Mobility, Information, and Bequest:
The "Other Side" of the Equal Division Puzzle

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Preliminary – Comments Solicited

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Abstract:
There is substantial empirical evidence that parental bequests to their children are typically equal in the US – a regularity inconsistent with the predictions of standard optimizing bequest models. The prior explanation for this puzzle is parents' desire to signal equal affection given *children's* incomplete information of parental preferences. However, *parents* also have incomplete information regarding children and the implications of this side of the information set have not previously been considered. Using a strategic bequest framework we show that when parents have sufficient uncertainty regarding children's returns to relocation a separating equilibrium in which parents reward attentive heirs with larger bequests is precluded. We argue that such uncertainty is consistent with conditions in the contemporary US.

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I. Introduction

There is mounting empirical evidence that, in the US, bequests are typically distributed equally across children (see for example Menchik 1980, Wilhelm 1996, and Behrman and Rosenzweig 2004).[1] When children are heterogeneous equal bequests contradict virtually every economic model of inter-generational transfer – including the standard models of altruism and bequest introduced by Becker and Tomes (1976, 1979) and the strategic bequest model pioneered by Bernheim, Shleifer, and Summers (1985). Since the distribution of approximately eighty percent of US wealth is attributable to intergenerational transfers (see Kotlikoff and Summers 1989) this contradiction between theoretical prediction and empirical reality constitutes a critical lacuna in economic theory.

Bernhiem and Severinov (2003) tackle this contradiction head-on and propose an explanation for the "equal division puzzle" based on incomplete information on the part of the child. Specifically, they assume that children cannot directly observe their parent's relative altruism for each child and that perception of parental affection directly enters children's utility. In essence, their model formalizes the intuitive notion that parents distribute bequests equally to avoid hurting the feelings of their children. While Bernhiem and Severinov (hereafter BV) identify an important information gap with respect to children, an equally important information problem exists for parents – just as children cannot directly observe the true distribution of parental affection so too parents cannot directly observe their

[1] Using IRS tax data Wilhelm (1996) found exactly equal bequests in almost seventy percent of the total sample and "approximately equal" in almost ninety percent of the bequests. Behrman and Rosenzweig (2002) using a different data set also find no significant differences in bequests across siblings after measurement error is considered. Melchik (1988) employed Cleveland Probate records.

children's true level of affection for them. This side of the incomplete information has not been considered in previous analysis of the "equal division puzzle."

In this paper we demonstrate that when children have potentially high returns to relocation, parents' incomplete information regarding their children's motivation for moving may preclude a separating equilibrium in a strategic bequest setting. Though our result is complementary with Bernheim and Severinov, the parent's side of the information dilemma is based on parameters that are inherently easier to observe than the children's. In particular, our equal-bequest equilibrium depends on earning differentials across locations, parental wealth, and parent's ex-ante and ex-post (of a child's relocation) assessment of their earning differential. Though the goal of this analysis is to theoretically analyze the implications *parent's* incomplete information, our results generate testable predictions for future empirical work. Specifically, the parameters for returns to relocation and parental wealth are potentially available in existing data. Parent's perceptions of their children's payoffs to relocation, though not cardinal, could likely be obtained through a survey much more reliably than the parameter of favoritism upon which the BV model turns.

The remainder of the paper is organized as follows: Section II provides deeper motivation and a more detailed literature review as precursors to the model; Section III formally specifies the game and characterizes the various equilibria in a proposition and proof format. Section IV concludes.

II. Motivation

Implications of Spatial Dispersion for Strategic Bequest

The frequency of geographical mobility in the US is astounding. Forty-three million people or roughly 16 percent of the population moved in the one-year period between March

1999 and March 2000.[2] Between 1995 and 2000 about one half of the US population had changed residence.[3] This mobility is highly concentrated among active labor force participants,[4] with the effect that mature families in the US exhibit dramatic (likely unrivaled) geographic dispersion. The US National Survey of Families and Households[5] found a mean distance of 411 miles separating parents and a randomly selected adult child in households with multiple adult children (see Roan 1993). In the context of strategic bequest models this geographical separation has critical implications. Specifically, since in this framework parents' would like to encourage attention with the promise of bequests, a significant geographical separation may be confounding if parents are uncertain of children's true motivation for moving. If parents care about children's welfare as well as the attention they receive (i.e., are altruistic) a tension is introduced between their desire to receive attention and their recognition that relocation may yield considerable pecuniary benefits to their children. Of course, children who do not value time with parents may exploit this uncertainty to mask their desired level of attentiveness. Our approach explicitly incorporates this scenario in the strategic framework. We also note that though our motivation and model are couched in terms of spatial dispersion, "dispersion" could be interpreted more generally as a credible signal that attention to parents has high costs. For example, a credible signal that the requirements of a job limit discretionary time for visits could serve the same function as spatial separation.

