 1998 UID. In column 2, we limit the data to those cities that are not included in the 1998 sample. Quite remarkably, this out-of-sample test yields a coefficient on

investor protection that is statistically not different from that in Table 1. Column 3 uses the "bounced check" instrument and finds the results to be generally consistent with previous specifications. Finally, in column 4, we explicitly control for the public housing share and find a slightly *stronger* impact of contract enforcement on the development of the *private* rental market, *ceteris paribus*.

Finally, as an extra robustness check of the results, we perform similar regressions using the 1998 United Nations aggregate estimates by country. The problem with these data is that we have the homeownership rate rather than the percentage of households living in rental units. The homeownership rate is not generally one minus the rate of renter-occupied households because there are other possible alternative housing arrangements (public housing, group quarters, squatters, homelessness). However we think this is a reasonable proxy.[24] The advantage of using data aggregated at the country level is that we are not relying on the selection of major cities in the previous sample.

The results in Table 5 are broadly consistent with the previous specifications. Poorer legal rental contract enforcement is associated with a higher homeownership rate. Columns 1 and 2 use the UN estimates of national homeownership rates. However, these are less interesting for our purposes, since they include homeownership in rural areas. In most developing countries housing ownership in rural areas is related to land ownership (the ownership of the means

[24] If we use the city data to regress one minus the ownership rate on the tenancy rate we obtain:

$$\begin{array}{rccccl} 1 - ownership & = & 0.134 & + & 0.845 & \cdot \; tenancy \\ & & (0.021) & & (0.059) & \qquad\qquad R - squared = 0.61 \end{array}$$

Clearly, the ownership rate is a reasonable, albeit noisy, proxy for the tenancy rate. However, the measurement error in this case may not be independent of the explanatory variable of interest. Less investor-protective regulation in the rental markets may be correlated with other regulations that affect the margin between homeownership and other alternative housing arrangements.

of production), an issue about which our analysis does not have much to say. We therefore focus on urban ownership rates (columns 3 and 4) and find results that are very close to the ones using the other independent data sources at the city level. The main findings in the paper are extremely robust.

4 Conclusion

In this paper we develop a legal contract enforcement theory of the own versus lease decision. The allocation of ownership rights will minimize enforcement costs when the legal system is inefficient. In particular, when legal enforcement of contracts is costly, there will be a shift from arrangements that rely on such enforcement (such as a rental agreement) toward other forms that do not (such as direct ownership).

We use a cross section of countries and show that in countries with longer times for legal enforcement of repossession when the tenant does not pay rent, and with more formalistic (and thus expensive) legal repossession enforcement procedures, the share of households living in rental units is smaller. In order to avoid endogeneity of the rental market law with respect to market size, we have used regulations in the case of bounced checks and legal origins as instruments and obtained similar results. Controlling for the extent of other labor and housing market regulations does not do away with the importance of contracting institutions.

In our regressions, rental market contract enforcement efficiency measures are typically the most statistically robust variables to enter in the different specifications. From a housing market perspective, the results suggest that laws that protect investors' rights are of

remarkable importance to the development of the rental market.

From a broader law and economics perspective, our results confirm the basic insights of previous literature relating market development with investor protection. Concretely, we show that one of the channels through which the legal system affects market development and its performance is through its effects on the allocation of ownership rights. Contracting institutions matter for economic outcomes of relevance and are bound to have an impact on welfare.

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5 Appendix

Proof of Proposition 1. A user with parameter δ rents if and only if $U^R(p,\delta) - U^O(p,q) \geq 0$. For $\delta \leq \widehat{\delta}$, we have that:

$$\frac{\partial U^O}{\partial \delta} = -(1-q)\cdot u'(\overline{v}-\delta-p) > -(1-q)\cdot u'(\overline{v}-\delta-p-\pi) = \frac{\partial U^R}{\partial \delta}$$

when $p = r$. Therefore, since owning is better for $\delta = 0$, it must also be for any $\delta \leq \widehat{\delta}$. Furthermore, for any $\delta \in \left(\widehat{\delta}, \overline{\delta}\right)$, the utility from owning decreases faster than when renting as δ increases:

$$\frac{\partial U^O}{\partial \delta} = -(1-q)\cdot u'(\overline{v}-\delta-p) < 0 = \frac{\partial U^R}{\partial \delta}$$

and both U^O and U^R remain constant for $\delta \geq \overline{\delta}$. Therefore, there exists a unique $\delta^* \geq \widehat{\delta}$ such that any $\delta \leq \delta^*$ wants to own, and any $\delta > \delta^*$ wants to rent. Indeed, either $\delta^* \in \left(\widehat{\delta}, \overline{\delta}\right)$,

or no user rents ($\delta^* = +\infty$). Notice that when q is not very large, we will have $\delta^* \in \left(\widehat{\delta}, \overline{\delta}\right)$, since $U^O = u\left(\underline{v} - p - \pi\right) < u\left(\underline{v} - r\right) = U^R$ when $q = 0$, $p = r$ and $\delta > \overline{\delta}$. ■

Proof of Proposition 3. Notice that the efficiency of the legal system does not affect the utility from owning. Therefore, it suffices to see what happens to the utility from renting as we increase c. Consider first a user with $\delta < \widehat{\delta}\left(c\right)$. Such a user remains in the property with a large probability of $q \cdot F\left(\widehat{\delta}\left(c\right)\right) + (1-q)$. Therefore, he must pay rents that satisfy $r_1\left(\delta\right) + r_2 = p + c \cdot \left[q \cdot F\left(\widehat{\delta}\left(c\right)\right) + (1-q)\right]$, in order to make investors break even. Let us denote $a\left(x\right) = \overline{v} - x - p - \pi + c \cdot q \cdot \left(1 - F\left(\widehat{\delta}\left(c\right)\right)\right)$, and $b = \underline{v} - p - c \cdot \left[q \cdot F\left(\widehat{\delta}\left(c\right)\right) + (1-q)\right]$. We can then rewrite the utility of renting as:

$$U^R\left(\delta, c\right) = q \cdot \left[\int_0^{\widehat{\delta}(c)} u\left(a\left(x\right)\right) \cdot dF\left(x\right) + \left(1 - F\left(\widehat{\delta}\left(c\right)\right)\right) \cdot u\left(b\right)\right] + (1-q) \cdot u\left(a\left(\delta\right)\right)$$

