FORMALIZATION, POSSESSION, AND OWNERSHIP

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This paper is a comment on the work of Hernando de Soto, who has done so much to highlight the importance of property rights, especially in the context of what I will call migrant communities within developing countries. These are the shantytowns of Peru, the *favelas* of Brazil, and the *bidonvilles* of Haiti. De Soto characterizes these communities as "extralegal zones." They consist, in his words, of "modest homes cramped together on city perimeters, a myriad of workshops in their midst, armies of vendors hawking their wares on the streets, and countless crisscrossing minibus lines."[1] I am interested in de Soto's work on these migrant communities for two reasons, which are related.

First, de Soto's work sheds important light on a problem in property theory with which I have been concerned for several years. This has to do with the distinction between two different ways for allocating resources among humans living together in some kind of organized society—possession and ownership.[2] There is a broad divide among property scholars between "Humeans" who see informal possessory rights as the origins of property, and "Hobbesians" who see the State as the critical institution that gives rise to claims of property.[3] De Soto's migrant communities are organized according to claims of possession that are extra-legal, that is, they are not sanctioned by the State. So they provide an important piece of data bearing on the causal debate about the origins of property.

Second, de Soto's work has spawned a worldwide reform effort that seeks to jump start economic growth in developing countries by

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1. HERNANDO DE SOTO, THE MYSTERY OF CAPITAL: WHY CAPITALISM TRIUMPHS IN THE WEST AND FAILS EVERYWHERE ELSE 78–79 (2000) [hereinafter DE SOTO, MYSTERY].

2. Thomas Merrill, *Ownership and Possession*, *in* LAW AND ECONOMICS OF POSSESSION (Yun-chien Chang ed., 2015); Thomas W. Merrill, *Property and the Right to Exclude II*, 3 BRIGHAM-KANNER PROP. RTS. CONF. J. 1, 13–21 (2014).

3. The distinction is often expressed in terms of whether property emerges "bottom up" (evolving out of social norms) or "top down" (is imposed by the State). *See* James E. Krier, *Evolutionary Theory and the Origin of Property Rights*, 95 CORNELL L. REV. 139 (2009); Thomas W. Merrill, *Introduction: The Demsetz Thesis and the Evolution of Property Rights*, 31 J. LEGAL STUD. S331 (2002).

formalizing the informal possessory rights that exist in migrant communities, that is, by transforming extra-legal possessory rights into legal property rights.[4] The primary rationale for such formalization programs is to make these claims eligible for use as collateral for loans, which in turn will provide the capital needed to build structures, obtain equipment and inventory, and enter the world of modern capitalism. This idea has been tremendously influential with international aid agencies and the World Bank and has been adopted, in one form or another, by a large number of developing countries throughout the world.[5] The results have largely been disappointing.[6] Once we pinpoint the key information-cost distinction between systems that allocate resources by possession and those that use ownership, we can come to an understanding of why the formalization projects have largely failed in their stated objectives. This understanding also points toward alternative reforms that may have greater chances of success.

I. THE THEORETICAL ISSUE

Possession is a social concept. It refers to a claim by a person of exclusive control of a physical object. It is grounded in actual control. One cannot gain possession simply by pointing to an object or taking a picture of it. Once actual control is obtained, however, possession does not require continuous control. It is sufficient to mark the object in such a way as to signal to others that one intends to retain control of the object.

The institution of possession is a universal feature of all known human societies, including hunter-gatherer bands. The objects eligible for claims of possession vary considerably from one society to another, as do the marks that signal to others that an object is possessed. No matter how claims of possession are communicated, in reasonably stable human societies there is a strong disposition to respect possession established by others. To be sure, there is variation here too, as some societies have higher rates of thievery than

4. Klaus Deininger & Gershon Feder, *Land Registration, Governance, and Development: Evidence and Implications for Policy*, 24 WORLD BANK RES. OBSERVER 233 (2009).

