Federal Reserve Bank of Chicago

Will Writing and Bequest Motives: Early 20th Century Irish Evidence

Leslie McGranahan

WP 2006-18

Will Writing and Bequest Motives: Early 20th Century Irish Evidence

November 13, 2006

Leslie McGranahan
Federal Reserve Bank of Chicago
Leslie.McGranahan@chi.frb.org

 I wish to thank Joel Mokyr for inspiring this work and seminar participants at IUPUI, Northwestern, the University of Chicago, the Federal Reserve Bank of Chicago and attendees at the Cliometrics sessions at the ASSA meetings for thoughtful comments. I also received helpful comments from Lisa Barrow, Cristina DeNardi, Anna Paulson, Lou Cain and Joe Ferrie.

"Why spend years attempting to create wealth and then take so little care to provide for loved ones, friends, or charity. The present rules governing your estate if you die without a will have scant regard for your wishes… There are no excuses for not making or reviewing your will. Act now before it's too late." Ian Burman, Probate lawyer, "When to Write a Will" http://news.bbc.co.uk/2/hi/business/4332463.htm. March 10, 2005

"Every adult – whether they are wealthy or not – should have a valid will. Yet, over half of all Americans die without one. In fact, national estimates project that 70% of American adults currently don't have a will. The reasons for this are common. Many people think they don't have enough property to worry about or that writing a will might be too expensive. Others simply prefer not to think about the subject at all…If your state's distribution laws work fine for you does that mean you shouldn't write a will? Well, not exactly. After all, having a will takes the guesswork out of who will receive what. And why not help avoid potential family feuds over where your property will go? … Having a will not only provides clear guidance for your loved ones after your death, but it also allows you to rest easy, knowing your wishes will be carried out. The peace of mind you gain will be well worth any expense or effort involved in drafting a will. After all, we all want to take care of our loved ones. Writing a will is one way to make sure they're cared for even after you're gone." Legalzoom.com advertising $69 Wills.

"Unless you make a Will, you cannot guarantee that your belongings will be distributed as you want when you die." Clickdocs.co.uk

"Why let someone else decide how to dispose of assets you worked hard to acquire." Elderhostel.com – a non-for-profit encouraging wills that include bequests to Elderhostel.

"If you die without a will, California law will determine the beneficiaries of you estate. Contrary to popular myth, everything does not automatically go to the state… Friends, a non-registered domestic partner or your favorite charities will receive nothing if you die without a will." The State Bar of California, "Wills" Calbar.ca.gov

I. Motivation

Will writing is a crucial part of the bequest process. In writing a will, an individual can choose who receives what portion of his assets, can give specific belongings to particular beneficiaries, and can provide for charities. By contrast, the assets of an individual who dies with out a will, or intestate, are divided among beneficiaries in a manner specified by the state or country in which he lived. Estimates of the percent of Americans who write wills before they die range from 30% to 50%. The existence of wills gives some indication concerning bequest motives. In particular, will writers anticipate that they are going to die with some positive estate value, care about who receives their assets, and are willing to occur a financial cost to pay for the drafting of a will. The goal of this paper is to investigate the decision to write a will in hopes that the motivations behind this decision will shed some light on bequest motives more generally.

Bequest motives are poorly understood despite a substantial body of research seeking to understand the impetus for the posthumous distribution of assets. The two principal economic theories of bequests – altruism and strategic bequests or exchange– fail to explain significant features of observed bequest behavior. One finding that is particular challenging to these two theories is the prevalence of equal bequests to children. However, few alternative explanations have been offered in place of these two theories. The frequency of equal bequests to children also draw into question why individuals write wills, given that estates are divided equally among children in the absence of wills.

Gaining a better grasp of bequest motives and the pattern of bequests can lead to a better understanding of key macroeconomic phenomenon. For example, further insight into bequest motives can help explain the rationale for the patterns of observed saving behavior and can lead to a better understanding of the sources of wealth inequality. In addition, understanding bequest motives can clarify likely responses to policy changes such as an abolition of the estate tax or changes in social security policy parameters.

I investigate bequest motives by looking at the will writing decision of a set of individuals who died in Ireland between 1901 and 1905. I link the estate records of these individuals to their household record in the 1901 Irish Census. The Census provides

similar information on individuals who write wills -- testators, and the intestate. The advantage of looking at this particular time period derives from the fact that it predates government provided old age support in Ireland. As a result, the linkages between parents and their children are less nuanced and more explicit than in the time periods and locations analyzed in most studies of bequest motives. I would anticipate strategic bequest motives to be far more pronounced because parents were more heavily dependent on their children in old age. In addition, in the turn of the century Irish context, estate taxes were low relative to current levels so I am able to abstract away from the tax avoidance component of modern estate planning.

I find some evidence that will-writing is motivated by the desire to repay individuals who provided care after the end of a dying person's productive years, especially among women. By contrast I find no evidence that the characteristics of potential beneficiaries influence the decision to write a will. I do find that the age, wealth, and landholding status of the deceased are correlated with will writing. These additional findings are consistent with the strategic bequest model and also with a simple model of bequests where individuals write wills because they have assets and think they are about to die.

The paper proceeds as follows. First, I introduce the principal theories of bequests and how these theories have been tested in previous research. I then present a simple model of the decision to write a will and discuss the implications of the model. Next I introduce the Irish context and the data set. Subsequently, I investigate which features of potential testators influence their decision to write a will and explore the extent to which the various theories can explain the patterns found in the data. I then conclude.

II. Understanding Bequest Motives

According to the basic life-cycle model, individuals save in order to support consumption above their income levels in the later years of life. With perfect foresight concerning the timing of death, individuals would run out of assets at the moment of death leaving no bequests to their heirs. The presence of substantial bequests has been explained in the literature primarily by three different theories; accidental bequests,

strategic bequests, and altruism. When the life-cycle model is extended to include uncertainty over the time of death, the prediction of accidental bequests arises. According to this theory, bequests are insurance for living too long. The accidental theory is inconsistent with the existence of wills. While bequests themselves may be accidental, the distribution decisions made by will are not accidental, but deliberate actions by individuals to distribute their assets under the assumption that there is something left to distribute. In addition, wills are not costless to draw up indicating that testators are willing to sacrifice some consumption in order to have a will.