If we differentiate this expression we obtain (after applying Leibniz' rule and simplifying):

$$\begin{aligned}
\frac{\partial U^R}{\partial c} &= \left[\begin{array}{c} q \cdot \int_0^{\widehat{\delta}(c)} u'\left(a\left(x\right)\right) \cdot dF\left(x\right) \\ + (1-q) \cdot u'\left(a\left(\delta\right)\right) \end{array}\right] \cdot \left[q \cdot \left(1 - F\left(\widehat{\delta}\left(c\right)\right)\right) - c \cdot q \cdot F'\left(\widehat{\delta}\left(c\right)\right)\right] \\
&\quad -q \cdot \left(1 - F\left(\widehat{\delta}\left(c\right)\right)\right) \cdot u'\left(b\right) \cdot \left[q \cdot F\left(\widehat{\delta}\left(c\right)\right) + (1-q) + c \cdot q \cdot F'\left(\widehat{\delta}\left(c\right)\right)\right] \\
&< -c \cdot q \cdot F'\left(\widehat{\delta}\left(c\right)\right) \cdot \left[q \cdot \left(\begin{array}{c} \int_0^{\widehat{\delta}(c)} u'\left(a\left(x\right)\right) \cdot dF\left(x\right) \\ + \left(1 - F\left(\widehat{\delta}\left(c\right)\right)\right) \cdot u'\left(b\right) \end{array}\right) + (1-q) \cdot u'\left(a\left(\delta\right)\right)\right] \\
&< 0
\end{aligned}$$

where the first inequality follows from the fact that $\int_0^{\widehat{\delta}(c)} u'\left(a\left(x\right)\right) \cdot dF\left(x\right) < F\left(\widehat{\delta}\left(c\right)\right) \cdot u'\left(a\left(\widehat{\delta}\left(c\right)\right)\right)$ and $u'\left(a\left(\delta\right)\right) < u'\left(a\left(\widehat{\delta}\left(c\right)\right)\right)$. We can then bound the positive terms in the first line by $\left[q \cdot F\left(\widehat{\delta}\left(c\right)\right) + (1-q)\right] \cdot u'\left(a\left(\widehat{\delta}\left(c\right)\right)\right) \cdot \left[q \cdot \left(1 - F\left(\widehat{\delta}\left(c\right)\right)\right)\right]$. By the de-

finition of $\widehat{\delta}(c)$, we have that $a\left(\widehat{\delta}(c)\right) = b$, and therefore, this bound equals the terms $q \cdot \left(1 - F\left(\widehat{\delta}(c)\right)\right) \cdot u'(b) \cdot \left[q \cdot F\left(\widehat{\delta}(c)\right) + (1-q)\right]$ from the second line.

Consider now a user with $\delta \geq \widehat{\delta}(c)$. Such a user remains in the property with a smaller probability of $q \cdot F\left(\widehat{\delta}(c)\right)$. Therefore, he must pay rents $r_1 + r_2 = p + c \cdot q \cdot F\left(\widehat{\delta}(c)\right)$. Let us denote $A(x) = \overline{v} - x - p - \pi + c \cdot \left(1 - q \cdot F\left(\widehat{\delta}(c)\right)\right)$, and $B = \underline{v} - p - c \cdot q \cdot F\left(\widehat{\delta}(c)\right)$. We can then rewrite the utility of renting as:

$$U^R(\delta, c) = q \cdot \int_0^{\widehat{\delta}(c)} u(A(x)) \cdot dF(x) + \left[q \cdot \left(1 - F\left(\widehat{\delta}(c)\right)\right) + (1-q)\right] \cdot u(B)$$

If we differentiate this expression with respect to c we obtain:

$$\begin{aligned}
\frac{\partial U^R}{\partial c} &= \left[q \cdot \int_0^{\widehat{\delta}(c)} u'(A(x)) \cdot dF(x)\right] \cdot \left[\left(1 - q \cdot F\left(\widehat{\delta}(c)\right)\right) - c \cdot q \cdot F'\left(\widehat{\delta}(c)\right)\right] \\
&\quad - \left[q \cdot \left(1 - F\left(\widehat{\delta}(c)\right)\right) + (1-q)\right] \cdot u'(B) \cdot \left[q \cdot F\left(\widehat{\delta}(c)\right) + c \cdot q \cdot F'\left(\widehat{\delta}(c)\right)\right] \\
&< -c \cdot q \cdot F'\left(\widehat{\delta}(c)\right) \cdot \left[\begin{array}{c} q \cdot \int_0^{\widehat{\delta}(c)} u'(A(x)) \cdot dF(x) \\ + \left[q \cdot \left(1 - F\left(\widehat{\delta}(c)\right)\right) + (1-q)\right] \cdot u'(B) \end{array}\right] < 0
\end{aligned}$$

where the first inequality follows from a similar calculation as above. Therefore, the utility from renting is decreasing in c for all users. As a result, the number of users for which renting yields a higher utility than buying must decrease as c increases. Finally, notice that those who rent must have $\delta > \widehat{\delta}(c)$, and therefore, U^R does not depend on δ, for them. However, U^O is (weakly) decreasing in δ, and therefore, if δ prefers to rent, any $\delta' \geq \delta$ must also prefer to rent. It then follows that there is $\delta^*(c)$ such that any $\delta \leq \delta^*(c)$ buys, and any $\delta > \delta^*(c)$ rents. Since the size of the rental market is decreasing in c, $\delta^*(c)$ must be increasing. ■