5. For further discussion of the formalization projects, see *infra* Part II.

6. *See infra* notes 13–14 and accompanying text.

others and there is often, unfortunately, a marked fall-off in respect for possession by out-groups relative to in-groups. But respect for possession exists, to some degree, even within bands of thieves.[7]

Ownership is a legal concept. Like possession, it refers to control over things. Ownership, however, refers to a legally enforceable right to exclusive control of a thing. In a society with a functioning legal system, ownership trumps possession. Ownership is also broader than possession because it is not limited to physical objects. One can own intellectual property rights, shares in companies, security interests, money, and lots of other things that are intangible.

The main point I would emphasize for present purposes is that every moderately sophisticated society with a functioning legal system will rely on both possession and ownership in allocating rights to resources. It is a mistake to think of possession as some rudimentary state of affairs that prevails in primitive societies but which is eventually replaced by ownership as development takes off. Even in the most advanced societies, possession is by far the most frequently used basis for allocating claims to resources.

In navigating through everyday life, for example, we make thousands of judgments about whether particular resources are claimed or unclaimed. Think of our response to cars in a parking lot, houses along a street, coats on a coat-rack, and goods piled up on the sidewalk in front of a shop. We make judgments about whether these objects are claimed or unclaimed based on perceptions about whether someone has signaled an intention to retain possession of the object in question. We do not ponder whether they are owned, and if so, by whom and in what sort of title. Even when we engage in transactions, most of the time we rely on possession as a sufficient basis for the right to engage in exchange. This applies to nearly all transactions in relatively low-valued goods, like food, clothing, books, and so forth. When you buy a bottle of water from a street vendor, you do not stop to ponder whether the vendor owns the bottles of water. You assume, based on his possession of the bottles, that he has the right to sell them.

Ownership, in contrast, comes into play only in relatively specialized contexts. These are typically high-stakes situations, such as

7. *See* Thomas W. Merrill, *Possession as a Natural Right*, 9 N.Y.U. J.L. & LIBERTY 345, 356–63 (2015) (and sources cited).

resolving a boundary dispute over land, establishing whether the seller has good title when buying a house or car, or determining whether to loan money to someone secured by collateral.

The reason why possession is used most of the time and ownership comes into play only exceptionally is primarily a matter of information costs. Determinations of possession are based on physical cues about objects that are processed by our brains almost instantaneously and unconsciously. They exist in the realm of cognition that Daniel Kahneman has called "system 1" or "thinking fast."[8] Somehow we learn these cues at a very young age, just by observing how people interact with objects of value.

Determinations of ownership, in contrast, entail much higher information costs. In order to identify someone as the "owner" of a thing it is necessary to trace its provenance in order to ascertain that the relevant rights (paradigmatically to exclude others) have not previously been transferred to someone else.[9] Such a determination may entail commissioning a survey, finding documents memorializing past transactions, figuring out what these documents mean, perhaps consulting some kind of registry of rights, possibly hiring a lawyer to sort all this out, and maybe even filing a lawsuit. Even the most streamlined of these enquiries requires a conscious effort to gather information and decide what it means. Determining ownership is a quintessential example of what Kahneman calls "system 2" cognition or "thinking slow."[10]

Once we see that possession is an informationally cheap way of allocating rights to resources, whereas ownership is an informationally expensive way of allocating resources, we can see why possession remains the predominate principle for most everyday purposes. And this is true in even the most sophisticated societies with the most elaborate systems of property rights and enforcement of those rights.

What remains controversial about this account of possession and its relation to ownership is a question of causation. My view, which you could call neo-Humean or perhaps a sociobiological view, is that there is something we can call the "possession instinct" which is

8. DANIEL KAHNEMAN, THINKING FAST AND SLOW (2011).

9. Benito Arruñada, *Property Enforcement as Organized Consent*, 19 J.L. ECON. & ORG. 401 (2003).

10. KAHNEMAN, *supra* note 8.

hard wired in human psychology.[11] People everywhere have a natural proclivity to identify certain objects as being possessed by others, and a natural proclivity to respect possession established by others. Obviously, it is not all biological; the possession instinct is significantly mediated by culture and by individual learning. But if a group of strangers, each from a different culture, were stranded on a desert island, they would quickly develop a normative understanding of which objects or places on the island belong to whom, and there would be widespread respect for this understanding.