The strategic bequest or exchange theory postulates that bequests are used to procure services from heirs that are not available in the market-place. For instance, a child who takes care of an elderly parent receives a disproportionate bequest in exchange for those care-giving services. Bernheim, Schleifer and Summers (1985) finds some support for this theory in that they find that parents who hold more bequeathable wealth receive more attention from their children. Perozek (1999) further investigates the link between estate size and attention from children and does not find more interaction between parents and adult children when parents hold more bequeathable wealth. Her work also challenges the exchange theory in that she finds that only children, who have no competition for their parents' resources, spend as much time with their parents as children in multi-child families.

Another theory that has been investigated as an explanation for bequest behavior is that bequests are motivated by altruism. (Wilhelm 1996) According to this theory, individuals care about the well-being of their heirs, and distribute their assets to maximize the utility of heirs. The assumption that the well-being of other individuals enters into the deceased's utility function equally, leads to the prediction that bequests to these individuals should compensate for pre-existing differences in wealth or earning potential. Because the lower wealth individual has a higher marginal utility of income under the standard assumption of declining marginal utility of income, he should receive a larger bequest. Research on the division of bequests does not support the prediction that bequests compensate for differential endowments.

In contrast to the predictions of both the exchange and altruism models, data on bequests finds that bequests to children are in most cases equal. Equal division has been

found to be the norm in a number of different data sets. In the Estate-Income Tax Match data, Wilhelm (1996) found that 68.6% of estates were divided exactly equally, and 76.6% were divided within 2% of equality. Light and McGarry (2003) report that 92.1% of mothers in their sample from the National Longitudinal Survey (NLS) respond that they plan to divide their estate equally among their children. Using North Carolina estate records, Norton and Taylor (2005) find that between 70% and 83% of estates were divided equally.

Some research has also advanced other theories of bequests. In particular, Andreoni (1990) postulates that giving is motivated by the "warm glow" received by the giver and McGranahan (2000) finds evidence that bequests to charity are motivated by the desire to be remembered in a favorable manner.

More recent articles on bequests have sought to understand bequest motives in the context of the stylized fact of predominant equal division. As Bernheim and Severinov (2003) point out, equal division is a "knife edge" outcome; it is difficult to reconcile with standard marginal utility based theories. Bernheim and Severinov (2003) develop a theoretical model where children care about parental affection and see bequests as a signal of parental preference relative to their siblings. Altruistic parents care about their children and as a result care about their children's perception of how much they are loved. The model suggests that an equilibrium exists where a large subset of parents will divide equally so that children will not believe that their parents are more partial to one child than they actually are.

Empirical research has investigated the prevalence of equal division by looking at the determinants of dividing an estate equally. These studies infer bequest motives from differences in the characteristics of parents who chose unequal division as compared to those who chose equal division. Norton and Taylor (2005) link survey responses concerning elderly living arrangements and care needs to estate records to investigate whether parents who divide unequally are more likely to have living arrangements and other characteristics consistent with exchange. They find little evidence of strategic bequests in that living with a child prior to death and elderly care demands do not lead to unequal division. They do find that some factors that could support either altruism or exchange do influence unequal division; namely having four or more children and writing

a will close to death. Light and McGarry (2003) find that unequal divisions can be explained by some characteristics of mothers consistent with exchange and altruism and that mothers' responses to survey questions concerning why they are not planning on dividing their assets equally are evenly divided between altruism and exchange.

This paper also takes the prevalence of equal division as a point of depart and asks why individuals write wills given that estates are divided equally among children in the absence of wills. Currently, in all 50 U.S. states, the intestate succession laws give surviving children equal parts of their parents' estates.[1] Equal division among children is also the law under intestacy in many other nations, and was the law in Ireland at the time investigated in this paper. Unequal division among children requires a will, but most will writers choose to divide equally in their will.

III. A Simple Model of the Decision to Write a Will

In this section, we present a simple model of will writing. We assume that the sole goal of a will is to change the distribution of assets from the distribution that would occur under intestacy. As noted in the previous section, many individuals mimic the intestacy distribution in their wills as far as the treatment of children is concerned: this issue along with other potential rationales for will writing will be discussed later.

We assume that a potential testator, *i*, chooses to write a will if his utility from doing so exceeds his utility from dying intestate. In particular, we assume that an individual compares his optimal estate distribution to the distribution that occurs if he dies intestate (the laws governing this process are referred to as the laws of intestate succession) and writes a will if the utility gain justifies the expense of writing a will.

Assume an individual has a set of family members or other beneficiaries who affect his will writing decision, or who would receive a bequest under intestate succession $n=1,\ldots N$. Further assume that his entire estate is distributed to these individuals and no one else. We label these bequests b_n.

[1] The intestate succession statutes do differ in the treatment of children of deceased children and in the portion given to surviving spouses.

He has a fixed amount of wealth to distribute at death: W_i. In other words, he does not determine the size of his bequest by weighing it against consumption uses of wealth. He derives some utility from the bequests given to beneficiaries: $U(b_1,...,b_n)$. This utility may arise because he directly benefits from the utility of other (altruism), from services received from heirs as a result of the bequest (exchange), or from the mere act of making the bequests (warm glow).

He incurs a cost of writing a will when he dies. Assume that this cost has both a psychic and financial component. The psychic cost derives from the need of the individual to contemplate his own demise. The financial cost comes from the need to find, hire, and pay a lawyer. Assume that both the psychic cost, p_i, and financial cost, l_i are individual specific. The financial cost reduces the amount of assets he is able to distribute to his heirs – the resulting estate size is $W_i - l_i$.

Intestacy

If an individual dies intestate, his entire estate is divided amongst his family members according to the laws of intestate succession. The series of bequests dictated by the state are: $b_{1,is},...,b_{N,is}$ s.t. $\sum_{n=1}^{N} b_{n,is} = W_i$. His utility under intestate succession is:

$U_{i,is} = U\left(b_{1,is},...,b_{N,is} \mid W_i, X_i\right)$.

The vector X_i includes other state variables such as the endowments of beneficiaries prior to bequest, and attributes of the potential testator.