Proof of Proposition 4. From proposition 3, we know that for a given user, U^R is decreasing in c when the first period rent fully reflects his probability of staying. Let $P^e = E\left[\Pr\left(\widetilde{v} \geq \overline{v} - \widehat{\delta}(c) \mid \delta, c\right)\right]$ denote the expected probability of a user-renter staying. Notice that $P^e \geq q \cdot F\left(\widehat{\delta}(c)\right)$, with equality when only those users with $\delta > \widehat{\delta}(c)$ rent. Consider a user with $\delta \leq \widehat{\delta}(c)$. From proposition 1 we know these users strictly prefer to rent when $c = 0$ (and by continuity, also for c small). When $F\left(\widehat{\delta}(\pi)\right) = 1$, his utility from owning is

$$U^O(p, \delta) = q \cdot \int_0^{\widehat{\delta}(\pi)} u(\overline{v} - x - p) \cdot dF(x) + (1 - q) \cdot u(\overline{v} - \delta - p)$$

(Notice that $\widehat{\delta}(\pi) < \overline{\delta} = \widehat{\delta}(2\pi)$.) If only those with $\delta > \widehat{\delta}(c)$ rent in equilibrium, the utility for a user with $\delta \leq \widehat{\delta}(c)$ to deviate and start renting is

$$U^R(\delta, c) = q \cdot \left[\int_0^{\widehat{\delta}(c)} u(A(x)) \cdot dF(x) + \left(1 - F\left(\widehat{\delta}(c)\right)\right) \cdot u(B)\right] + (1 - q) \cdot u(A(\delta))$$

where $A(x)$ and B are as defined in the proof of proposition 3. Notice that for such a user, owning is still preferred whenever $c \leq \pi/(1 - q)$, since $u(\overline{v} - x - p) \geq u(\underline{v} - p) \geq u(B)$ when $x \leq \widehat{\delta}(\pi) = \overline{v} - \underline{v}$ and $u(\overline{v} - x - p) \geq u(A(x))$.[25] Furthermore, when $c > \pi/(1 - q)$ his utility from renting becomes

$$q \cdot \int_0^{\widehat{\delta}(\pi)} u(A(x)) \cdot dF(x) + (1 - q) \cdot u(A(\delta))$$

which is larger than U^O when $\delta \leq \overline{\delta}$ since $u(\overline{v} - x - p - \pi + c \cdot (1 - q)) > u(\overline{v} - x - p)$ and

[25] The last inequality follows from the fact that $A(x) = \overline{v} - x - p - \pi + c\left(1 - q \cdot F\left(\widehat{\delta}(c)\right)\right) \leq \overline{v} - x - p$ when $c \leq \pi$. Furthermore, when $c \in \left[\pi, \frac{\pi}{1-q}\right]$, $A(x) = \overline{v} - x - p - \pi + c(1 - q) \leq \overline{v} - x - p$ since $F\left(\widehat{\delta}(c)\right) = 1$.

$u(\overline{v}-\delta-p-\pi+c\cdot(1-q))>u(\overline{v}-\delta-p)$.

All $\delta\leq\widehat{\delta}(c)$ prefer to own as long as $c\cdot(1-q)\leq\pi$. Therefore, for $c\leq\pi/(1-q)$, any user who rents must have $\delta\geq\widehat{\delta}(c)$, and leaves with probability $1-q\cdot F\left(\widehat{\delta}(c)\right)$. However, as soon as $c>\pi/(1-q)$, then all $\delta\leq\min\left\{\widehat{\delta}(c),\overline{\delta}\right\}$ strictly prefer to rent. This would cause P^e to discontinuously jump upward at $c=\pi/(1-q)$, and an equilibrium cannot be sustained. When we increase c marginally above $\pi/(1-q)$, if no $\delta\leq\widehat{\delta}(c)$ is supposed to rent, then they all have an incentive to deviate and start renting. However, if they all rent, P^e must go up discretely, increasing the first period rent, and causing the utility of renting to jump downward and become lower than that of owning for these users.

In order to obtain an equilibrium when $c>\pi/(1-q)$, investors must increase first period rents above the expected cost, in order to prevent any $\delta\leq\widehat{\delta}(c)$ from renting. This requires setting rents to satisfy $r_1+r_2=p+c\cdot P(c)$, where $P(c)$ satisfies the equation $c(1-P(c))=\pi$, whenever $c>\pi/(1-q)$. By doing this, all $\delta\leq\widehat{\delta}(c)$ are indifferent between buying and renting (and can then be assumed to buy). Hence, all renters have $\delta>\widehat{\delta}(c)$. Yet, since $P(c)>P^e$ for any such renter, their utility of renting goes below that that would be achieved under perfect discrimination (U^R is decreasing in $P(c)$). As a result, the size of the rental market must be smaller.

As long as P^e keeps jumping above $P(c)$ when all $\delta\leq\min\left\{\widehat{\delta}(c),\overline{\delta}\right\}$ start renting, we cannot sustain a pooling equilibrium. Denote by $\alpha(c)$ the fraction of renters with $\delta\leq\min\left\{\widehat{\delta}(c),\overline{\delta}\right\}$, in case they started to pool with the high mobility users. Then, such a pooling equilibrium could be sustained when $P(c)=q\cdot F\left(\widehat{\delta}(c)\right)+(1-q)\cdot\alpha(c)$, where the right hand side would correspond to P^e. However, when the mass of users with $\delta>\widehat{\delta}\left(\frac{\pi}{1-q}\right)$ is sufficiently low, $\alpha(c)$ must be arbitrarily close to one. The rents would almost reflect the

probability of staying for any of the low mobility users. Hence, they must prefer to own at that point, and no pooling of low and high mobility users exists.