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[2] Population Profile of the United States: 2000 (Internet Release) **3-3.** U.S. Census Bureau.
[3] See http://www.census.gov/population/pop-profile/2000/chap03.pdf , Berkner and Faber (2003), Hobbs and Damon (1996).
[4] Hobbs and Damon (1996) report that only about 5 percent of people over 65 years in the US moved between 1992 and 1993 compared to 18 percent of persons between 1 and 64.
[5] The NSFH is a national random sample of households in the coterminous US.

Comparative Model Structure

The structure of our model differs significantly from Bernheim, Shleifer, and Summers' (1985 – hereafter Bernheim et al.) seminal paper on strategic bequest as well as BV. Bernheim et al. advanced the reasonable (perhaps inarguable) notion that many parents, though altruistic, seek to garner attention (in time) from their children using available instruments of influence. Clearly, the promise of significant bequest constitutes a potentially powerful bargaining chip. Assuming a continuous attention variable Bernheim et al. focus on the interior solutions where parents' desired attention exceeds that their children would supply without bequest incentives. In their model parents can credibly commit to the bequest instrument by choosing a fraction of their wealth to hold in bequeathable form. Children then choose levels of attention, internalizing the parental bequest rule. They then employ the Longitudinal Retirement History Survey and other evidence to argue that, indeed, the bequeathable share of wealth is sensitive to measures of attention. One implication of Bernheim et al. is that heterogeneous children should choose different levels of attention in equilibrium, and hence receive unequal bequests.

The "strategic" structure of Bernheim et al. is quite simple – and quite appropriate to the empirical exercise they undertake. Children internalize their parent's bequest rules and optimize accordingly. The structure of our model reflects our desire to focus on multiple layers of incomplete information associated with children's pecuniary gains to relocation, parents` desire for attention, and the strategic use of bequests by parents. We adopt the simplest model capable of illuminating the implications of these information issues. As such we abstract from numerous issues that would obfuscate our central theme but are unlikely to fundamentally alter the affect of mobility on the strategic environment. These include child moving transactions costs, the issue of quantity versus quality of time with parents, the role of in-vivo gifts, and uncertainty regarding the set of potential bequest levels. A number of these issues can be addressed simply through the appropriate interpretation of the parents' and children's utility function. For example, we can interpret the "time spent with parents" as a quality adjusted measure -- that is, efficiency units of time. Similarly, utility can be interpreted as net of any moving costs and in-vivo gifts so that attention can be focused on the location decision.

Empirical Evidence of Strategic Bequest

It is appropriate at this stage to note that the empirical evidence for an attention-bequest linkage is mixed – at best. The original Bernheim et al. paper reports a significant correlation while Perozek (1998) subsequently employed data with more detailed child characteristics to argue against such a linkage. Norton and Taylor (2001) claim evidence of a linkage, while Sloan, Picone, and Hoerger (1997) find only weak indication of strategic bequest. Since the notion that parents seek to influence children's behavior through bequests is reasonable, the mixed empirical evidence may itself appear puzzling. However, weak evidence of an attention-bequest correlation does not imply that strategic-bequest motivations are unimportant since pooling equilibrium may also emerge from this strategic environment. The relevant question therefore becomes: are pooling equilibrium conditions present where equal bequests are typical? The parental information dilemma we identify provides the basis for an affirmative response to this question.

Interestingly, while there is strong evidence that equal bequests are the norm in the US, such is not the case in many low-income countries. From Africa to Asia (see Quisumbing et al. 2004, Quisumbing and Otsuka 2001, Fachamps 2005) empirical work reveals highly unequal bequest patterns. While most research in low-income countries has focused on bequest inequality associated with gender and birth-order, these patterns of inequality may nevertheless be consistent with one (or many) of the models of "efficient bequest" [6] -- unlike an equal bequest rule. We demonstrate in this paper that an absence of high earning differentials, and consequently low geographical mobility, may yield separating equilibrium with highly unequal bequests. Thus, our focus on mobility also may speak to the stark differences in bequest division that are typical in traditional societies with low mobility and the highly egalitarian division typical in the US.