Testacy

If an individual writes a will, he chooses bequests to family members to maximize his utility subject to the constraint that the total bequests plus the lawyer's fee for writing the will must equal the total bequest. All bequests are constrained to be positive because an individual cannot take assets from one heir at death and transfer it to another. His

optimization problem is: $Max_{b_{1,T},...,b_{N,T}} U\left(b_{1,T},...,b_{N,T} \middle| p_i, X_i\right) s.t. \sum_{n=1}^{N} b_{n,T} + l_i = W_i$ and

$b_{1,T}, b_{2,T}, ..., b_{n,T} > 0$.

If we label the optimal bequests that result from solving the optimization problem: $\hat{b}_1, ...\hat{b}_N$, then the utility of writing a will is:

$U_{i,T} = U\left(\hat{b}_1, ..., \hat{b}_N \mid W_i, l_i, p_i, X_i\right)$.

If we further assume that the utility function is separable in the psychic costs, we can rewrite the utility of writing a will as:

$$U_{i,T} = U\left(\hat{b}_1, ..., \hat{b}_N \mid W_i, l_i, X_i\right) - U\left(p_i\right)$$

Will Writing

An individual will choose to write a will if the utility from having a will exceeds the utility from dying intestate. Or, if:

$$U\left(\hat{b}_1, ..., \hat{b}_N \mid W_i, l_i, X_i\right) - U\left(p_i\right) > U\left(b_{1,is}, ..., b_{N,is} \mid W_i, X_i\right) \qquad \text{(Equation 1)}$$

this can be rearranged to

$$U\left(\hat{b}_1, ..., \hat{b}_N \mid W_i, l_i, X_i\right) - U\left(b_{1,is}, ..., b_{N,is} \mid W_i, X_i\right) > U\left(p_i\right) \qquad \text{(Equation 2)}$$

Lemma 1: If there are no costs to will writing, and if individuals indifferent between writing a will and not writing a will do write a will, everyone will write a will.

Proof: In the absence of costs, the exact distribution under intestate succession is possible by will. If the intestate succession outcome is preferred to the testate outcome, then the testate outcome could not have been the optimal distribution.

Lemma 2: If bequests did not enter into the utility function i.e., individuals did not care about the distribution of their assets, and there were positive psychic costs, no one would write a will.

Proof: The utilities of the bequests are both equal to zero, so the left hand side of Equation 2 equals zero. This implies that an individual will write a will is the utility of the psychic costs is negative, but we've constrained the psychic costs to be positive.

The combination of the two Lemmas indicates that the observation that some individuals write wills and others do not demonstrates that there are both costs and benefits to will writing.

Even without specifying anything concerning the form of the utility function, we can generate a couple of predictions from Equation 2. Anything that increases the left hand side of the equation will increase the likelihood of observing a will as will anything that decreases the right hand side. First, other things equal, individuals with lower psychic costs will be more likely to write a will. Individuals facing lower financial costs will also be less likely to write a will because the lower financial costs increase the utility of the optimal distribution while leaving the utility of the intestate succession distribution unchanged.[2] Second, individuals whose optimal distribution differs most dramatically from the intestate succession baseline should be more likely to write wills. These individuals have the most to gain from changing the distribution. Which individuals are most likely to want to change the baseline distribution will depend on the specifics of the intestate succession distribution and the utility function determining the optimal distribution.

The effect of wealth on will writing is indeterminate. For some individuals the cost of hiring a lawyer will be prohibitive; as a result, increases in wealth will make will writing possible. Further predictions based on wealth depend on the utility function. For example, if we assume that testators are motivated by altruism, we find that for a broad class of individuals, increases in wealth make will-writing less attractive and lead to intestacy. This is the case because as wealth increases, the pre-existing endowments of beneficiaries shrink relative to the size of the estate and the distribution under intestate succession of dividing wealth equally converges to the altruism distribution of dividing the combined assets of all family members equally. The predictions of the effects of wealth according to a specific manifestation of the altruism model are investigated further

[2] This holds so long as bequest amounts enter the utility function positively, a very reasonable assumption.

in Appendix A. The strategic bequest theory could lead to a prediction of higher wealth leading to a higher probability of writing a will if there are economies of scale in the receipt of care services. An individual would like to give his entire estate to which ever child is a better service provider. The marginal benefit of each dollar given to the preferred child and taken away from other children is increasing as wealth increases.

This discussion is based on the assumption that individuals write wills in order to change the distribution of assets. Other possible motivations for will writing also exist. An individual may write a will in order to choose guardians for their minor children, to name an executor different from the one appointed by the state, to give bequests to charities, to speed the distribution of assets, or to give specific assets to specific beneficiaries. These will be discussed further in light of the findings and once the specific legal context of the data is elucidated.

IV. The Context

While the decision to write a will could be investigated using data from a variety of nations and time periods, I choose to look at data from turn of the century County Fermanagh, Ireland. At this time all of Ireland was still subject to English law. This data selection has numerous motivations and advantages.

First, there was no state old age support system in place in Ireland at this time. The first government pension act was passed in 1908. As a result, older individuals were more dependent on younger individuals in their waning years. Modern research on strategic bequests assumes that young individuals provide their elders with phone calls and visits. In the turn of the century Irish context, older individuals relied on the young for more basic needs. As a result, the incentives for strategic interaction were more pronounced. Strategic interactions may be evident in the Irish data, even though they are not consistently present in data collected after the advent of government provided old age support.

Second, estate taxes were fairly low so the tax regime in place would have been less distortionary than the current tax regime. Estate taxes were applied in the same manner whether a deceased individual wrote a will or died intestate. Estates below £100 paid no duty (40% of my sample), estates between £100 and £500 paid 1% of the estate

value (45% of the sample). Estates valued above £500 had gradually increasing rates. The largest estate in my data, £57148, would have paid 5%. In addition to estate duties, beneficiaries needed to pay Legacy and Succession duties for estates above £1000 (5% of the sample), these rates were decreasing in consanguinity. These rates were also low by current standards – 1% for direct lineal relatives.

