Appendices to *Partition and Revelation*

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APPENDIX A. A COMPARISON OF DEFAULT JUDICIAL
PARTITION RULES

In this Appendix we provide a short comparative survey of default judicial partition rules of real estate.[1] The judicial partition regime is constructed of a presumption (or lack thereof) for partition in sale or in kind, a specification of the conditions that will override that presumption, and a variety of other special features.

I. Presumptions and Overrides

An initial question that each jurisdiction's law must address is whether partition in kind or partition by sale will be the preferred approach, and how strong the presumption in favor of that approach will be.

A number of modern jurisdictions take the position that courts should favor partition in kind. This is adopted in Germany,[2] France,[3] Japan,[4] China,[5] and Taiwan.[6] Empirical studies in

1 Some jurisdictions have addressed partition of chattel property separately. In East Germany, for example, the rule was a mandate of partition by sale for real estate and a preference for partition in kind for movables. See Civil Code of the German Democratic Republic Art 41, as translated in 1–2 *Law and Legislation in the German Democratic Republic* 31 (Lawyers Association 1976).

2 Ger Civil Code § 753, as translated in *Gesetze im Internet* (Juris 2013) (Langenscheidt Translation Service, trans), online at http://www.gesetze-im-internet.de/englisch_bgb/englisch_bgb.html (visited Oct 30, 2013).

3 Fr Civil Code Art 815, 827, as translated in *Legifrance* (France 2006) (Georges Rouhette and Anne Rouhette-Berton, trans), online at http://www.legifrance.gouv.fr/Traductions/en-English/Legifrance-translations (visited Oct 30, 2013).

Taiwan show that the court orders partition in kind only about 20 percent of the time.[7] Most American jurisdictions, as introduced in the main text, have a common law rule that purports to favor partition in kind, but scholars suggest that courts in the United States usually order partition by sale.[8] Thus, partition law in action might deviate significantly from the partition law on the books.

The opposite presumption, that courts should favor partition by sale, has been adopted in Denmark.[9] A third rule that eschews any presumption in favor of either partition approach has been adopted in the Netherlands.[10] There, courts are required to select a partition approach according to public interests and private interests.[11]

A more extreme possibility would disallow or disable courts from pursuing a particular partition approach. We are aware of one jurisdiction, Russia, in which the court has no power to order partition by sale.[12] When partition in kind is "not permitted by a law or is impossible without incommensurate damage to property in common ownership, the partitioning owner shall have

[4]   Civil Code of Japan Art 258, as translated in *Japanese Law Translation* (Ministry of Justice 2013), online at http://www.japaneselawtranslation.go.jp/law/detail/?id=2057&vm=02&re=02&new=1 (visited Feb 2, 2014).

[5]   Property Law of the People's Republic of China Art 100, as translated in *Property Law of the People's Republic of China*, online at http://www.china.org.cn/china/LegislationsForm2001-2010/2011-02/11/content_21897791.htm (visited Feb 5, 2014). Value reduction is one justification for using partition by sale. Note that in China, only buildings and other improvements are subject to private co-ownership and hence to partition, as all of the underlying land is owned either by the state or by a collective. See Yun-chien Chang, *Property Law with Chinese Characteristics: An Economic and Comparative Analysis*, 1 Brigham-Kanner Prop Rts Conference J 345, 347 (2012); Property Law of the People's Republic of China Art 47, 58 (cited in note 5); China Const Art 10, online at http://english.gov.cn/2005-08/05/content_20813.htm (visited Feb 10, 2014).

[6]   Taiwan Civil Code Art 824, as translated in *Laws & Regulations Database of the Republic of China* (Ministry of Justice 2012), online at http://law.moj.gov.tw/eng/LawClass/LawAll.aspx?PCode=B0000001 (visited Oct 31, 2013).