The opposing view, which has been informally advanced on several occasions in response to my views, can be called neo-Hobbesian. This is the view that possession only works as a basis for allocating resources because it is backstopped by the power of the State. Take one of my favorite examples of the use of possession in the modern world—the luggage carousel at an international airport. People from all over the world and all sorts of cultural backgrounds understand that they are entitled to take only the suitcase uniquely marked as their own; they understand they are not to interfere with suitcases marked as belonging to someone else. The process works the same at airports all over the world and most of the time operates without any official checking of claim tags, once bags are retrieved.

To which the neo-Hobbesians respond: The system of suitcase allocation works only because everyone understands that someone, somewhere, is the legal owner of each of these suitcases. Particular suitcases may be borrowed, or may even be stolen. But each is owned by someone. We learn in our youth that taking property owned by someone else is a crime, punishable by the State. So we desist from taking a suitcase that we perceive is not our own, because we fear the power of the State. In this particular example, possession may serve up the cues as to who is entitled to what, but it is functioning simply as a proxy for ownership. Ownership supplies the underlying explanation for the respect for possession.[12]

What I like about de Soto's account of the migrant communities in the developing world is that it presents a kind of natural experiment for testing these rival theories. As he describes the circumstances of

11. Merrill, *supra* note 7.

12. *Cf.* Carol M. Rose, *The Law is Nine-Tenths of Possession: An Adage Turned on Its Head*, *in* 40 LAW AND ECONOMICS OF POSSESSION (Yun-chien Change ed., 2015) (arguing that possession is best explained by "acting like an owner").

these communities, they are essentially outlaws from the perspective of the formal system of property rights. The people living in these communities inhabit handmade structures built on land they do not own. They operate businesses they are not licensed to operate. They commute on minibuses that have no franchises authorizing them to provide service. Yet, as de Soto makes emphatically clear, these are bustling communities, filled with entrepreneurship and energy.[13] They constitute a major part of the wealth of the countries in which they operate. De Soto's point is that they could do even better if they had formal property rights; if they could join the system of private property from which they have been excluded.[14]

From my perspective, the migrant communities that de Soto describes operate on the principle of possession—they allocate resources based on perceptions of possession and respect for possession established by others. Moreover—and this is the critical point in terms of the causation debate—they do so in a context where everyone knows they do not have ownership rights. The principle of possession here cannot be explained as a proxy for ownership, because everyone knows these communities are not grounded in formal property rights. They are a real world instantiation of my hypothesis about a group of people marooned on a desert island. There can be no claim that the millions of people living in these migrant communities respect possession because it is backstopped by law and the power of the State. They respect possession because it is the natural human thing to do.

II. THE FAILED FORMALIZATION PROJECT

The distinction between possession and ownership, and the recognition of the radical difference in the information costs associated with these two ways of allocating resources, also has important implications for the fate of de Soto's key policy proposal, which is to formalize the informal rights to resources that people have in migrant communities in developing nations. A major reason for formalizing these rights of possession, de Soto argues, is to create a foundation for

13. HERNANDO DE SOTO, THE OTHER PATH 17–127 (1989) [hereinafter DE SOTO, THE OTHER PATH].

14. *See* DE SOTO, MYSTERY, *supra* note 1, at 15–37.

secured lending based on the collateral in these resources. This injection of capital, he argues, would allow the occupants of these migrant communities to start or expand a business, or otherwise improve these resources, which would jump start economic growth and promote greater equality.[15]

The evidence to date indicates that this formalization project, where it has been carried out, has generally failed to achieve its announced objective. A number of country-specific case studies suggest that the urban poor who receive these formalized rights do not use them to obtain secured loans. Instead, once formalization occurs, they frequently cash out by selling to larger landholders or developers.[16] Perhaps most critically, in light of the argument de Soto advanced in support of formalization, a comprehensive review of the literature by two World Bank researchers reports that evidence of improved access to credit "is scant."[17]

There are undoubtedly a variety of explanations for why formalization projects have failed to achieve economic lift-off in developing countries. For example, if formal titles are distributed in such a way that they conflict with customary rights, this can give rise to conflict between indigenous populations and formal rights holders.[18] Or, if state institutions are too weak or corrupt to enforce formal titles effectively, control over resources may revert to informal rights holders.[19] These sorts of explanations, however, do not seem to account for the failure of formalization to stimulate secured lending in the migrant communities that have emerged in and around major cities in developing countries. With respect to these communities, there is no conflict between the person in possession and the person with newly formalized title—they are one and the same. And as de Soto

15. *See id.* at 153–205.