Third, Irish testators, like their English and American counterparts, had a great deal of freedom over distribution rendering will writing more attractive than in societies with less testamentary freedom (such as Italy, France, and Modern Ireland)[3]. While the laws of intestate succession provided a default distribution of property upon death, by writing a will, testators could choose any alternative distribution of their choosing. Testators could be capricious or even cruel if they chose. The one exception to total testamentary freedom was that surviving spouses were entitled to some portion of the estate. In this environment, the will writing decision is more important than in societies where only a small portion of the estate can be transferred at the deceased's discretion.

Finally, I was able to create a rich data set that contained information on whether a set of individuals was testate or intestate as well as information about their family circumstances. For this purpose, I create a data set that combines information on the estate of an individual from estate records, matched with information on their living arrangements and family status from the Census preceding their death. I use estate records for individuals who died in County Fermanagh, Ireland (now part of Northern Ireland) between April 1901 and December 1905 matched with their record in the 1901 Census, enumerated on March 31, 1901.

The Irish Census provides a rich array of information on family structure that is not available from many other sources. Other Censuses could presumably be used, but in order to match individuals to the Census, we would need access to actual Census manuscripts records which are only available for older Censuses.[4] Irish living arrangements were complex and diverse during this period providing a good deal of variation in the data. Relatedly, in this period many individuals died without ever having married. I believe that individuals without direct descendents may be the most likely to

[3] Many other societies do not allow children to be disinherited by will.
[4] For instance, US census data is only available through 1930. U.S. Census data is confidential for 72 years.

write a will because they are more likely to find the laws of intestate succession arbitrary and desire to change the default distribution.[5] The small size of the Census geographical unit, *townland*, makes it easy to find individuals in the Census, once their townland is known from the estate records. The median townland in the sample has 36 people and 8.5 families.

I restrict the analysis to individuals who died in Co. Fermanagh. I could only chose among the counties that are currently part of Northern Ireland because many records from the counties in the Republic of Ireland were destroyed by fire. Among the Ulster counties I chose Co. Fermanagh because it is the least populous of the Ulster counties which promotes matching, because the county's Census had been Indexed making it possible to find individuals who had changed townland, and because it is a fairly average county. The population in Co. Fermanagh in 1901 was approximately evenly split between Catholics and Protestants. It was wealthier than most of the non-Ulster counties, but poorer than most of the rest of Ulster. In Appendix B, I compare my Co. Fermanagh sample to the entire enumerated Irish population.

In order to further understand the incentives to write a will, we need additional information about the inheritance practices in Ireland at this time. Farms in Ireland had historically been subdivided and by the dawn of the 20th Century were relatively small and most could only realistically support one family.[6] As a result, inheritance practices in Ireland in the early 20th Century were generally characterized by giving the farm to one son and expecting the remaining children to live either unmarried with the inheriting son or to find a life elsewhere –in the cities of Ireland or abroad. Daughters could also marry the inheriting sons of other families. Research looking at farm inheritance has not found that primogeniture dominated, but rather that the inheriting son would come from across the birth order distribution (Kennedy 1991). Kennedy (1991) hypothesizes that this departure from primogeniture arose from the unattractiveness of farm inheritance for

[5] Guinnane 1997 contains a lengthy analysis of the reasons for the high level of permanent celibacy. He concludes that changes in the costs and benefits of having a family (for both men and women) can explain the high rates of non-marriage. In particular, expanding life options other than child-rearing and marriage allowed individuals to survive without marriage. He does a good job explaining why simpler explanations cannot explain the data. Other things substituted for the security of marriage and family.

[6] One of the Penal Laws (enacted in 1703) mandated that the land of a Catholic farmer descend in equal shares to all his sons. This restriction lasted until the end of the 18th Century.

some eldest sons who would have to wait too long for their parents to retire or die and could find better opportunities outside the family farm.

The laws of intestate succession in Ireland also were not characterized by primogeniture. At this time, Ireland was subject to English succession law.[7] English law stipulated that in the case of intestacy, real property pass via primogeniture and personal property (chattels) pass by more complicated intestate succession arrangements that treated all children equally. In England, some land was freehold and was considered real property while other land was leasehold and considered personal property. By contrast, in Ireland by 1901, all landholding whether held as real property or as personal property descended to heirs in the manner of personal property i.e. via the intestate succession arrangements for chattels.

The Irish Land Acts had allowed tenant farmers to purchase the land they worked using money borrowed at a low interest rate from the state. Most of this purchasing had occurred between 1885 and 1909, with some of it prior to 1901. The Registration of Title Act of 1891 mandated that all land purchased under the Land Acts where money was borrowed from the state be registered. It further stipulated that all compulsorily registered land pass to heirs as personal property. The justification given for this departure from the English treatment of real property was that Irish tenant farmers had long been leaseholders and were more familiar and comfortable with equal division of land under intestacy and had no experience with issues related to real property transmission.[8]

Most of the land holders in my sample were leaseholders or tenant farmers. Any real property held would have been purchased under the Land Acts. As a result, we can

[7] Irish succession law and English succession law were identical with one exception. In England, bequests for the purposes of saying mass for the repose of the soul of the deceased were not permissible because they were deemed superstitions, but such bequests were allowed in Ireland.

[8] This justification was pointed out in a debate in the Irish Senate (Seanad Eireann, 1965). Other possible justifications exist. Primogeniture was beginning to be viewed as an antiquated and unenlightened tradition, even in England where it would be abolished in 1925. Additionally primogeniture was particularly problematic in a society with high migration where it could be difficult to find and contact an heir. Alternatively, the state may have been motivated by a desire to enhance its ability to collect the substantial debts that accompanied land purchased under the Land Acts. It is easier to collect debts against property that devolves as personal property than against real property. It is unlikely that this was motivated by an English desire to keep farms small as had occurred under the penal laws because these arrangements could still be changed by will and because the Land Acts were not punitive, but a fundamentally generous solution to the Irish land problem.

assume that all assets were divided according to the laws of intestate succession that treated all children equally.

Table 1 details the rules of intestate succession based on who survived the deceased. There are four principal scenarios depending on whether a spouse and/or children survived the deceased. These rules are not random. They appear to conform to some notion of fairness and may attempt to approximate the choices that the deceased would have made had he written a will.