Finally, notice that investors must be making strictly positive profits when $P(c) > P^e$. This can be sustained in equilibrium if there are more investors than renters. There will be entry until the point where expected profits fall down to zero again, as some of the investors will not be able to obtain a rent for their property. ■

Figure 1

Share of Renter Households (1998 City Data) and the Law

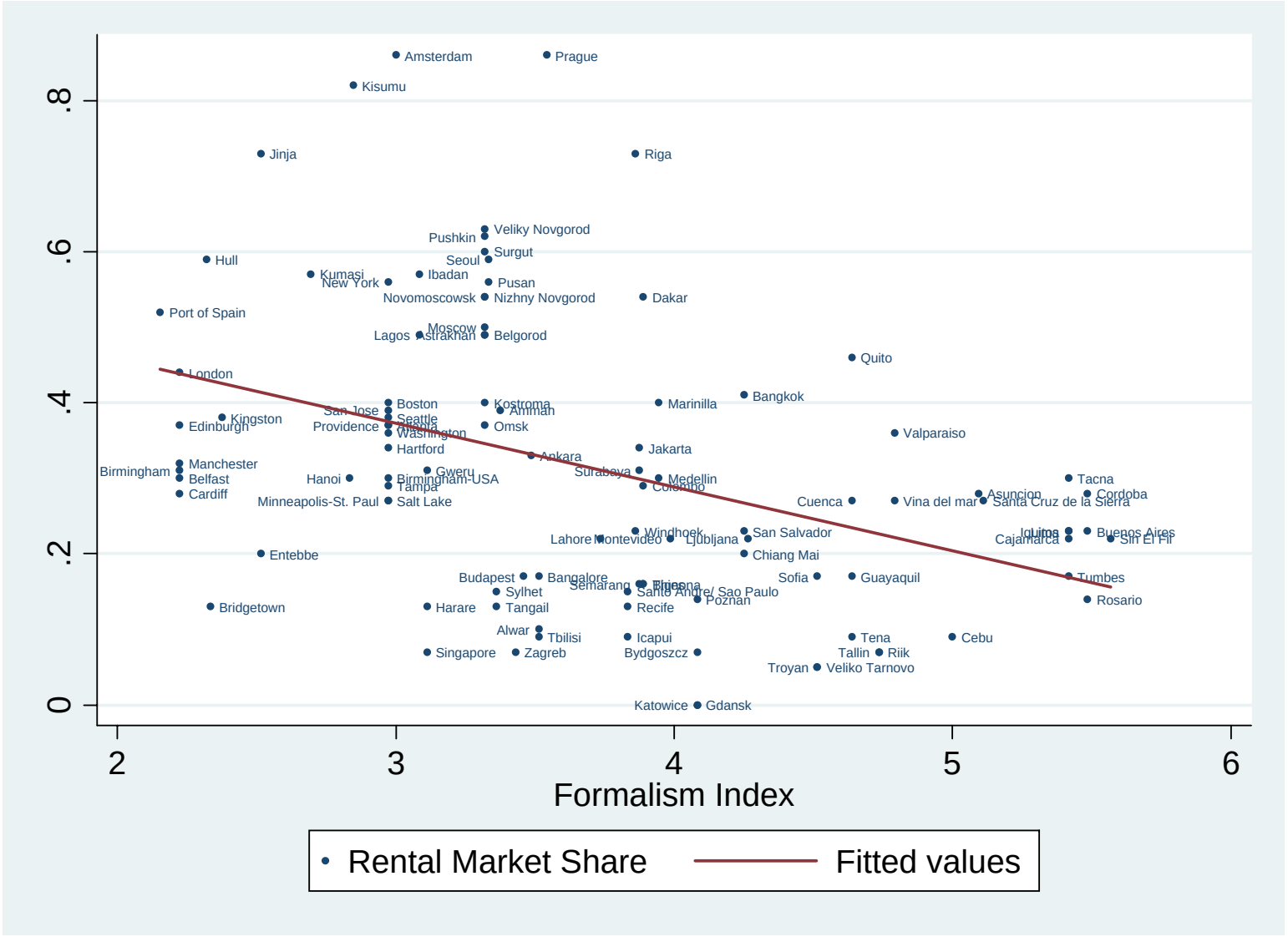

Figure 2

Share of Households in Private Rental Housing (1993 City Data) and the Law

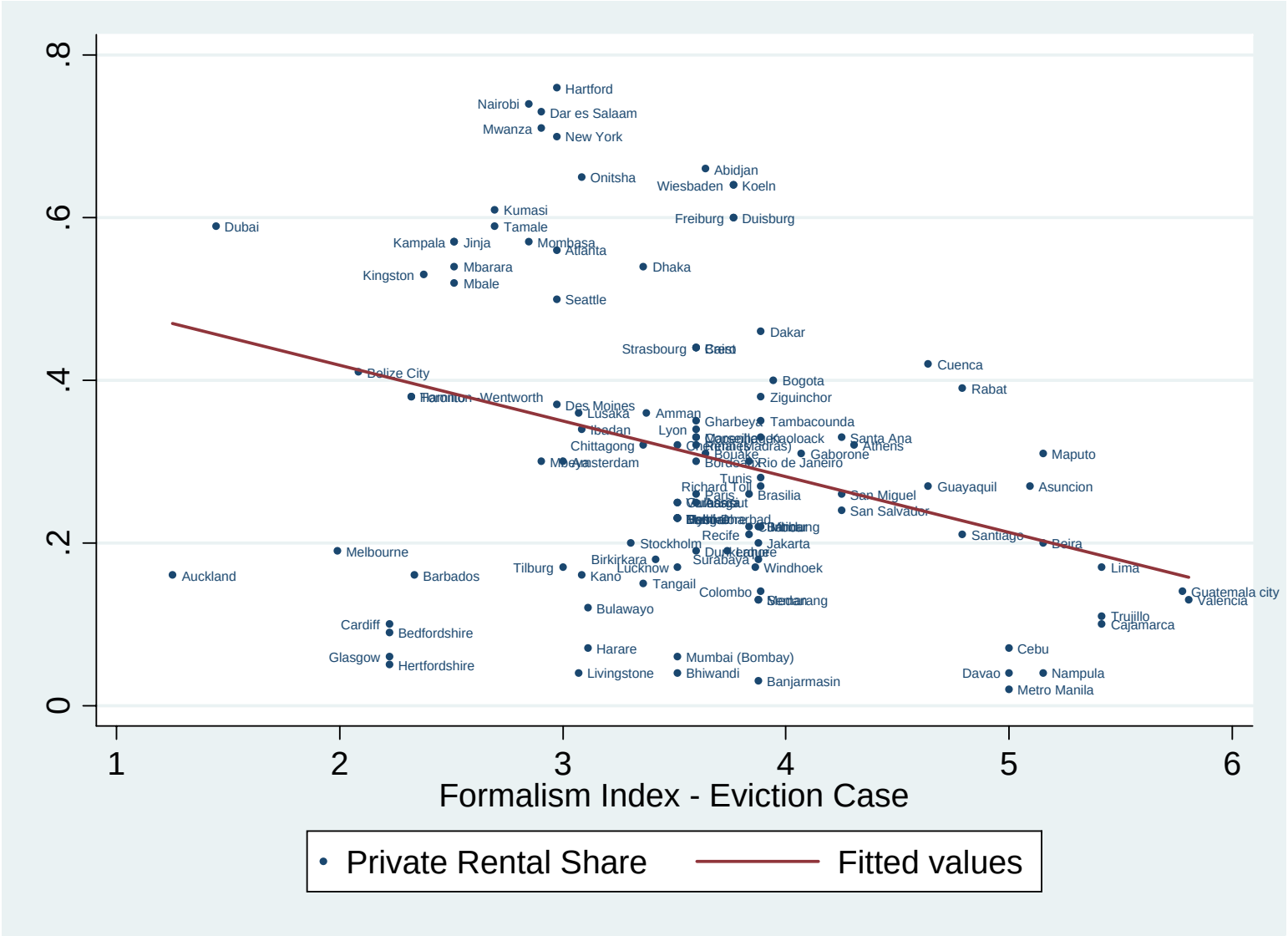

Figure 3

Urban Ownership Rates (1998 Country Data) and the Law

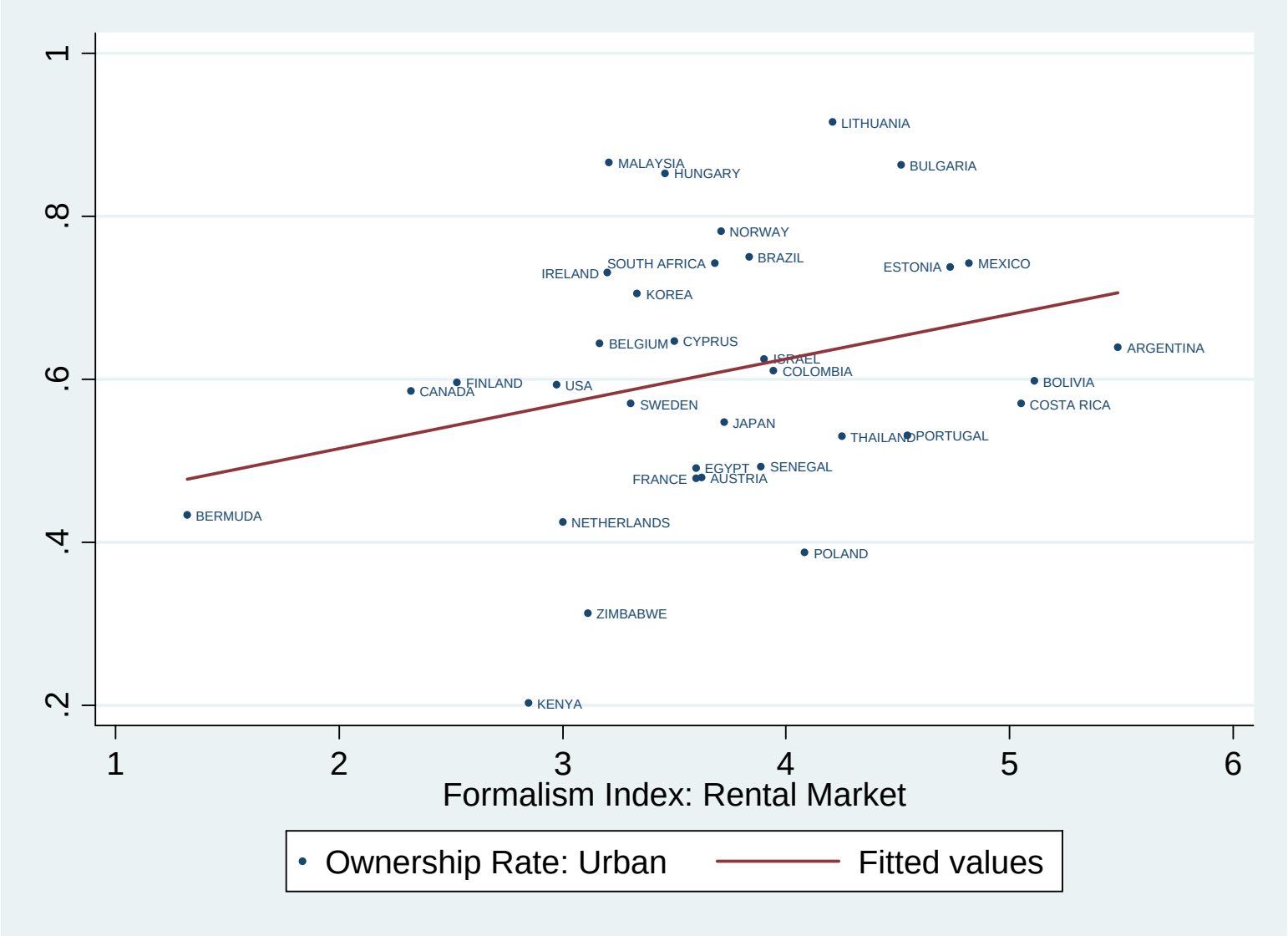

TABLE 1

Rental Contract Enforcement and Rental Market Development

	Tenancy Share (Rental Households/ Total Number of Households)											
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**
Formalism Index (Repossession Legal Process)	**-0.084** (0.020)***		**-0.064** (0.023)***	**-0.095** (0.026)***	**-0.114** (0.026)***	**-0.087** (0.025)***	**-0.107** (0.027)***	**-0.135** (0.023)***	**-0.088** (0.027)***	**-0.091** (0.026)***	**-0.117** (0.032)***	**-0.087** (0.033)**
ln(Total Duration of Repossession Legal Process)		**-0.075** (0.025)***	**-0.041** (0.031)	**-0.02** (0.032)	**0.001** (0.037)	**-0.024** (0.031)	**-0.005** (0.032)	**-0.002** (0.030)	**-0.03** (0.033)	**-0.048** (0.038)	**-0.027** (0.028)	**-0.063** (0.047)
ln(GNP per capita)				-0.013 (0.015)	-0.019 (0.017)	-0.008 (0.015)	-0.021 (0.013)	0.005 (0.021)	-0.024 (0.016)	-0.004 (0.039)	-0.046 (0.013)***	-0.021 (0.035)