[7]   Yun-chien Chang, *Tenancy in "Anticommons"? A Theoretical and Empirical Analysis of Co-ownership*, 4 J Legal Analysis 515, 535 (2012).

[8]   See Yun-chien Chang and Lee Anne Fennell, *Partition and Revelation*, 81 U Chi L Rev 27, 30 n 12 (2014).

[9]   See Tanya-Caroline Hitchcock and Malene Stein Poulson, *Dänemark*, in Christian von Bar, ed, 1 *Sachenrecht in Europa: Systematische Einführungen und Gesetzestexte* 7, 62 (Rasch 2000).

[10]   Civil Code of the Neth § 3:185, as translated in *The Civil Code of the Netherlands* 475–76 (Wolters Kluwer 2009) (Hans Warendorf, Richard Thomas, and Ian Curry-Sumner, trans).

[11]   Civil Code of the Neth § 3:185(1), as translated in *The Civil Code of the Netherlands* at 475–76 (cited in note 10).

[12]   See Chang and Fennell, 81 U Chi L Rev at 37 n 42 (2014) (cited in note 8).

the right to payment to him of the value of his participatory share by the other participants of participatory share ownership."[13] The latter procedure effectively extends a put option to the owner who desires partition, forcing a sale of that party's share to the others.

II.   Additional Features

The basic choice of approach—partition in kind or partition by sale—is only part of the story. A number of other features determine how partition operates on the ground. First, there can be procedural preconditions to seeking judicial partition (of any sort). Some countries, for example, require that parties attempt voluntary partition before seeking judicial partition. The decision to partition in kind implicates additional choices, sometimes economically significant, about exactly how to physically split the land. When property is not amenable to division into equally valuable segments, perhaps due to improvements, partition in kind may require compensatory transfer payments among the parties, known as owelty.[14]

Partition by sale requires additional choices about the way in which the sale will be structured. A basic distinction can be drawn between negotiated sales procedures and auction procedures, and the two may produce different outcomes and have different efficiency implications. Other details, such as opportunities for inspection and the types of payments that are allowed, can influence who is likely to bid. For example, Professor Phyliss Craig-Taylor argues that a supermajority vote should be required for the court to order partition by sale; she recommends that the court allow for time for winning bidders to pay, so that co-owners would be able to make a bid.[15] Sometimes courts place rather extreme constraints on the sales procedure to constrict participation. In one South African case, *Kruger v Terblanche*,[16] the court ordered a partition by sale but stipulated that only the

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[13]   Civil Code of the Rus Federation Art 252(3), as translated in 2 *Russia & the Republics Legal Materials* Part One at 123 (Juris 2013) (William E. Butler, ed and trans).

[14]   See John G. Casagrande Jr, Note, *Acquiring Property through Forced Partitioning Sales: Abuses and Remedies*, 27 BC L Rev 755, 764 (1986).

[15]   See Phyliss Craig-Taylor, *Through a Colored Looking Glass: A View of Judicial Partition, Family Land Loss, and Rule Setting*, 78 Wash U L Q 737, 780–81 (2000).

[16]   1979 (4) SA 38 (D), as translated in *The South African Law Reports* 1281 (Juta 1979) (J.C. Ferreira, J.H. Kok, and B.G. Morrison, eds).

two brothers who were the co-owners of the farm in question could participate in the bidding.[17]

APPENDIX B. AUCTIONS: THEORY AND EVIDENCE

In this Appendix, we provide an overview of empirical and theoretical work on property auctions to supplement our discussion in the main text.

Professor Christopher Mayer has argued that in English (ascending bid) auctions, "[a]uction prices should be lower than prices for houses sold at negotiated sales, with the possible exception of auctions held in very 'hot' markets."[18] The auction discount results from the fact that auction sales are limited to buyers who are in the market in a given period, while sales taking place in the listing market allow the seller to search for a higher-valuing buyer over multiple periods.[19] Mayer's empirical work finds that auctioned property never sells at a premium.[20] Other scholars who have studied English auction versus negotiated sales in the real estate market, however, disagree with Mayer. Professors Daniel Quan,[21] Kenneth Lusht,[22] and Mark Dotzour

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[17] For a discussion of co-ownership and *Kruger*, see C.G. van der Merwe, *Law of Property*, in C.G. van der Merwe and Jacques E. du Plessis, eds, *Introduction to the Law of South Africa* 201, 221 (Kluwer 2004).