III. The Model

Descriptive Overview

We take as given that children place different value (V) on discretionary time with parents. For simplicity assume there are two different valuations: children for whom additional time with parents yields positive utility (type V^H) and children for whom additional time with parents reduces utility (type V^L).[7] Regardless of their valuation of time with parents, some children's earnings (E) are higher (E^H) if they move away from their parents, while others have the same earning (E^L) whether they relocate or not ($E^L < E^H$). Parents cannot directly observe their children's preferences for spending time with them or their children's pecuniary gains from relocating. However, they do assign probability distribution functions to these parameters. If children do not relocate their choice of time

[6] See for example, Davies and Zhang (1995).

[7] We can assume there exists some baseline level of time with parents that is not utility reducing for V^L children. Horowitz note to parents: "Notwithstanding my relocation, I really am a type V^H child. . . .*really*."

spent with parents (T) is either high (T^H) or low (T^L), and of course parents can observe this behavior.

Parents are all assumed to value more time with their children and to be altruistic, but also to have self-interest motivations. We also assume that parents would (notionally) like to reward those children who highly value time spent with them.[8] At the bequest (B) stage we will assume that parents have only a binary strategy set: to leave a high bequest level (B^H) or a lower level (B^L). Though parents are altruistic towards all children they may use their bequest strategically to encourage more time and to (additionally) reward those children who they believe highly value time with them. However, altruism prevents parents from wanting their children to forego (sufficiently) high external opportunities on their behalf.

These strategic incentives could be derived from a parental optimization problem with utility: $U^P(T, g(V,U^C), R; B)$, where the arguments T, g, and R enter U^P positively (with partials g_V, $g_{UC} > 0$) and R a "residual claimant" to bequest. The function $g(V, U^C)$ captures the interaction between child utility (the pure altruism motive) and V – that is, parents' inclination (though altruistic to all children) to provide additional reward to children who highly value them. The "residual claimant" (R) is a *potential* bequest recipient (e.g., charity) in the event parents, who ex-ante budgeted for B^H, in equilibrium disperse B^L to the child. Parents would choose bequest levels to maximize utility given their information regarding children *and* their strategies impact on equilibrium behavior. The altruism inherent in this function implies a willingness to exchange time for a child's opportunity to earn a high wage E^H elsewhere. Therefore, it is not optimal to adopt a simple strategy of offering B^H in

[8] The alternative would be neutrality or the contrary relationship between V and altruistic proclivity – that is, a parental inclination to reward children who put low value on them with higher bequest. We reject this possibility with confidence. Perfect neutrality would seem a razor's edge that can also be reasonably discounted.

response to T^H and B^L in response to T^L. Rather, this utility function implies that parents may desire to reward (with a higher bequest) a child who offers them a high level of time *or* a child who values them highly but relocates to earn E^H. In a world of imperfect information, however, parents cannot directly observe preferences (V) or opportunities (E) and must infer these from observable actions. The sequence of choices is made clear in the extensive form game in Figure 1 and the stage narrative below:

Stage 1 – Nature chooses whether the child places a high value, V^H, or a lower value, V^L, on time with parents as well as determines if a child has high returns to relocation (E^H or E^L). This generates 4 types of possible child types: $\{V^H\text{-}E^H, V^H\text{-}E^L, V^L\text{-}E^H, V^L\text{-}E^L\}$. Parents cannot observe the type but know the probability p that the value (V) is high and the probability δ that opportunities (E) are high. Note that a child's value and opportunity are assumed to be independent.

Stage 2 – Children choose whether to move away from their parents or not. A child (of any type) who does not move receives opportunity level E^L.

Stage 3 – Children who don't relocate decide whether to spend a lot of time with their parents (T^H) or not (T^L). Note that T^L is not necessarily zero; it is just important that it is less than T^H.

Stage 4 – Parents make a decision to give a high (B^H) or low (B^L) bequest to their child.