ln(Population Density)				-0.037 (0.020)*	-0.055 (0.018)***	-0.038 (0.019)**	-0.041 (0.019)**	-0.053 (0.019)***	-0.031 -0.021	-0.042 (0.019)**	-0.07 (0.016)***	-0.026 (0.022)
ln(Victims of Theft /'000)					-0.005 (0.013)							
Areas considered as dangerous or inaccessible to the police						-0.053 (0.034)						
ln(Travel Time per Work-Trip (mins))							0.041 (0.048)					
ln(Local Government Revenue per Capita)								-0.035 (0.018)*				
ln(Share Households with Access to Water)									0.042 (0.056)			
ln(Median Household Income per Month)										0.003 (0.040)		
ln(Total Population ('000) - Urban Agglomeration)											0.008 (0.015)	
ln(Under 5 Mortality)												-0.042 (0.052)
Constant	0.626 (0.088)***	0.703 (0.133)***	0.762 (0.139)***	1.018 (0.237)***	1.114 (0.286)***	0.997 (0.222)***	0.928 (0.275)***	1.192 (0.244)***	1.122 (0.242)***	1.112 (0.225)***	1.455 (0.255)***	1.115 (0.248)***
Observations	102	102	102	102	82	102	84	72	98	66	61	70
Number of Countries	47	47	47	47	38	47	36	32	45	35	29	37
R-squared	0.16	0.12	0.18	0.24	0.3	0.52	0.34	0.25	0.41	0.29	0.26	0.3

Standard errors in parentheses (clustered by country)

* significant at 10%; ** significant at 5%; *** significant at 1%

The table presents the results of OLS regressions with the share of households living in rental units in a city in 1998 as the left-hand-side variable. The main explanatory variables are the formalism index (a measure of how costly is the enfocerment of contracts by courts) and the average length of the legal repossession process in the case of rent non-payment in the country where the city is located. GNP per capita, and population density are the main controls at the country level. Columns 5 to 12 include other city-level controls. See Data Appendix for details.