[18] See Christopher J. Mayer, *A Model of Negotiated Sales Applied to Real Estate Auctions*, 38 J Urban Econ 1, 20 (1995). But see Daniel C. Quan, *Real Estate Auctions: A Survey of Theory and Practice*, 9 J Real Est Fin & Econ 23, 38–39 (1994) (criticizing Mayer's approach, because it assumes that "auction sales [do] not influence the equilibrium price of houses sold in the negotiated market").

[19] See Christopher J. Mayer, *Assessing the Performance of Real Estate Auctions*, 26 Real Est Econ 41, 44 (1998). See also Hanoch Dagan and Michael A. Heller, *The Liberal Commons*, 110 Yale L J 549, 607 (2001) (arguing that auctioned properties are sold at below fair market value because there are fewer bidders for auctioned properties than potential buyers for properties on the open market).

[20] Mayer, 26 Real Est Econ at 53–61 (cited in note 19). Professors George Gau and Daniel Quan's hedonic model in their unpublished work also shows that auction prices are significantly lower than negotiated sales. See George W. Gau and Daniel C. Quan, *Market Mechanism Choice and Real Estate Disposition: Negotiated Sale versus Auction* *13 (UCLA Anderson Graduate School of Management Recent Work, June 1992), online at http://escholarship.org/uc/item/77f5k3x9 (visited Oct 31, 2013). Interestingly, this empirical result is contrary to the prediction of Quan's mathematical model. See Quan, 9 J Real Est Fin & Econ at 44 (cited in note 18), for an explanation of the contradictory result.

[21] See Daniel C. Quan, *Market Mechanism Choice and Real Estate Disposition: Search versus Auction*, 30 Real Est Econ 365, 368 (2002) (using 202 auctions and negotiated sales from Austin, Texas, in hedonic regression models and finding that on average, the auction prices for vacant land are approximately 30 percent higher than the negotiated sale prices).

et al,[23] using a similar quantitative strategy (that is different from Mayer's),[24] find that on average auctions sell at a premium. Nevertheless, as Mayer points out, these empirical works may suffer from omitted variable bias, because sellers' decisions to put their properties on the list market or the auction market is probably endogenous.[25]

English auctions are not the only type of auction that sells real estate at a discount. In Taiwan,[26] where courts sell off properties through first-price, sealed-bid auctions, auctioned properties, as compared to comparable properties sold in the search market, are empirically found to be sold at an average discount of about 17 percent.[27] Generally very few bidders participate in any given court auction.[28] Courts in Taiwan provide little information on the auctioned properties and are not always committed to handing over unpossessed properties to the winning bidders.[29] Because only distressed properties (such as real estate under foreclosure) are auctioned by courts in Taiwan, the auction discount may reflect the uncertainty of property conditions, rather than indicating the different effects on prices of sale mechanisms. Nonetheless, the fact remains that partition by sale does not always liquidate properties at or above fair market value.

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[22]   See Kenneth M. Lusht, *A Comparison of Prices Brought by English Auctions and Private Negotiations*, 24 Real Est Econ 517, 528 (1996) (finding that English auctions of nondistressed properties yield an average premium of 8 percent in Australia).

[23]   See Mark G. Dotzour, Everard Moorhead, and Daniel T. Winkler, *The Impact of Auctions on Residential Sales Prices in New Zealand*, 16 J Real Est Rsrch 57, 67 (1998) (finding that auctions of nondistressed properties in Christchurch, New Zealand, produce either no premium or a positive premium).