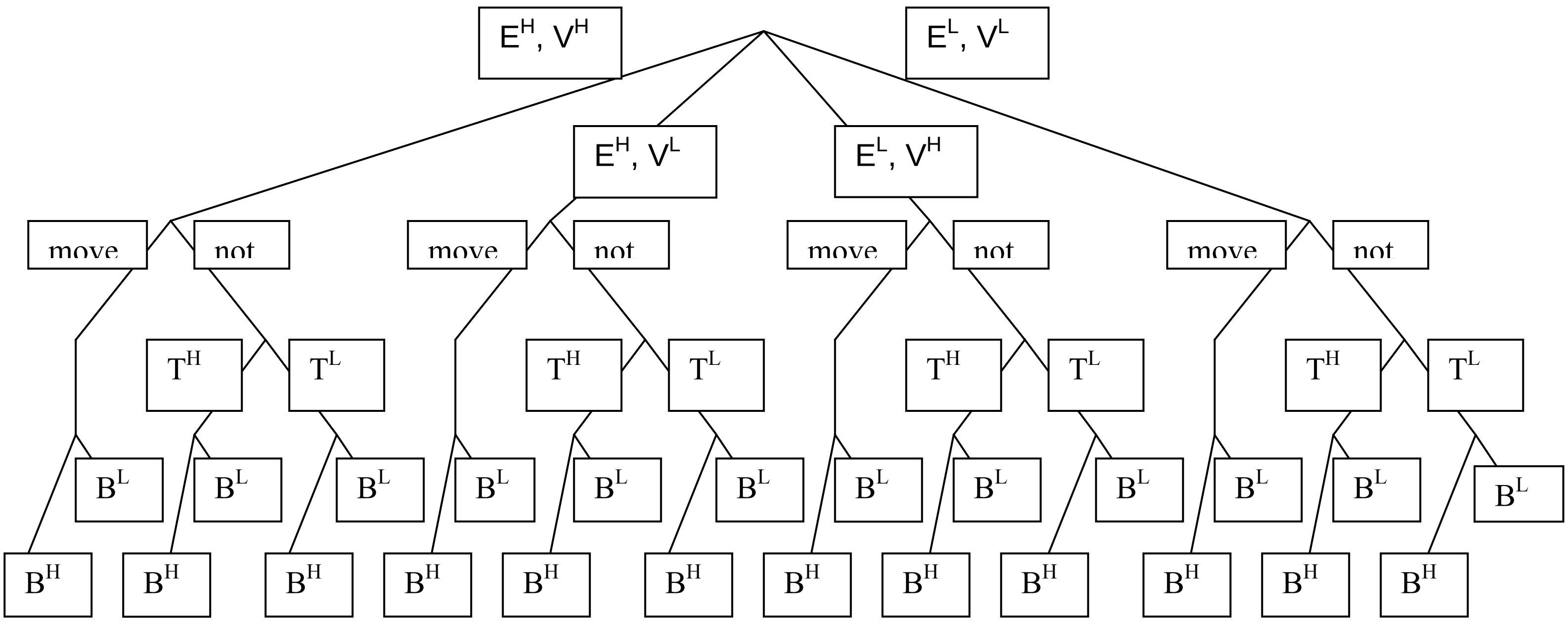

Figure1.

Characterizing the game in the standard way by backward induction, we start with Stage 4 in which the parents determine their bequest strategy.

Stage 4: The Parents' Choice

If a child *does not* relocate, the dominant strategy is: B= B^H if T = T^H and B= B^L if T = T^L.[9]

If the child *does* move away, the amount of time spent with the parents is assumed to be low, and parents cannot observe if a child places a high or low value on time with them.[10]

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[9] The levels of T^H and T^L can be found by maximizing the child's utility function. Conditional on not moving, the high level of time is what a high value child would choose to spend and the low level of time is what a low value child would spend if there was only a low bequest; of course they may choose a higher level in order to obtain the higher bequest. For simplicity, we will take the time strategies sas given.

In this situation, parents' bequest will be based upon their updated probability that a child who moves away is indeed type V^H. This updated probability will be simultaneously determined in equilibrium, with a child's decision to move providing additional information to the parent.[11] At this stage in the analysis, simply define this updated probability to be *q*. Suppressing all arguments of the utility function not relevant to the Stage 4 decision, a parent will offer a high bequest iff:

(1) $q(U^P(B^H, V^H)) + (1-q)(U^P(B^H, V^L)) > q(U^P(B^L, V^H)) + (1-q)(U^P(B^L, V^L))$

where the left hand side represents the expected utility from choosing B^H, and the right hand side is the expected utility from choosing B^L. Again, the probability *q* will be determined in equilibrium. Define q^* to be the critical value of *q* that makes *(1)* hold with equality.

Stage 3: Children choose time

Denote the utility of children as follows:

(2) $U^C(B^i, T^j, V^m, E^n; d)$

where B^i is the bequest to be received, T^j is the time spent with parents, V^m is the value of the time spent with parents, E^n is the indicator of the value of the child's relocation opportunity, and *d* is a dummy which is *0* when the child does not relocate and *1* when they do. The indices *i, j, m* and *n* take on either a high value (H) or a low value (L). If the child does not move they choose their time commitment to maximize utility.