16. BENITO ARRUÑADA, INSTITUTIONAL FOUNDATIONS OF IMPERSONAL EXCHANGE: THEORY AND POLICY OF CONTRACTUAL REGISTRIES 148–50 (2012); Rashmi Dyal-Chand, *Leaving the Body of Property Law? Meltdowns, Land Rushes, and Failed Economic Development*, *in* HERNANDO DE SOTO AND PROPERTY IN A MARKET ECONOMY 90–91 (B. Barros ed., 2010); John Gravois, *The De Soto Delusion*, SLATE (Jan. 29, 2006), http://www.slate.com/articles/news_and_politics/hey_wait_a_minute/2005/01/the_de_soto_delusion.html.

17. Deininger & Feder, *supra* note 4; *see also* NIALL FERGUSON, THE ASCENT OF MONEY 278 (2008) (citing evidence that only four percent of squatters given formalized title in Quilmes, Argentina managed to secure a mortgage).

18. Daniel Fitzpatrick, *Evolution and Chaos in Property Rights Systems: The Third World Tragedy of Contested Access*, 115 YALE L.J. 996, 1038–42 (2006).

19. *Id.* at 1042–45.

points out, most of the countries where these migrant communities are located have already established systems of land title registration and enforcement—which work tolerably well for the elite who own and trade in conventional property rights.[20]

There is an alternative and more parsimonious explanation for the failure of formalization to stimulate secured lending in migrant communities. Once we understand the distinction between possession and ownership, and the information-cost reasons for making possession the general default principle in allocating resources, the failure of formalization to induce secured lending should not be surprising. The most general explanation is that the rights in question are not sufficiently valuable to justify the higher information costs associated with determining ownership of property. More specifically, the failure of these formalized rights to stimulate secured lending can be pinpointed to two factors.

First, a bank or other lender will enter into a secured loan only if the expected return on the loan exceeds the costs of establishing that the borrower has the relevant ownership rights to provide collateral for the loan. From de Soto's account of migrant communities, it seems clear that the original value of the individual formalized rights—to a small plot of land improved by a homemade shack for example—will be small. Thus, at least initially, lenders may conclude that the return on entering into a secured loan will be too small to justify the costs of verifying title to the collateral.

Let me elaborate. One can characterize the decision by a bank or other lender to engage in secured lending with a simple formula. The bank makes money by charging interest on loans that is higher than its cost of capital. This is known as the interest rate spread. The amount of money the bank will make on any particular loan is a function of the spread times the principal value of the loan. Suppose the spread is two percent and the principal value of the loan is ten thousand dollars. The expected return is .02 times $10,000 or $2,000. (I ignore the complication of discounting the expected return over time and so forth.) In deciding whether to enter into the loan, the bank will compare this expected return to various costs it will incur in making the loan, such as origination costs, collection costs,

20. *See* DE SOTO, MYSTERY, *supra* note 1, at 73–74, 153.

the risk of loss on default, and so forth. For present purposes, I will focus on only one cost—the cost of doing a title search.

Suppose, to continue my hypothetical, the cost of a title search is three thousand dollars. On this assumption, the loan, which will generate expected revenue of two thousand dollars, will not be made. Clearly this will be true if the bank bears the cost of verifying title to the collateral. It is also not likely to be made if the bank shifts the cost of verifying title to the collateral onto the borrower, through an origination fee. The borrower would have to earn a very high rate of return on the borrowed funds, above and beyond the interest payments on the loan, in order to cover the cost of the title search, which I have posited to be three thousand dollars.