[24]   These studies all use an auction dummy variable to identify whether auctioned properties on average sell at a premium as compared to properties sold in the listing market. By contrast, Mayer uses weighted repeat-sale regression models. His use of repeated sales that have been sold in both auctions and search markets controls for the omitted variable bias. See Mayer, 26 Real Est Econ at 46–49 (cited in note 19).

[25]   See Mayer, 26 Real Est Econ at 45–46 (cited in note 19); Quan, 9 J Real Est Fin & Econ at 43–44 (cited in note 18) (recognizing this point).

[26]   For a brief overview of how the auction market in Taiwan works, see Vickey, Chiu-Chin Lin and Chiung-Ying Huang, *A Comparison between the Semi-parametric and Parametric CAMA Modeling of Court Auction Residential Housing Market in the Taipei Metropolitan Area*, 16 J Housing Stud 85, 87 (2007).

[27]   See Chin-Oh Chang, Chien-An Wang, and Yi-Ju Chen, *The Puzzle of the Discount Price for the Foreclosed House: Does the Factor of Competition Explain More Discounts?*, 28 Chiao Da Mgmt Rev 1, 27 (Vol 2, 2008), online at http://www.airitilibrary.com/Publication/alDetailedMesh?docid=10287310-200812-28-2-1-39-a (visited Feb 17, 2014).

[28]   See id at 14 (finding that in 2001–2002, in 46.6 percent of the court auctions in Taiwan, there was only one bidder).

[29]   See id at 5.

APPENDIX C. BARGAINING IN THE SHADOW OF
JUDICIAL PARTITION

In this Appendix, we supplement the main text's analysis of the impact of judicial partition rules on pre-partition bargaining dynamics by working through an extended example.

I.   Bargaining with No Economy of Scale

We start with the simplest scenario, in which there is no economy of scale; that is, the sale price through partition by sale is the aggregation of the market values of the post-physical-division plots held by the former co-tenants. The analytical framework laid out in the text suggests that without an assembly premium, partition in kind is more efficient. Nonetheless, because subjective increments among co-tenants vary, it is not always in all co-owners' interest to support the plan of physical division. Since unanimity is the universal rule for voluntary partition, it leaves room for strategic bargaining.

Consider the following example: Dan, Eileen, and Frank co-own Blackacre in equal shares. The co-owners have agreed that each co-tenant will manage a one-third section of the plot,[30] each of which has a fair market value (FMV) of w. Dan and Eileen attach an additional subjective increment to the part they have managed for some time, while Frank does not. Assume that s and $2s$ are the added subjective increments for Dan and Eileen, respectively. The total economic value or reservation prices of Dan, Eileen, and Frank on their separately managed parts are $w + s$, $w + 2s$, and w, respectively. If the total market value of Blackacre, sold intact, is $w + w + w = 3w$, physical division does not decrease economy of scale. Following Professors Thomas Miceli and C.F. Sirmans, partition in kind (following the existing management plan) should be adopted because it preserves subjective value and produces total economic value of $w + (w + s) + (w + 2s) = 3w + 3s$, which is higher than $3w$ (the likely value of the property to a third party) or $3w + 2s$ (the

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    30   For discussion of this type of covenant, see Yun-chien Chang and Henry E. Smith, *An Economic Analysis of Civil versus Common Law Property*, 88 Notre Dame L Rev 1, 45–46 (2012); Thomas W. Mitchell, Stephen Malpezzi, and Richard K. Green, *Forced Sale Risk: Class, Race, and the "Double Discount"*, 37 Fla St U L Rev 589, 616 (2010); Dagan and Heller, 110 Yale L J at 619 (cited in note 19).

value of the property in Eileen's hands, assuming she wins the bid).[31]

Next, consider the bargaining situation that the parties will find themselves in before seeking judicial partition. If Blackacre is physically partitioned (according to the co-tenants' predefined territories), they each receive their economic value specified above. Dan and Eileen will prefer this approach. Frank, however, might prefer partition by sale. Dan and Eileen have positive subjective values, and if either or both of them have the financial flexibility and willingness to bid in the court auction, the auction price could be higher than $3w$, the fair market value of Blackacre. Frank would then receive a share of the subjective increment that one or both of them have in the property.