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[10] Though children who move away may call or visit more often if they highly value time with their parents it seems reasonable to assume that spatially separated children have relatively less time to spend with parents than children who do not move. Relaxation of this assumption would involve three possible levels of time commitment and would unnecessarily complicate the model without adding insight.

[11] This information will simultaneously influence a parent's decision so the equilibrium is fully simultaneous.

We know that as a result of the parent's stage 4 strategy, when d=0 and $T^j = T^H$, then $B^i = B^H$, and when $T^j = T^L$, $B^i = B^L$. Since T^H is the amount of time a child who highly values time with parents will spend, we know that type V^H children spend T^H and receive B^H. That is, by construction $U^C(B^H, T^H, V^H, E^n, d=0) > U^C (B^L, T^L, V^H , E^n, d=0)$.

A child who does not highly value time with parents will choose a high level of time iff $U^C(B^H, T^H, V^L, E^n, d=0) > U^C (B^L, T^L, V^L, E^n, d=0)$. There exists a critical value B^{H*} such that if $B^H > B^{H*}$, a V^L type chooses to spend a high level of time (T^H) with his parents, and if $B^H < B^{H*}$, a V^L child chooses T^L. As a first result, therefore, wealthier parents get more time.

Given our analysis of Stages 3 and 4 above, there are two primary cases to consider as we move to Stages 1 and 2 of the game: (i) $B^H < B^{H*}$; (ii) $B^H > B^{H*}$. Continuing our analysis of the game through backward induction we now move to Stages 1 and 2.

Stage 2: The Decision to Move/Not Move

As demonstrated above, if the child does not move the outcome depends on the parents' bequest level (i.e., if $B^H < B^{H*}$). If the child moves, $T = T^L$, and the parent must infer the child's type to choose a high or low bequest. Hence there are two subgames in this case: *subgame A*, when parent chooses B^L if the child moves, and *subgame B* when parent chooses B^H instead. The child's strategy is contingent upon their beliefs regarding this reward/punishment response. We can fully characterize the child's strategy as follows:

Type V^L-E^L:

Case 1: $B^H < B^{H*}$

d=1 if parents bequeath B^H to movers

d=0 if parents bequeath B^L to movers

If parents will choose a low bequest to children who move, this type will move iff $U^C(B^L, T^L, V^L, E^L\ d=1) > U^C(B^L, T^L, V^L, E^L, d=0)$; i.e., they receive a low bequest either way and, in the case of indifference, we assume the choice is to stay. If the parents will continue to offer a high bequest regardless, the child moves because $U^C(B^H, T^L, V^L, E^L, d=1) > U^C(B^L, T^L, V^L, E^L, d=0)$. Recall that this type will receive a low bequest if they stay since the parent's resources are not sufficient to induce a high level of attention.

Case 2: $B^H > B^{H*}$
d=1 if parents bequeath B^H to movers
d=0 if parents bequeath B^L to movers

If parents will offer a high bequest regardless of whether the child moves or not, this type's utility will be $U^C(B^H, T^L, V^L, E^L, d=1)$ or $U^C(B^L, T^L, V^L, E^L, d=0)$. That is, it is possible to receive a high bequest either way, but to do so when staying a high level of time must be spent with parents. Given an equal bequest, this type of child will always move.[12] If, however, parents will punish, the bequest is high only if the child stays. Given that we are in this case: $U^C(B^L, T^L, V^L, E^L, d=0) < U^C(B^H, T^H, V^L, E^L, d=0)$. In other words, the higher bequest is worth the time. Moving will provide the child utility no better than staying and not spending time, i.e. $U^C(B^L, T^L, V^L, E^L, d=1) \leq U^C(B^L, T^L, V^L, E^L, d=0)$, which is strictly worse than staying and spending a high level of time.

[12] We are ignoring the corner solution where the net utility of relocating is always less than that of not moving. Under such circumstances a VL child never moves and the game is uninteresting because VL children are not willing to bluff and parents have full information when observing their child's behavior.

Type V^L-E^H:

Case 1: $B^H < B^{H*}$

d=1 is a dominant strategy

Even if the parents will choose a low award when a child moves, this child will receive a low bequest by choosing d=0, so moving and receiving the external opportunity is preferred.