The lesson we derive from this simple example is that the decision to engage in secured lending is critically dependent on the principal value of the loan. At a minimum, the principal value of the loan must be large enough to exceed the costs of a title search and the other costs of originating and managing the loan. If the cost of a title search is positive, as it always will be, then the principal value of the loan must be large enough to cover the title search costs. Neither the bank nor the owners of newly formalized plots of land who are the target of the formalization reform effort will be interested in participating in securing lending if the principal value of the loan is too small to cover the costs of verifying title to the collateral.

Some indirect confirmation of this observation is provided by looking at a relatively unusual market for secured lending in the United States—where the collateral takes the form of a lease. There is no conceptual reason why a tenant cannot use her lease as collateral for a loan. Obviously this is uncommon. I have never heard of a residential tenant with a year-to-year lease securing a loan by posting the tenancy as collateral. There are examples of leases being used as collateral in the commercial lending context. Grocery stores, for example, commonly enter into twenty to twenty-five-year leases for the buildings in which they operate, and they have used these leases as collateral for securing revolving lines of credit. Typically, multiple leases are bundled together in a single package of collateral. This makes sense—the more leases that are bundled, the larger the collateral and the bigger the principal amount of the loan. Owners of cooperative apartments are another example. Persons

who buy cooperative apartments today can obtain mortgages to purchase their apartment unit. Technically the assets that secure the mortgage are the shares the unit owner holds in the cooperative corporation. But the only reason the shares have any economic value is because they come with a long-term lease of a particular apartment unit, which is often worth one million dollars or more in a market like New York City.[21]

These examples of leasehold mortgages show that secured lending is nonexistent when the lease has a relatively small value, as would be the case for a short-term residential lease. When the value of the leasehold is large, either because it is a major commercial lease or because it is a very long-term residential lease, we see that secured lending, like magic, appears. I take this as confirmation that secured lending is feasible only when the value of the collateral, and hence the principal amount of the loan, is sufficiently large to justify the costs of performing a title search and the other costs associated with originating and managing the loan.

Second, secured lending works only if there is a credible threat by the lender to foreclose on the collateral if the loan is in default. This is not because lenders have any desire to take possession of the collateral. Taking possession of the collateral is usually a losing proposition for the lender.[22] The reason lenders prefer to make loans secured by collateral is that this gives them enhanced leverage to persuade borrowers to continue making payments on the loan. Such leverage will exist only if the lender has a credible *threat* to foreclose and take possession of the collateral. And the threat to foreclose will be credible only if the costs of foreclosure process are less than the value the collateral will obtain on a sale once it is seized.[23]

Foreclosure of real estate in the United States is expensive, often entailing a judicial hearing and, if the mortgagor does not voluntarily relinquish possession, an eviction procedure carried out by the sheriff's office. Because of various statutory redemption rights, foreclosure is also value destroying—reducing the price the foreclosed-upon

21. *See, e.g.*, Michael H. Schill et al., *The Condominium Versus Cooperative Puzzle: An Empirical Analysis of Housing in New York City*, 36 J. LEGAL STUD. 275, 281 (2007).

22. Ronald Mann, *The Concept of Collateral*, *in* CASES AND MATERIALS ON COMMERCIAL FINANCE (2017).

23. By "costs of the foreclosure process" I refer to the costs of gaining possession of the collateral and selling it to recover some or all of the principal value of the loan.

property can obtain in a sale by as much as forty percent.[24] Foreclosure on delinquent auto loans—it's called repossession in this context—is less costly. Still, it entails using "repo" men to find the vehicle and tow it away in the dead of night, which can lead to conflict or litigation.

In contrast, when we consider a third type of secured lending, the costs of foreclosure are very small. Pawnshops loan money to individuals secured by collateral in the form of personal property, like jewelry, musical instruments, guns, and so forth. The unique aspect of pawnshops is that possession of the collateral is transferred to the shop for the duration of the loan. There are a variety of explanations for this practice, but surely one is that the costs of foreclosure are dramatically reduced when the collateral is already in the hands of the lender. If the borrower defaults, the pawnshop just takes the collateral off the shelf and sells it. If the collateral remains with the borrower, it would be prohibitively expensive, relative to the value of the collateral, to hire a repo man to seize possession of the guitar or engagement ring that secures the loan, even assuming the repo man could gain entrance to the dwelling where these objects are kept.