V. Data

The data I gather on estates comes from The Calendar of Probates (essentially an index). Each year has a separate Calendar arranged alphabetically by the last name of the deceased. The Calendar provides information on all estates in Ireland where someone was given a grant of Probate or Administration. When an individual had a will, probate was granted to the executor. Administration was granted to an administrator when an individual was intestate or failed to appoint an executor. The grant of administration or probate allowed the grantee to initiate the distribution of assets. The calendars tells us whether an individual was testate or intestate, the total value of his personal property, his place of residence, date and place of death, date and place of probate, occupation, and to whom probate (for testators) or administration (for the intestate) was granted. Figure 1A provides an example of a record from the Calendar.

From the Calendars, I collected information on all individuals from Fermanagh who died between April 1901 and November 1905 and whose estates received a grant of administration or probate between May 1901 and December 1905. There are 531 individuals in this data set. While this does not include all individuals who died, it does include all individuals who had estates to pass on after their death and therefore had to use legal distribution channels. A deceased individual would be excluded from the sample if he was poor or young (under 18) and did not have any assets or because the

deceased was married and female and all her assets automatically transferred to her husband.[9] Issues related to sample selection are discussed in greater detail in Section VII.

Based on the information provided in the Calendars, most importantly the deceased's name and place of residence, I look for the deceased individual and his or her family in the 1901 Irish Census for County Fermanagh. Remarkably, I am able to match 494 of the 531 individuals to their 1901 Census record, representing a 93% matching rate. Three types of data are available from the Census. First, we know information about the individuals in the deceased's household. In particular, we know how family members are related to the household head, and their religion, martial status, literacy, age, occupation, and place of birth.[10] An example of a household record is presented in Figure 1B, part b. Second, the census provides detailed information on the condition of the family's housing including whether the household head is also the landholder. An example of a building record is presented in Figure 1B, part c. Various housing attributes are reported and given points. The sum of the points, called *housepoints*, is then tabulated. Housing is rated as being first (the best) through fourth class depending on the number of *housepoints*. We also know whether anyone was seriously ill in the household on the day of the census but if so we don't know who was ill. Third, we have information on the location where the household lived including whether it was a town or a street in a city, the town or street population, and the religious distribution of the town or street members. Figure 1B, part a, provides an example of the townland information.

Our analysis is based on these two sets of records only. We do not use information from the wills and administrations themselves, although all of the wills, administrations and some additional estate documents are available in the Public Record Office of Northern Ireland.[11] The wills do not provide the same information as the administrations making it difficult to generate a common set of variables from the two

[9] The Married Woman's Property Act of 1882 allowed woman married after 1882 to control and dispose of the property held at the time of marriage. Most married women who would have been dying in 1901-1905 were probably married before 1882.

[10] The 1911 Census asks three additional questions of married women -- the number of years the marriage has lasted, the number of children born in the marriage and the number still living. This would provide information on family members outside the household. However, it is less valuable than it first appears because the questions are not asked of widows or widowers. Because the Old Age Pensions Act was passed in 1908, 1911 data would not be as useful for this analysis.

[11] In some circumstances, I looked at the estate records to make sure the correct match was being made between the estate calendars and Census.

sets of records. In the case of wills, these records contain the wishes of the deceased. For administrations they give the information necessary to apply the laws of intestate succession.

I code information from these different sources to create a set of variables that allows me to investigate the will writing decision. Means of the variables coded for the entire sample as well as breakdowns based on whether an individual had a will, and the legal distribution channel if he had a will, are presented in Table 2. The sample is divided into the entire sample (in columns 2&3), the intestate (in columns 4 & 5), those with probated wills (in columns 6 & 7), and those with administrated wills (in columns 8 & 9). Individuals with administrated wills are labeled in the Calendars as having "Letters of Administration with the Will Annexed." In most cases, this indicates that a will was written, but that either no executor was appointed or that the appointed executor was unable or unwilling to act. The estate would still go to the beneficiaries named in the will and the wife, if living, or next of kin, if the testator was unmarried, would act as the administrator. The majority of the sample had a probated will, while approximately one-third was intestate. A small number, seven percent, had administrated wills.[12] The table shows that the average time between death and the grant of administration or probate was similar for those with probated wills and the intestate indicating that writing a will does not appear to speed up the distribution of assets.

The table presents means of eight sets of variables – estate variables, demographic variables, information about potential beneficiaries, measures of literacy, culture, and religion, one community measure, wealth variables, occupational indicators, and indicators for individuals likely to be influenced by exchange motives. The format of the variable names indicates whether the variable means for the three testation status groups are statistically significantly different from one another at the 95% level.

The theory suggested the need for variables measuring the gap between the optimal distribution and the intestate succession distribution, psychic costs of a will, financial costs of a will, and wealth. I describe below how I proxy for each of these

[12] We can compare these numbers to some official statistics for Ireland as a whole. In the District Probate courts in 1902, 48% of estates had Probated wills, 10% had administrated wills, and 42% were intestate. The percentages in 1903 were nearly identical. (*Judicial Statistics of Ireland, for 1902*, 1903*; Judicial Statistics of Ireland for 1903,* 1904)

variables. I also include variables measuring additional attributes of the deceased, his estate and his potential beneficiaries to capture other features of the utility function or other possible rationales for will-writing.

Measures of family composition serve to proxy for the gap between the optimal distribution and the distribution under intestate succession based on the assumption that the intestate succession default less accurately reflects the preferences of individuals in certain family types. I break the deceased into categories based on who will inherit the estate under intestacy.[13] This categorization is based on the individuals enumerated in the household at the time of the census.[14] In 33% of cases, relatives other than a wife and children will inherit, indicating that the deceased was unmarried and childless. In 14% of cases a wife would share the estate with other relatives because the married couple was childless. In an additional 33% of cases, a spouse and children inherit indicating that the deceased was married with children. Finally, in 20% of cases, children inherit alone because the deceased was widowed and had children. I anticipate that individuals whose beneficiaries include relatives outside their immediate family should be the most likely to write a will because they are more likely to have preferences different from the intestate succession default. For example, the estate of an unmarried childless man without parents would be divided equally among his siblings according to the intestate succession laws. I hypothesize that he is likely to desire to write a will to bring about an unequal partition among his siblings or to give his estate to other individuals. By contrast, I anticipate that widowers with children will be less likely to write wills, other things equal, because the equal division dictated under intestate succession conforms to their preferences.