Case 2: $B^H > B^{H*}$

d=1 if parents bequeath B^H to movers

or if $E^H > E^{H*}$

d=0 otherwise

If parents always offer high bequests, the child compares $U^C(B^H, T^L, V^L, E^H, d=1)$ with $U^C(B^H, T^H, V^L, E^L, d=0)$. Choosing d=1 is optimal. If parents do choose lower bequests to a child who moves, the child will choose d=1 iff $U^C(B^L, T^L, V^L, E^H, d=1) > U^C(B^H, T^H, V^L, E^L, d=0)$. There exists a critical value E^{H*} such that if $E^H > E^{H*}$, the child will move. Otherwise, the higher bequest from staying home outweighs the opportunity.

Type V^H-E^L: d=0 is a dominant strategy

This type can never benefit from moving since they will receive the high bequest by choosing d=1 and they receive positive utility from time with their parents. The strategy is independent of the magnitude of B, and therefore is the same for case 1 and 2.

Type V^H-E^H:

d=1 if a) if parents bequeath B^H to movers

or if b) if parents bequeath B^L to movers but $E^H > E^K$

d=0 otherwise

where E^K is the critical value of E such that $U^C(B^L, T^L, V^H, E^K; d=1) = U^C(B^H, T^H, V^H, E^L, d=0)$. Note that it can be shown that $E^K > E^{H*}$; i.e., it takes greater opportunities to induce a type V^H child to move if they will receive a lower bequest as a result than it takes to induce a type V^L to do so. Clearly, the child will move if the opportunities outweigh the lost inheritance and lost value of time with their parents. We assume that if the parents will always offer the high award, a child with high opportunities will choose to move away despite the lost utility of time with their parents. In the case where this is not true, the game is uninteresting since high value children do not move, thereby eliminating the possibility for low value children to successfully move without being revealed. This assumption, therefore, guarantees part a) of the strategy.

Equilibrium:

Now that the strategies have been fully characterized, we must consider the possible equilibria of the game. Given *q*, the parent will make the choice depending upon equation (1) and the updated value of *q* which is simultaneously determined by the child's strategy. This leads to the following set of propositions:

Proposition 1:

When $B^H < B^{H*}$ and $E^H < E^K$, type V^H children choose d=0, parents punish d=1, and type V^L children choose d=0 when $E=E^L$ and d=1 when $E=E^H$.

Proof: Given the child's strategies defined above, it is clear then when parents punish and external opportunities are low, type V^H will never move and type V^L will move when their opportunities are high. Given that only type V^L ever moves, it is optimal for parents to punish a move and the equilibrium is supported.

Discussion:

In this equilibrium, all children remain nearby the parents except for children with low value for their parents and high opportunities away. The equilibrium is efficient in that parents offer lower bequests to all low value children and no high value children, but they are unsuccessful in getting any low value children to spend time with them. The equilibrium occurs when parents have a low level of resources ($B^H < B^{H*}$) and even children with better opportunities; do not have great options ($E^H < E^K$). In other words, lower income families with low opportunities for their children are likely to stay together, but parents are not able to induce children who do not value them as highly to spend additional time with them. We therefore have the testable prediction that low-income families, with children whose pecuniary gains from moving are small, will tend to have more unequal bequest. That is, the occurrence of this separating equilibrium should be more likely at the lower end of the income distribution.

Proposition 2:

When $B^H > B^{H}*$ and $E^H < E^{H*}$, all children choose d=0 and parents punish d=1.

Proof:

Given the decision to punish, see from the strategies outlined above that all children choose d=0. Recall that $E^H < E^{H*}$ implies that $E^H < E^K$. For parents to be willing to punish, they must form beliefs regarding the type of child that would move. Assuming that they believe a move would only take place from a type V^L child, it is optimal to punish

Discussion:

In this equilibrium external opportunities are not high enough to induce any type to move, and the bequest is large enough to induce all types to spend time with their parents if they stay. Parents have sufficient resources relative to their children's opportunities to induce all children to stay and to spend time with them. This equilibrium may be consistent with the strong family cohesion that that is observed in many low-income countries.

Proposition 3:

When $B^H > B^{H*}$ and $E^K > E^H > E^{H*}$, all V^H children choose d=0, V^L choose d=1 iff E^H and parents punish d=1.

Proof:

Given the conditions above it is straightforward to verify that the parents' strategy to offer the lower bequest is supported. Note that since only type V^L will move, it is optimal for parents to punish d=1.