TABLE 2
IV estimates

	Tenancy Share (Rental Households/ Total Number of Households)			
	Bounced Check Instrument		Legal origins Instruments	
	(1)	**(2)**	**(3)**	**(4)**
Formalism Index (Repossession Legal Process)	**-0.071**	**-0.091**	**-0.053**	**-0.074**
	(0.017)***	(0.023)***	(0.024)**	(0.037)*
ln(GNP per capita)		-0.008		-0.005
		(0.015)		(0.018)
ln(Population Density)		-0.039		-0.035
		(0.020)*		(0.022)
Constant	0.576	0.87	0.51	0.771
	(0.076)***	(0.251)***	(0.091)***	(0.341)**
Observations	102	102	102	102
Number of Countries	47	47	47	47
F-statistic of excluded variables	139.31	261.89	38.46	28.94

Standard errors in parentheses (clustered by country)
* significant at 10%; ** significant at 5%; *** significant at 1%
The table presents the results of IV regressions with the share of households living in rental units in a city in 1998 as the left-hand-side variable. The main explanatory variables are the formalism index of the legal repossession process in the case of rent non-payment in the country where the city is located (a measure of how costly is the enfocerment of contracts by courts). This variable is instrumented, respectively, by the formalism index and average legal duration of court involvement in the case of a bounced check (columns 1 and 2), and by a set of dummies indicating the legal origin of the country (columns 3 and 4). GNP per capita, and population density are the main controls at the country level. See Data Appendix for details.