Table C1 shows the parties' payouts for different sorts of partition procedures. In each case, the parties lose their fractional undivided claims on the property and get, in exchange, either land (designated by the shaded cells) or money.

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[31] See Thomas J. Miceli and C.F. Sirmans, *Partition of Real Estate; or, Breaking Up Is (Not) Hard to Do*, 29 J Legal Stud 783, 793 (2000). We assume for the moment that Dan and Eileen are unable to combine forces to put in the high bid and that Eileen will not otherwise ultimately transfer the portion Dan values to Dan. That assumption will be relaxed below. See Appendix C.II.

TABLE C1. PAYOFFS UNDER FOUR PARTITION PLANS

	Dan's payoff	Eileen's payoff	Frank's payoff	Total
(1) Partition in kind	$w + s$† (tie)	$w + 2s$†	w	$3w + 3s$† (tie)
(2) Partition by sale, and no co-owner participates in the auction	$\leqq w$	$\leqq w$	$\leqq w$	$\leqq 3w$
(3) Partition by sale, and Eileen is the highest bidder (at her reservation price)	$w + {}^2/_3s$	$w + {}^2/_3s$	$w + {}^2/_3s$	$3w + 2s$
(4) Partition by sale, and Eileen and Dan coordinate to bid at their combined reservation price	$w + s$† (tie)	$w + s$	$w + s$†	$3w + 3s$† (tie)

† marks the best partition approach for each co-tenant and in total.

Note: The shaded cells are outcomes in which the party holds onto all or part of the land.

The parties' negotiations take place in the shadow of these payouts. Because Frank stands to gain from a sale in which Dan, Eileen, or both bid their reservation prices, Frank might use the threat of a partition action to extract concessions from Dan and Eileen. To induce Frank to agree to in-kind partition, Dan and Eileen might offer Frank side payments—perhaps each chips in $^1/_3s$. The bargaining may fail, however. First, if Dan and Eileen are confident that they can persuade a court to order partition in kind, they give up nothing (other than litigation expenses) and still get their preferred partition method. Second, the subjective values of Dan and Eileen are not verifiable by Frank. This

may hinder a deal if Frank thinks Dan and Eileen will understate their subjective values and lowball their offers.

It is also worth emphasizing that, in this example, there may be no surplus to be gained from completing the partition. By hypothesis, there are no economies of scale, and the parties already have in place an agreement that lets them manage separate areas separately. Although economic analysis has generally assumed that partition is the efficient result when a co-tenant seeks it (and has sought to determine only how to achieve it at lowest cost), the threat of a partition action might be wielded within an otherwise functional co-tenancy simply to extract surplus from other parties. Such a threat becomes more potent the more likely the court is to order partition by sale under a mechanism that does a good job of inducing co-tenants with high subjective values to reveal—and disgorge a share of—their reservation prices. A blunter auction procedure (or a judicial preference for partition in kind) would remove Frank's source of gain from partition, and with it, his ability to threaten Dan and Eileen.

II. Adding Economy of Scale

How does the scenario above change if there is economy of scale in maintaining Blackacre intact? This requires us to examine the relationship between subjective value and market value. Recall that the s term above represented a subjective increment, a premium over and above the market value of the property. This was straightforward in a static analysis in which market value did not change, but we must now contend with situations in which the market value changes depending on the property's configuration.