We can again see that the value of the collateral is critical by comparing the practice of pawnshop lending to other forms of secured lending using personal property as collateral. Various forms of personal property, such as autos, airplanes, and boats, serve as collateral for secured loans. Like guitars and engagement rings, and unlike land, they are moveable and concealable. Yet for these high-valued forms of personal property, the collateral stays with the borrower. The costs of repossession are sufficiently low, relative to the value of the collateral, to make this feasible. The fact that pawnshops insist on a transfer of possession to the lender as a condition for making the loan reflects the relatively high costs of foreclosure relative to the value of the collateral. So the historical experience of pawnshops provides some confirmation that low-valued collateral will not support a robust system of secured lending—unless possession of the collateral is transferred to the lender before the loan is made. And of course, in the case of the plots of land and the fixtures described by de Soto, transfer of possession to the lender in advance

24. Mann, *supra* note 22 (citing statistics on commercial real estate loans indicating that "a typical foreclosure sale results in a loss to the lender of about 40% of its original loan amount").

of the loan would defeat the very purpose of generating a market in secured credit to jump start economic growth.

There is another, cultural reason why the threat of foreclosure is unlikely to be credible with respect to newly formalized land. Foreclosure entails a willingness to allow ownership rights to trump possessory rights. If the dominant ethos of the squatter community is possession, it may be difficult to accept the idea that a lender can oust a possessor for nonpayment of a loan. There is a parallel here to the behavior of the so-called claims associations in the United States in the nineteenth century, which refused to allow squatters to be displaced by persons who had purchased land in formal land sales.[25] Over time, it is reasonable to think that the ethos of the squatter community will give way to a sensibility that recognizes the necessity of periodic foreclosures of debtors who, for whatever reasons, cannot repay the loan. But it is likely to take some time and experience with the process of secured lending and periodic foreclosure to develop such an ethos.

III. OTHER PATHS

I am highly sympathetic to the basic reform strategy outlined by de Soto, which is to bring migrant communities into the world of modern capitalism by enhancing the security of their rights to material possessions, and giving them access to credit markets so that they can engage in small scale entrepreneurial enterprises. If formalization of possessory rights does not work to yield these results, are there other ideas that might work better?

Perhaps the most widespread proposal for creating enhanced opportunities for access to capital among the world's poor goes by the name microfinance. Although there are many variations, the root idea is to establish nonprofit entities, which obtain funding from developed countries or international organizations and then make small unsecured loans to individuals in developing countries for purposes of improving land, starting businesses, and so forth.[26] These have achieved mixed success. The literature about the promise and

25. DE SOTO, MYSTERY, *supra* note 1, at 108–48.

26. *See generally* Katherine Hunt, *The Law and Economics of Microfinance*, 33 J. L. & COM. 1 (2014).

perils of microfinance is vast. There have been some ingenious proposals for using social pressure to encourage repayment of loans. But because these proposals generally do not entail any modification of property institutions, I have little to say about them.

An alternative that would entail modification of property institutions would be to pursue a formalization strategy, along the lines proposed by de Soto, but on a much more modest basis. Perhaps the central flaw in de Soto's formalization project is that it seeks to leap from possessory rights to property rights in one large bound. A more promising approach might be to start more modestly with formalization of *possessory* rights, rather than trying to transform possessory rights into property rights. De Soto himself has shown that in some of the shantytowns and favelas he describes, the possessors post signs on their holdings attesting to their possessory rights. He has also developed evidence that possessory rights are transferred within these communities.[27]

This suggests that a more modest reform, with arguably greater prospect of success, would be to create a system of documentary proof of *possession*. The possessors of small plots of land and fixtures would be given official pieces of paper describing and attesting to their possession of a particular plot of land and associated fixtures. Persons having the relevant certificate of possession could call on the State to repel trespassers. Transfers of the certificates would signify a transfer of possession. The State of Minnesota has adopted a program of certificates of possessory title which could serve as a potential model for such a reform.[28]

Legalization of possessory rights in this fashion should enhance the security of these claims by allowing disputes over possession to be resolved through a legal process rather than relying solely on self-help or social pressure. Among other benefits, this would allow household members to leave the family plot during the day to seek employment, rather than require at least one member to remain on the premises to stand guard against usurpers.[29] It would also facilitate the transfer of possessory rights from one claimant to another.