Discussion:

External opportunities are high enough to attract type V^L children despite higher resources of the parents, but not great enough to attract children who want to spend time with their parents. The equilibrium is efficient in that only type V^L children get the lower bequest and only type E^H children move. Parents' promise of a high bequest is sufficient to induce provision of a high level time from low opportunity children.

Propositions 1, 2 and 3 are equilibria in which the parents choose a lower bequest to a child who moves. However, there also exists equilibrium over some range of these parameters in which parents will continue to offer the higher level of the bequest.

Proposition 4:

When $p\delta/(p\delta +1\text{-}p)>q^*$ and $E^H > E^K$, there exists a unique equilibrium in which parents choose B^H if the child moves, all children who place a low value on time spent with their parents will move, and type V^H children choose d=1 when $E=E^H$ and d=0 when $E=E^L$. This equilibrium holds for all values of B^H.[13]

Proof:

(i) In this equilibrium, parents will not punish a move. Conditional on this, a child who places a low value on time with his parents will choose to move regardless of his opportunities (see the strategies outlined above).

(ii) As described in the stage 2 strategies, a child of type V^H who is not punished will leave iff his opportunities are sufficiently high.

(ii) Given that all low value children move and high value children will move only if they are also high opportunity, will parents choose to offer a high bequest upon

[13] Recall that we have assumed away the case in which a high opportunity V^H child would not move even if they are not punished. In this case the equilibrium collapses to an uninteresting game.

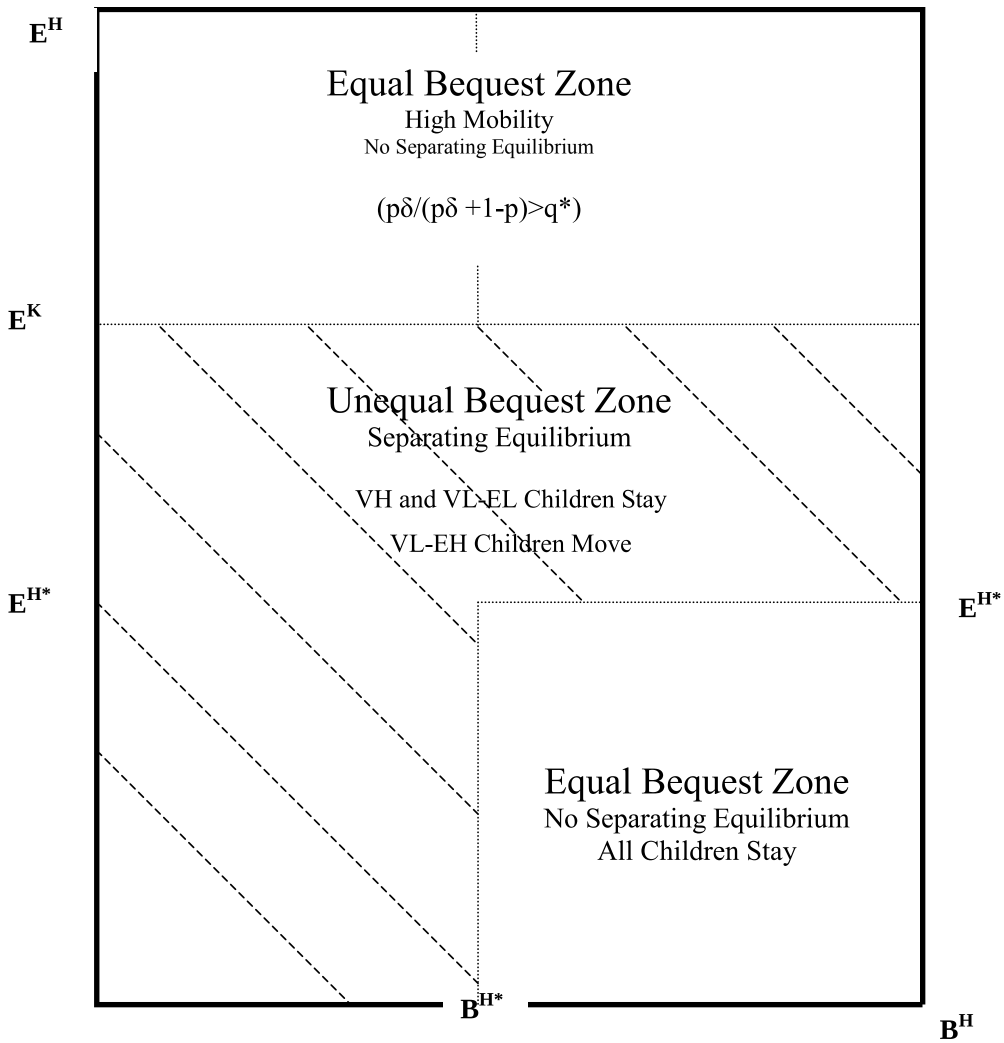
observing a move? The updated probability q that a move ($d=1$) implies a type V^H is $p\delta/(p\delta + 1 - p)$. When this exceeds q^*, parents will not punish and all children receive B^H.