Consider first a scenario like the one given above, in which Dan, Eileen, and Frank are each currently managing separate areas of Blackacre. Suppose Dan and Eileen are running small family farms for their households on their respective areas, and Frank is renting out "his" portion as a sheep grazing area. The entire Blackacre property could be converted to a commercial farming operation that would increase the market value of the whole parcel by $2w$, to a total of $5w$. In the example above, Dan had a subjective increment of s, and Eileen had a subjective increment of $2s$. This increment attaches to their current use of the property in family farming, which does not exploit the economies of scale associated with using the parcel as a whole.

What happens now if Frank pushes for partition by sale? The market price for the parcel as a whole is now $5w$. But Dan can be expected only to bid up to $3w + s$, as before, and Eileen likewise can only be expected to bid up to $3w + 2s$. This is because if Eileen, for example, wins the bid, she will only be able to sell the balance of the land (the portions she has not been managing) for $2w$, having destroyed economies of scale by retaining the originally managed portion. If Dan and Eileen can work together to bid, they would bid a maximum of $3w + 3s$; Dan would retain his area and enjoy $w + s$, Eileen would retain her area and get $w + 2s$, and the balance would be sold at fair market value, w. Whether Dan, Eileen, or Dan and Eileen together will be the high bidder in a partition sale depends, then, on how s compares with w, as well as on the liquidity and auction design factors mentioned in Appendices A and B, above.

Regardless of who is the high bidder, partition by sale will likely bring Frank something more valuable than his current parcel, which is valued at w.[32] He will get one of the following: $1^2/_3w$ (if the whole parcel is sold at fair market value); $w + ^2/_3s$ (if Eileen is the high bidder at her reservation price); or $w + s$ (if Dan and Eileen together have the high bid at their joint reservation price). Here the partition sale could serve the valuable function of testing whether $3w + 3s$ (the highest use of the land in pieces) is greater than $5w$ (the highest use of the land as a consolidated unit). But it will only do so if Dan and Eileen are able to bid.

If Frank knows that $3w + 3s$ is greater than $5w$, but also knows that Dan and Eileen lack the liquidity to put in the $3w + 3s$ bid, he could try to demand side payments in order to go along with a voluntary partition in kind. Alternatively, if Frank knows that Dan and Eileen could be forced (perhaps by his own competing bid) to bid their full joint reservation price, he could attempt to extract much of this value through side payments instead. Frank will be more successful in his demands the greater is the perceived risk that a judicial partition would be by sale rather than in kind, and the greater is the chance that Dan and Eileen will either be unable to bid, or forced to bid their full value.

What if, instead, $5w$ exceeds $3w + 3s$? Where economies of scale are large relative to subjective premia, the latter can

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[32] It is possible Frank would not get a larger share if the auction procedure leads to a sale at a deep discount below FMV. But in such a case, Frank himself could be the high bidder and resell in a negotiated sale setting where he would be likely to obtain FMV.

become irrelevant. In other words, the fact that a partition procedure neglects the subjective valuations of the co-owners may have no impact on the final allocation of land. Suppose, for example, that w is \$100K and s is \$50K. $3w + 3s$ is \$450K, which is less than $5w$ (\$500K). Whether the co-owners' subjective valuations are ignored altogether or fully known and accounted for, the result would remain unchanged; the assembly premium associated with keeping the property intact is so great as to overwhelm the subjective increments associated with keeping it in pieces.

In the scenarios above, the ability for Dan and Eileen to enjoy subjective increments depended on them retaining separate control of subsets of the land; their subjective valuations did not attach to the consolidated configuration that maximized market value. But we could also imagine instances in which a co-owner's subjective valuation *would* attach to the entire consolidated unit, as where one tenant has been in sole possession and has become attached to the entire tract. Similarly, things that make a parcel generally more valuable to the market (such as nearby urban development) could either increase or decrease the subjective enjoyment that one or more co-owners get from the property.[33] Thus, large changes in market value, whether associated with scale economies or not, can render moot uncorrelated subjective values held by the co-owners.