TABLE 3

Rental Contract Enforcement or Other Regulations?

	Rental Share						
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
Formalism Index (Repossession Legal Process)	**-0.115** (0.029)***	**-0.113** (0.034)***	**-0.083** (0.024)***	**-0.101** (0.024)***	**-0.106** (0.027)***	**-0.125** (0.028)***	**-0.107** (0.022)***
ln(GNP per capita)	-0.008 (0.020)	-0.008 (0.028)	0.018 (0.016)	-0.034 (0.018)*	-0.006 (0.022)	-0.038 (0.015)**	-0.02 -0.019
ln(Population Density)	-0.038 (0.021)*	-0.044 (0.035)	-0.021 (0.034)	-0.045 (0.019)**	-0.038 (0.021)*	-0.062 (0.016)***	-0.039 (0.019)**
Level of Protection of Industrial Relations Laws	0.01 (0.075)						
Level of Protection of Labor and Employment Laws		0.076 (0.152)					
Level of Protection of Social Security Laws			0.294 (0.085)***				
Property Rights Index, 1997				0.052 (0.026)*			
Legal Creditor Rights Index - Collateral Lending					-0.005 (0.024)		
Rent Control Index						-0.323 (0.307)	
Log Time to Property Registration							-0.028 (0.024)
Log Cost of Property Registration							0.0001 (0.024)
Constant	0.922 (0.266)***	0.963 (0.396)**	-0.06 (0.335)	0.947 (0.245)***	0.93 (0.210)***	1.352 (0.263)***	1.127 (0.272)***
Observations	92	59	59	98	98	53	100
Number of Countries	39	19	19	46	44	23	45
R-squared	0.27	0.25	0.35	0.27	0.23	0.47	0.26

Standard errors in parentheses (clustered by country)

* significant at 10%; ** significant at 5%; *** significant at 1%

The table presents the results of OLS regressions with the share of households living in rental units in a city in 1998 as the left-hand-side variable. The main explanatory variable is the formalism index (a measure of how costly is the enfocerment of contracts by courts) in the case of rent non-payment. In columns 1, 2, and 3 we control for country-level indexes measuring, respectively, the extent of protection to unions and collective bargaining, the extent of labor market regulation, and the level of protection of social security in the country. In column 4 we control for an index measuring the extent of property rights protection. Column 5 controls for a measure of the extent of protection of creditor rights (including lender rights on the collateral in asset-backed lending transactions). In column 6 we add a rent control index. Column 7 controls for the costs and lenght of the real estate propery registration process. See Data Appendix for details.

TABLE 4

1993 Private Rental Data

	Share **Private** Rental Households			
	(1)	**(2)**	**(3)**	**(4)**
Formalism Index (Repossession Legal Process)	**-0.069**	**-0.062**	**-0.057**	**-0.08**
	(0.029)**	(0.031)**	(0.029)*	(0.029)***
ln(GNP per capita)	0.00002	-0.013	0.001	0.012
	(0.020)	(0.019)	(0.020)	(0.020)
ln(Population Density)	-0.015	-0.02	-0.014	-0.004
	(0.019)	(0.021)	(0.019)	(0.018)
Share Public Housing				-0.417
				(0.178)**
Constant	0.622	0.69	0.566	0.547
	(0.235)**	(0.234)***	(0.244)**	(0.238)**
Observations	114	63	114	114
R-squared	0.12	0.13	0.11	0.16
Countries	47	30	47	47
Regression Description	*Baseline*	*Not in 1998 Sample*	*IV: Check Case*	*Public Housing*

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Columns 1 and 2 present the results of OLS regressions with the share of households living in privately-owned rental units in a city in 1993 as the left-hand-side variable. The main explanatory variable is the formalism index (a measure of how costly is the enfocerment of contracts by courts) in the case of rent non-payment. In column 2, we only include those cities that are not available in the 1998 data set (this can be interpreted as an out-of-sample test of the robustness of the main result in Table 1). Column 3 presents results of IV regressions using the formalism index in the case of a bounced check as an instrument. Column 4 controls for the share of public housing in the city. See Data Appendix for details.

TABLE 5

Courts and Homeownership (National Data)

	Homeownership Rate			
	Rural & Urban		Urban	
	(1)	(2)	(3)	(4)
Formalism Index (Repossession Legal Process)	**0.046**	**0.025**	**0.055**	**0.067**
	(0.023)**	(0.023)	(0.024)**	(0.032)**
ln(GNP per capita)		-0.027		0.033
		(0.015)*		(0.025)
ln(Population Density)		0.002		-0.019
		(0.017)		(0.014)
Constant	0.504	0.812	0.405	0.154
	(0.087)***	(0.190)***	(0.098)***	(0.325)
Observations	41	40	34	34
R-squared	0.07	0.12	0.08	0.16

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Columns 1 and 2 present the results of OLS regressions with estimates on the share of households in a country living in owner-occupied housing as the left-hand-side variable. The main explanatory variable is the formalism index (a measure of how costly is the enfocerment of contracts by courts) in the case of rent non-payment. In columns 3 and 4 (the focal regressions of interest) we use the ownership rate in urban areas. See Data Appendix for details.

Appendix Table 1

Descriptive Statistics (1998 City Data)

	N	Mean	St.DV.	Min	Max
Country Level					
Total Duration of Repossession Legal Process	102	262.260	253.767	39	1080
Formalism Index (Repossession Legal Process)	102	3.680	0.907	2.153	5.569
GNP per capita	102	7893.357	10811.840	260	31910.160
Population Density (people per sq km)	102	185.204	663.941	2.301	6586.885
City Level					
Tenancy Share	102	0.315	0.192	0	0.86
Victims of Theft /'000	82	14.316	17.041	0.020	85.300
Areas considered as dangerous or inaccessible to the police	102	0.347	0.478	0	1
Travel Time per Work-Trip (mins)	84	28.702	11.978	5	62
Local government revenue per capita	72	611.291	937.994	2.190	4637.900
Share Households with Access to Water	98	0.847	0.235	0.116	1
Median Household Income per Month	65	600.249	794.994	41.000	3767
Total Population ('000) - Urban Agglomeration	61	1667.868	2096.379	6.500	8769.341
Under 5 Mortality	85	0.033	0.039	0.001	0.170

All Monetary Figures in 1998 US $.