Discussion:

This equilibrium holds when q^* is low (parents regret punishing a type V^H with real opportunities) or when p and δ are high – that is, parents' ex-ante beliefs regarding their children's valuation of time with them *and* their children's external opportunities are high. Given their altruism, parents wish to continue to offer a high level of bequest to children who are moving for a better job. This situation may hold over the range of parental bequests since they are unwilling to use their strategic power to limit their children's mobility. The equilibrium is inefficient because children who are fact moving because they do not want to spend high levels of time with parents are also rewarded with a high bequest. In this equilibrium parents get the least amount time because opportunities are plentiful and they are altruistic.

Figure 2 below illustrates Propositions 1 through 4 in the dimensions of E^H and B^H, with the critical values of the high outside earning opportunities (E^K, E^{H*}) and critical high bequest level (B^{H*}) partitioning the space into zones of more and less equal bequest division. The Figure succinctly illustrates a motivation for the equal division puzzle that has not previously been explored. Specifically, it reveals that when sufficiently high returns to moving coincide with altruistic parents' beliefs that the returns to moving are high *and* that their children do highly value time with them, a *high mobility* equal bequest equilibrium emerges.

Figure 2 -- Equilibrium Zones For Type V^H Children



In interpreting Figure 2 it is important to note that the *High Mobility-Equal Bequest Zone* that we are associating with the U.S. pattern of equal division depends critically on parental perceptions of their children's type and earning potential (i.e., $p\delta/(p\delta+1-p)>q^*$). We believe such uncertainty is a reasonable (and perhaps inevitable) feature of a high mobility society. Characterization of the equilibria when these conditions are not satisfied is presented in the appendix.

IV. Conclusion

This paper provides a new explanation for the equal division puzzle that is based on the interaction of *parents'* incomplete information regarding their children and a distinctive feature of modern American society – geographic mobility. We show that this confluence of factors generates a strong propensity for a pooling equilibrium with equal bequests. Though our explanation is complementary with Bernheim and Severinov's (2003) model of *children's* incomplete information, the parents' side of this information dilemma is simpler to model and depends on parameters that are inherently easier to observe empirically. We also show that as returns to mobility decrease, unequal bequest equilibria emerge. Since returns to geographical relocation vary considerably across countries our model may also speak to the unequal division of bequests observed in other countries.

Appendix

Proposition A1:

When $E^H > E^k$, and $p\delta/(p\delta +1-p)<q^*$, parents choose B^L if $d=1$, and all children with low opportunities will never move. Children with high opportunities will move regardless of their type. This holds for all values of B^H.

Proof:

(i) Given the strategy of the parents, if the child's type is V^H, his utility of moving is U_C^H (B^L, T^L, V^H, E^i; d=1), and utility of not moving is U_C^H(B^H, T^H, V^H,E^L, d=0). By definition of E^K, type V^H will move as will type V^L. If the opportunity is low (E^L), neither is willing to move.

(ii) The parents' strategy: Will the parents choose to punish given the expected response form the children? Since $p\delta/(p\delta +1-p)<q^*$, parents will punish a move. Note that since the equilibrium is fully revealing of a child's true opportunity, the updated probability that a child who moves has high opportunity is 1 (δ=1), and the updated probability a child is of type V^H conditional on moving is the same as the unconditional probability p (i.e., q=p). Since $p\delta/(p\delta +1-p)<q^*$ and δ=1, this implies $p<q^*$. Therefore, q=p and parents will choose the punishment strategy when $p<q^*$.

Note that this equilibrium in which parents punish children who move away is more likely to hold when p is low and q* is high. In other words, parents are likely to punish when they hold a prior belief that children are unlikely to care about them, and when their have less altruism and therefore experience a higher disutility of giving high bequest to V^L children. The equilibrium results in inefficiencies in which some high value children get punished for pursuing desirable opportunities. Moreover, the greater opportunities for some children (relative to proposition 1) and similarly low resources of parents results in families being separated and parents receiving even less time from their children. The relative power difference between parents and children leaves parents with less strategic influence.

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