I include additional measures of the children in the household including an indicator as to whether there are any children in the household, the age of the oldest and youngest child, the number of children and whether all children or any children are minors. Having minor children may influence the will writing decision because an individual may want to appoint a guardian for his children different from the one

[13] These categories are based on the rules for men. The entire estate of a deceased married woman would go to her husband. There are 21 married women in the sample.

[14] Some of the children of older potential testators likely lived outside the household and would not have been enumerated in the Census. However, these categorizations are probably still correct in nearly every case because households with children usually had at least one child living within the household.

appointed by the state and can do so by will.[15] In modern discussions of will writing, guardianship of minor children is frequently advanced as a reason for writing a will. Alternatively, there are fewer opportunities for exchange with minor children and the earning potential of minor children has not been revealed. As a result, potential testators with minor children have less of an incentive to write a will based on the altruism or strategic bequest theories.

I use indicators of whether the deceased was able to read and write, or able to read but unable to write, and measures of religious confessional group to proxy for the psychic costs of will writing. The majority of the deceased, over 80%, reported to the census enumerator that they could read and write. An additional 9% could read but could not write. The sample is about 40% Catholic and 60% Protestant. There is little religious or educational difference amongst the three testation groups. I incorporate these measures because individuals of different religions or educational attainment may have different perspectives, superstitions, or teachings on temporal preparation for death. In addition, religious divisions in Ireland represented cultural divides. Protestants and Catholics attended separate schools and lived in different towns or different areas within cities. In my sample, the average deceased Catholic lived in a town that was nearly three quarters Catholic while the average Protestant lived in a town that was sixty percent Protestant.

To measure the financial costs of writing a will, I include a variable indicating whether the deceased lived in a city. I use this as a proxy for the costs of will writing based on the assumption that city dwellers had more access to lawyers who could draft wills. Only 17% of the sample lived in a city; half of the city dwellers lived in Enniskillen and half lived in smaller cities. The remainder of the sample dwelled in the small rural townlands throughout Fermanagh. Contrary to my prediction that city-dwellers should be more likely to write wills, I find that a higher percent of the intestate lived in cities. Literacy may also be correlated with the financial cost of writing a will as illiterate individuals may need more assistance from lawyers.

I include a number of measures of wealth. First, I include the measure of estate value provided in the Calendars. Average log estate value in the sample was £4.959

[15] More specifically, in a will a married man could appoint a guardian to act jointly with his wife following his death. A married woman could not appoint a guardian for her children as the father would be their sole guardian. A widow could appoint a guardian by will.

(£142 -- average estate value was £486). This is actual reported wealth at death – a far more exact measure than is available in other (non-administrative) data sources. It measures the value of all personal property including the value of leasehold properties net of rental obligations, but does not include the value of real property and is not net of debts or funeral expenses. Based on richer asset data for a subset of the population, the correlation between the reported wealth measure and wealth including real property and net of debts and funeral expenses is .6. Figure 2 displays the wealth distribution separately for each sub-sample. From the graph and table we see that those with probated wills were wealthier than individuals in the other groups. Figure 3 displays the wealth distribution separately for the Protestants and Catholics in the sample. It is well known that Protestants throughout Ireland were wealthier than Catholics. Matching religion data from the Census with wealth data from estate records allows me to quantify this disparity for a specific population.

I also measure wealth by include an indicator as to whether there were servants enumerated in the household. In addition, I code a dummy variable based on whether the deceased was reported as the landholder in the Census building return. I also include an indictor for when the name of the landholder was left blank. Most frequently, the landholder information is left blank when there was no landholder because the family lived in an urban area. For instance, none of the 39 individuals who lived in Enniskillen report a landholder. I find that individuals with probated wills were more likely than the intestate to have servants and hold land.

I also include a number of occupation measures to proxy for wealth. My first measure places individuals in occupational groups according to the classifications used in the published Census Report; professional or commercial, agricultural, domestic or industrial, unclear. I label individuals who were retired or have no reported occupation as "unclear." Higher fractions of those with probated wills report agricultural and domestic or industrial occupations than the intestate. My second occupational grouping uses more standard social class definitions. I place retired individuals in the category corresponding to their former occupations and individuals with no reported occupation in the category corresponding to the occupation of the head of household (if related). While most of the

sample in all three testation groups worked as farmers, we also observe that individuals with probated wills were more likely to be farmers than the intestate.

In addition to categorizing occupations, I also map the occupation reported in the Census to three different continuous measures of occupation – Haines income score, IPUMS status score, and IPUMS income score. The Haines income score corresponding to an occupation is a measure of income imputed from data from the 1901 U.S. Cost of Living Survey and compiled in Preston and Haines (1991). The IPUMS status and income scores are measures of the social status and income of an occupations based on data in the 1950 Census. The intestate have higher scores than will writers. In conjunction with these scores, I include separate dummies for those individuals who do not report a market occupation (i.e. wife) and for those individuals who report that they are independently wealthy and therefore do not need to work.

I also include a standard set of demographic variables – age, sex, and marital status. From the demographic variables we observe that the average age at death was 65.[16] Those with wills, either probated or administrated, were older than the intestate. Figure 4 graphs the distribution of age at death for the three testation groups. Figure 5 displays the frequency of different ages reported in the census for the entire deceased population. We see obvious signs of the age-heaping common in the self-reported age data from less advanced societies.[17] While age was not incorporated directly into the model, we may anticipate that age would influence will writing for a couple reasons. First, wills are valid unless subsequently revoked, usually by a newer will, so an individual will have a will if one was ever written. Older individuals have had more time to write a will. Second, a will is not needed until a person dies, so individuals may become more likely to write a will as they age and anticipate that they will die soon.

Over three-quarters of the sample are male. This is partly due to the near exclusion of married women from the sample. However, even among the never married, men outnumber women 3 to 1. Most never married women probably had few assets and

[16] Age at death is age reported in the Census plus the amount of time between the date of death as reported in the Calendars and the Census date of March 31, 1901.