27. *See* DE SOTO, THE OTHER PATH, *supra* note 13, at 25–26.

28. Kimball Foster, *Certificates of Possessory Title: A Sensible Addition to Minnesota's Successful Torrens System*, 40 WM. MITCHELL L. REV. 112 (2013).

29. *See* Erica Field, *Entitled to Work: Urban Property Rights and Labor Supply in Peru*, 122 Q.J. ECON. 1561 (2007).

One could envision such a system of formalized possessory rights evolving into the basis for secured lending, at least on a neighborhood level. Perhaps over time it would evolve into something like full-blown property. At least a Humean can imagine that this would be possible.

Another potential reform would be to encourage the development of firms devoted to compiling credit scores of individuals who participate in the informal economies of migrant communities. Historically, the primary forms of personal lending were based either on the reputation of the borrower as known to the lender or on the posting of collateral to secure the loan. Modern economies (like the United States) have developed a third form: what can be called algorithmic lending. The basic idea here is to gather data on the past behavior of the potential borrower and process it through an algorithm that predicts the probability of repayment of a loan. The most familiar example is credit card borrowing, where the issuance of the card and determination of the credit line is based on an algorithmic analysis of the borrower's historical pattern of behavior in participating in financial transactions, most prominently as distilled through a so-called credit score. Similar techniques are widely used in assessing applicants for purchase money loans for autos, homes, and the like. Recent studies suggest that even peer-to-peer lending, which was originally conceived as an alternative form of finance that would break free of conventional forms of lending, has largely been subsumed by institutions that rely heavily on credit scores and algorithmic analysis of borrower characteristics.[30]

All of which suggests that developing economies might do much to enhance access to finance capital by promoting (or even subsidizing) the emergence of firms devoted to compiling the data needed to develop algorithmic lending. The development of such an industry requires that there be some method of compiling information about the past behavior of the borrower in paying off various obligations, which in turn can be synthesized into a credit score. If a person has a history of consistent repayment of obligations, their credit score goes up, resulting in greater access to credit from various sources. The system works only if information can be shared among lenders about the past performance of borrowers, which requires some

30. Kathryn Judge, *The Future of Direct Finance: The Diverging Paths of Peer-to-Peer Lending and Kickstarter*, 50 WAKE FOREST L. REV. 603 (2015).

assurance of confidentiality. This in turn requires the enactment and enforcement of appropriate legislation allowing sharing of information while protecting against unauthorized disclosure. If appropriate legislation providing these assurances can be adopted, the information can be distributed digitally, at much lower cost than is associated with verifying ownership of collateral and engaging in the process of foreclosure.

The trick in extending algorithmic lending to the urban poor in developing countries lies in getting them into the system of making purchases using credit. Obviously, a legal infrastructure must be in place, which permits the assembly of information about individual behavior with respect to credit along with appropriate assurances of confidentiality. If this is established, then perhaps the poor could start with simple debit cards, based on prepaid credit balances. Once individuals have established a history of proper usage of such debit cards, banks might be willing to offer them credit cards with small lines of credit. Successful management of the credit card would lead to larger and larger credit lines, to the point where the borrower would be able to finance a small shop or other entrepreneurial venture. None of this will be easy for developing countries to achieve. But the information-cost demands should be much lower than that associated with secured lending, at least when the value of the collateral is relatively small relative to the value of the loan.

CONCLUSION

Hernando de Soto's pioneering work on migrant communities in developing countries provides important insights into the relationship between possession and ownership. His studies help us see that an extensive system of allocating resources by possession occurs on a widespread basis in contexts where possessory rights cannot be regarded as proxies for ownership. His advocacy of formalization of possessory rights into ownership, in order to jump-start secured lending to the individuals living in these migrant communities, has largely failed. Once we understand that the roots of this failure lie in the very high information costs associated with systems of ownership, we are in a better position to identify alternative strategies for making capital more widely available to persons in these communities.