Data Appendix

Variable	Source	Description
Total Duration	Djankov, La Porta, Lopez-de-Silanes and Shleifer (2003).	The total estimated duration in calendar days of the reposession procedure after non-payment of due rents. It equals the sum of: (i) duration until completion of service of process, (ii) duration of trial, and (iii) duration of enforcement.*
Formalism Index	Djankov, La Porta, Lopez-de-Silanes and Shleifer (2003).	The index measures substantive and procedural statutory intervention in judicial repossesion cases at lower-level civil trial courts, and is formed by adding up the following indices: (i) professionals vs. laymen, (ii) written vs. oral elements, (iii) legal justification, (iv) statutory regulation of evidence, (v) control of superior review, (vi) engagement formalities, and (vii) independent procedural actions. The index ranges from 0 to 7, where 7 means a higher level of control or intervention in the judicial process.*
GNP per Capita	Djankov, La Porta, Lopez-de-Silanes and Shleifer (2003).	
Population Density (people per sq km)	World Development Indicators (WDI) World Bank (2004)	
Level of Protection of Industrial (Collective) Relations Laws	Botero, Djankov, Laporta, Lopez-de-Silanes, and Shleifer, (2005)	This index measures the level of legal protection of the right to unionization and collective bargaining. The index is the normalized sum of 3 original indexes as constructed by Botero et al: (i) labor union power, (ii) right to unionization in the constitution, (iii) right to collective bargaining in the constitution.
Level of Protection of Labor and Employment Laws	Botero, Djankov, Laporta, Lopez-de-Silanes, and Shleifer, (2005)	This index measures the level of protection of labor and employment laws. The index is formed by the normalized sum of 3 original indexes constructed by Botero et al: (i) alternative employment contracts, (ii) conditions of employment, (iii) job security.

Level of Protection of Social Security Laws (Old Age, Unemployment, Sickness)	Botero, Djankov, Laporta, Lopez-de-Silanes, and Shleifer, (2005)	This index measures the level of protection of social security laws. The index is formed by the normalized sum of 3 original indexes as calculated by Botero et al.: (i) subindex of old age, disability and death benefits; (ii) subindex of sickness and health benefits; and (iii) subindex of unemployment benefits.
Property Rights Index, 1997	La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1999) - From Heritage Foundation 1997 Index of Economic Freedom	A subjective index that scores the degree to which a country's laws and government protect private property rights and the degree to which its government enforces those laws. Takes on 5 values (from Very Low, 1, to Very High, 5)
Legal Creditor Rights Index - Collateral Lending	World Bank Doing Business Database 2005 (DB), and Djankov, McLiesh, Shleifer (2006)	The DB creditor protection index adds seven indexes pertaining to collateral law and 3 indexes pertaining to bankruptcy law. We subtract the values for the 3 latter indexes from Djankov et al. to obtain our measure of collateral lending creditor protection
Rent Control Index	Malpezzi and Ball (1991)	It is obtained as the sum of several indexes measuring several aspects of the coverage, stricness, and enforcement of rent control regulations
Time and Cost of Property Registration	World Bank doing Business Database 2005 (DB)	Assumes a standardized case of an entrepreneur who wants to purchase land and a building in the largest business city—already registered and free of title dispute. Time is measured in days. Cost is expressed as a percentage of the value of the building.
Areas considered as dangerous or inaccessible to the police	UN Global Urban Indicators, 1998	Areas considered as dangerous or inaccessible to the police (yes or no)
Travel Time per Word Trip (mins)	UN Global Urban Indicators, 1998	Average time in minutes for a one-way work trip. This is an average over all modes of transport.
Local Government Revenue per Capita	UN Global Urban Indicators, 1998	Local government revenue per capita is the total local government sources of funds in US dollars annually, both capital and recurrent, for the metropolitan area, divided by population (three-year average).

Under 5 Mortality - All	UN Global Urban Indicators, 1998	Percentage of female and male children who die before reaching their fifth birthday.
Percentage Household with Access to Water	UN Global Urban Indicators, 1998	Access is defined as having water located within 200 meters of the dwelling.
Median Household Income per Month	UN Global Urban Indicators, 1998	Median household income: Household income is defined as the gross income from all sources, which include wages, salaries, incomes from businesses or informal sector activities, investment income, and where information is available, income in-kind.
Total Population ('000) - Urban Agglomeration	UN Global Urban Indicators, 1998	Total population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship. Urban agglomeration is defined as the city proper along with the suburban fringe and any built-up, thickly settled areas lying outside of, but adjacent to, the city boundaries.
Tenancy Share	UN Global Urban Indicators, 1998	Households in rental housing over total number of households. This information is usually collected through the census or household surveys. In the absence of such sources, an evaluation might be carried out using several indirect sources collected through public housing boards, housing finance institutions, real-estate agencies, non-governmental organizations, etc.
Share Private Rental Households	UN Global Urban Indicators, 1993	Households in private rental over total number of households. Private rental is defined as households in (formal) housing for which rents are paid to a private landlord who is the legal owner.
Homeownership Rate (Urban and Overall)	UN Human Settlements Statistical Database version 4, 1999	Percent of total households that are owner occupied.