[17] Most tests for age heaping find that heaping is more common at older ages. Given that so many of the individuals in the deceased sample were old at the time of the census, the high degree of age heaping in the data is not surprising. Within the sample, I find reporting of an age ending in a 0 or 5 to increase in age, decreasing in wealth, and higher for the illiterate.

were dependent on parents or siblings. The intestate were more likely to be never married and less likely to be widowed than those with probated wills; this may be an age effect. In keeping with the famous Irish low marriage rates, we see that 28.5% of the deceased were never married. By comparison, according to recent U.S. statistics, 10.4% of individuals who died in 2003 and were over 15 were never married. (U.S. Department of Health and Human Services 2006) Individuals with administrated wills more likely to be married than those with probated wills and the intestate (the difference with the intestate is statistically significant at the 10% level).

Finally, I include three family structure variables that will help with an assessment of the exchange model. With these, I hope to label individuals who were dependent on others during old age and would potentially need to pay for this care in the form of a disproportionate bequest. In order to single out the relative who provided care, a will is needed. As was the case with the earlier beneficiary indicators, I hypothesize these individuals have the most to gain from changing the default distribution. First, I include an indicator as to whether the deceased appeared to live as a dependent on a grown child. This includes individuals who are labeled in the Census as the mother or father of the head, and those who live with one son or daughter who is 30 or above. I view this as an indicator of exchange because individuals living with one prime age child are likely to be getting care-giving services from that child. I find that this type of living arrangement is most common among those with probated wills. Second, I include a variable measuring whether an individual is not related to the head in a direct lineal manner. This includes individuals who are brothers, sisters, cousins, aunts or uncles of the family head. I assume that these individuals were supported by the household head and are more indebted to him than to other similarly related individuals. Third, I include an indicator for whether an individual is reported as being retired either in the Census or in the estate record or reported an occupation that provides no income -- such as housekeeper or wife. I believe that individuals without a source of income are more likely to be dependent on their children or others in old age and therefore need to compensate those who provided support.[18]

[18] I exclude individuals retired from the armed forces or police in this definition of the retired because they would have received pensions.

From Table 2 we get a picture of individuals with Administrated wills as being older, married, relatively poor landowners. This pattern leads to the conjecture that for such estates the appointed executor may believe that the widow will do an adequate job administering a small farming estate and may step aside as a result. Alternately, the deceased may not have appointed an executor at all deeming his wife equal to the task. In either case, the motivations of the deceased in writing a will are not different from the motivations of those with a probated will. As a result, for the remainder of the paper, I am going to group individuals with administrated wills and individuals with probated wills together. All of these individuals went to the expense and trouble of writing a will.

VI. Estimation and Findings

To investigate the determinants of having a will, I estimate a probit model where the dependent variable is equal to one if the individual has a will (either probated or administrated) and equal to zero if the individual died intestate. I report marginal effects in the Tables below. The coefficients can be interpreted as telling us how a marginal change in the underlying independent variable influences the probability of having a will.

Because of the numerous different variables available in the data set, I am going to begin with the demographic variables and progressively add other variable groups. In column 1 of Table 3, I report the determinants of will writing based on age, sex, and marital status. I find that among these variables only age has a statistically significant effect on the probability of writing a will. A one year change in age changes the probability of having a will by one percent. Calculated differently, a one standard deviation change in age, 15 years, changes the probability of having a will by about 15%. This relationship between will writing and age is consistent with the fact that older individuals are more likely to die and a will is unnecessary prior to death. Younger individuals may have put off will writing because they were not expecting to die. If we were able to obtain individual cause of death data we could further investigate whether individuals without wills were more likely to die from accidents and fast moving illnesses and were not anticipating their deaths. Unfortunately, this data is unobtainable.[19]

[19] The registrar of deaths in Belfast does have the data available, but it is expensive to procure and would need to be done by a civil servant separately for each individual.

Interestingly, overall data on cause of death show that illness far exceeds accidents and other unexpected events as the major cause of death. If we look at the readily available U.S. mortality statistics for this period, we find approximately 5% of deaths caused by accidents. Comparable statistics for England and Wales yield a lower number – close to 1%. At this time the leading causes of death in England and Wales and the U.S. were Tuberculosis and Influenza/Pneumonia -- illnesses that don't kill or total incapacitate an individual instantaneously presumably leaving an ill person time to write a will if desired.

In column 2, I replace the marital status variable with the beneficiary variables that indicate who will inherit the estate if the individual dies intestate. As mentioned earlier, I expect that individuals will be more likely to write a will if other relatives inherit either exclusively or in conjunction with the deceased's wife because in these cases, potential testators are more likely to find the division dictated by intestate succession arbitrary. This prediction is not supported in the data. The marginal effects on these two types of families relative to those where a wife and children inherit are negative and statistically insignificant; if anything individuals with estates divided outside their immediate families are more likely to be intestate.[20] This result could arise if individuals in these types of families are less concerned about what happens to their assets because they care less about those they leave behind.

In column 3, I incorporate measures of literacy and religion. None of these variables is statistically significant indicating that these proxies for psychic costs do not appear to affect will writing. Alternatively religion and literacy may be poor proxies for psychic costs. One issue with this regression is that we are omitting wealth which is highly correlated with religion.

In column 4, I add a dummy indicating whether the deceased lived in a city. I find that city dwellers are 15% less likely to write wills, contrary to my predictions. This is not a wealth effect because city dwellers were on average wealthier than non-city residents. However, it may be a result of the low landholding by individuals in cities. Only 5% of city dwellers report that they are the landholder on their Census forms as

[20] These results are unchanged if we create a separate category for married women whose entire estate would go to her husband under intestate succession.

opposed to 72% of individuals outside of cities. This will be revisited in greater detail below.

The final column of Table 3 adds a variable measuring the natural log of the estate value to the regression. I find that a one percent increase in wealth increased the probability of having a will by seven percent. While the effect of wealth on will writing was indeterminate based on the theory, intuitively individuals with more to distribute may be expected to go to more trouble to distribute. This result does not appear to be driven by their being a threshold below which no one writes a will. Fifty percent of individuals in the bottom wealth decile have a will and the probability of having a will is increasing in wealth for individuals above the bottom decline. In this final column, the effect of living in a city becomes larger. This indicates that the earlier result was muted by the absence of wealth.