This analysis aligns with that of Miceli and Sirmans if the question is limited to whether judicial partition in kind or by sale is more efficient ex post.[34] But the distributive impacts of the two alternatives may lead to different ex ante bargaining dynamics among the co-tenants. In the numeric example above, Eileen would receive a value of \$200K (that is, $w + 2s$) under partition in kind, whereas she would receive one-third of \$500K under partition by sale, or \$166.66K. She is therefore made worse off by the shift from partition in kind to partition by sale, despite the allocative efficiency of selling the property as a unit. If partition in kind is the rule, Dan or Frank might be able to make a side payment to Eileen sufficient to convince her to

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[33]   It is therefore useful to think of the subjective increment as being reverse engineered for any given co-owner; it can be obtained by subtracting the market value from the co-owner's total reservation price (economic value) for the property. Thus the s term is not fixed for a given co-owner, but can only be determined once we know how her reservation price compares to the (current) market value.

[34]   See text accompanying note 31.

support a voluntary sale instead. If partition by sale is the rule, Eileen might attempt to pay Dan and Frank not to petition for the sale, but she would fail (she could not pay them enough to stop the sale).

APPENDIX D. DISECONOMIES OF SCALE

This Appendix explores the possibility that diseconomies of scale, as well as the economies of scale discussed in the main text, can weigh in favor of partition by sale on efficiency grounds. Consider a large tract of land, represented by the large square in Figure D1, that will serve its highest and best use if it is divided up into nine small tracts containing single-family, owner-occupied dwellings.[35] Suppose there are four co-tenants. The small number of co-tenants and the large size of the tract relative to the highest and best use of the land might seem to argue for partition in kind,[36] but dividing the tract among the co-tenants could easily impede getting the land into its most useful configuration.

FIGURE D1. PARTITION IN KIND WITH DISECONOMIES OF SCALE
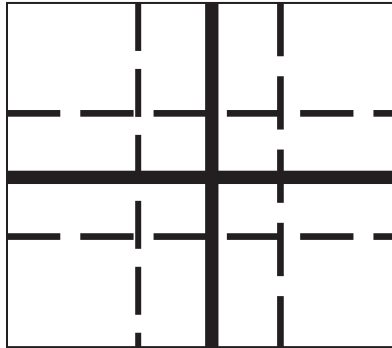
As Figure D1 demonstrates, producing four of these nine lots would require the cooperation of two former co-owners, and

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[35] Agency problems with the rental form might explain the preference for dividing the tract into separately owned parcels. See Edward L. Glaeser, *Rethinking the Federal Bias toward Homeownership*, 13 Cityscape: J Pol Dev & Rsrch 5, 6 (Number 2 2011) ("In general, ownership should be lodged with the agent who is in the best position to make investments and, in the case of a single-family detached house, that agent is the resident.").

[36] See Miceli and Sirmans, 29 J Legal Stud at 792–93 (cited in note 31) (explaining that scale effects that would argue for a forced sale over partition in kind are less likely to be present where the number of co-tenants is few and the parcel is large).

producing one of them would require the cooperation of all four. Partition by sale thus may provide the smoothest path to optimal scale, even where *diseconomies* of scale are involved.[37]

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[37] One might instead characterize the situation in Figure D1 as a special case of positive economies of scale, if the land use in question is defined as follows: serving as a canvas for the optimal subdivision of land where returns to scale are not constant. A larger tract offers more alternatives for efficient subdivision than does a group of smaller tracts. Regardless, the situation is one that would not get picked out as a candidate for partition by sale by the Miceli and Sirmans approach. See Miceli and Sirmans, 29 J Legal Stud at 793 (cited in note 36). Their analysis does, however, recognize a conceptually related case of scale effects. See id at 789 n 17 (describing a situation in which the full parcel is no more valuable than the sum of the pieces held by the n individual co-tenants, but the land might be more profitably divided into fewer than n pieces).