I further investigate these results by maintaining a subset of variables and adding alternative measures of family structure in Table 4. I look at whether having children, their ages, or whether any or all are minors affects will writing. None of these measures of family structure is statistically significant. Similar to the measures of beneficiaries, characteristics of children do not influence will writing.

In Table 5, we incorporate an additional set of wealth and income measures. In column 2, we add in two measures of wealth traditionally used in the economic history literature – whether the household contains servants and the number of housepoints (similar to the common measure of the number of windows). Neither is statistically significant, although the coefficient on servants is positive and large. Both of these are highly correlated with wealth, which is already controlled in the regression. In column 4 we add information about landholding in the form of indicators for whether the deceased is the holder of the land where he lives, and an indicator for whether the landholder information is blank. Relative to individuals who live on the holdings of others, landholders are 9% more likely to write wills. Because the value of most land (the value of real property is excluded) is incorporated into the measure of wealth, this result indicates that the type of wealth influences will-writing. We may find this higher propensity to write a will among landholders because the assets of non-landowners may have been more liquid and easier to split among beneficiaries. Landholders may have

had more concern with giving a single beneficiary a sizeable enough farm to support a family and may have been concerned with which child inherited the holding.

In columns (5)-(9) we add the various measures related to the occupation of the deceased as detailed in the previous section. None of the occupational grouping or scores has any predictive power of the probability of writing a will controlling for wealth.

In Table 6, I incorporate the indicators for households where I expect individuals to be influenced by exchange. In column 2, I add the dummy indicating whether an individual lived with one prime aged child prior to death. In column 3, I add the indicator for individuals who were enumerated outside their family of origin. In column 4, I incorporate the indicator for individuals with no obvious income source based on the occupation reported to the Census or in the Calendars. For the first and the last indicators of exchange, the point estimates are large and positive and the effect on will writing of having no obvious source of income is statistically significant. This finding is consistent with those more dependent on others in their last years being motivated by exchange in deciding to distribute their assets after death. I do not find that living outside ones family of origin influences the probability of having a will. The point estimate here is negative in keeping with the finding that individuals whose estates devolve to individuals outside their immediate family appear to be less likely to write wills.

To investigate these results further, I look at the determinants of will writing for six separate sub-population groups: men and women, Protestants and Catholics, and land holders and non-land owners. I do this separately for each measure of exchange and present the results of separate regressions for each group in Tables 7-9.

A number of noteworthy patterns emerge from these tables. First, we observe in Table 8 that the point estimate of the effect of living outside of ones family of origin on will writing is negative for all groups and statistically insignificant. Most of these individuals live with siblings. We find no evidence that these individuals write a will to compensate their sibling for giving them a place to live. The negative relationship we find could be consistent with altruism if these individual place a low weight on the utility of others generally and as a result do not care about who receives their assets. When we look at the other two measures of exchange, we find that these exchange motivations are stronger for women and non-land owners than their counterparts. Women living with a

prime age child are 28% more likely to write a will than other women while women with no obvious income sources are (statistically insignificantly) 15% more likely to write a will. Among non-landholders and those where the name of the landholder is not given, those living with a prime aged child are 31% more likely to write a will and those with no income source are 21% more likely to write a will.

Women and non-landholders were disadvantaged relative to others (as were Catholics) and as a result more likely to be dependent on others for support during old age, so it is reassuring that they appear to be more motivated by exchange. Landholders were unlikely to be dependent in old age because their holding provided enough food and income to support them. Even if a landholder was too old to work the land, he could guarantee some minimum level of sustenance.

I also find that the role of landholding in leading to will writing was concentrated among Protestants and men. The value of the land owned by these two advantaged population groups, even controlling for wealth, was probably higher. These groups may also have owned real property not counted in our wealth measure. Finally, the influence of age on will writing was positive and statistically significant for all of the groups. I find a curious result that women who could read, but could not write were much more likely to have wills. [21]

One potential explanation for the differences between men and women is that they were differentially selected into the sample. In the next section, we investigate sample selection and its potential influence on these findings.

VII. Sample Selection

Our sample consists of all individuals who died between April 1901 and November 1905 in County Fermanagh and whose estates received a grant of administration or probate between May 1901 and December 1905 and who we were able to find in the 1901 Census.

[21] I looked at the determinants of literacy and found that wealthier individuals, younger individuals, and Protestants were more likely to be literate. This indicates that this variable is correctly specified.

As a result, the sample is selected from the population of individuals who died in Fermanagh between March 1901 and 1905 in two manners. First, there are individuals who we are unable to find in the 1901 Census and second there are those who died between the target dates who did not have their estates go through administration or probate prior to December 31, 1905 either because their estates did not go through administration or probate at all or because the legal process occurred after the end of 1905. We discuss each of these sources of selection in turn.

Our first issue is that we are unable to find some individuals in the 1901 Census. As mentioned earlier, I am able to match over 90% of those individuals in the Calendars. This is an impressive match rate. The principal way that we are able to match individuals is through townland and name. Townlands are very small. The median townland of the deceased had only 9 families. In some cases there is not an exact and unique match between the townland and name in the Calendar and the same information in the Census. I address this problem in a myriad of ways.

In a number of cases there is more than one individual in the townland with the same name as the deceased. Often most individuals in a townland have the same surname – probably the result of farm division by common ancestors. First names are also fairly well concentrated – among the deceased in my sample nearly 30% were named James, John, Patrick, Thomas, or William. In many of the cases where more than one person has the same name, I am able to find the deceased based on ancillary information provided in the calendars – such as occupation or the name of and relationship to the person who was granted probate or administration. Also, sometimes I am unable to find the deceased in the Census, but can clearly find the deceased's family in the Census. In these cases, I use the information on the remainder of the family members – these individuals are included among the matched. [22] If I cannot find the deceased or his family in the given townland, the availability of an index allows me to look for individuals with that name in other townlands. I occasionally will find the deceased in a townland adjacent to the one reported in the Calendar. Given the small and rural nature of most townlands, the boundaries were probably pretty uncertain.

[22] In 51 cases there is more than one individual with the same name in the townland. In seven cases, I can find the deceased's family, but the deceased is absent.

Of the 531 individuals from the calendars, 38 cannot be found in the 1901 Census Microfilm using any of these techniques. Among those that we are unable to match, we can think of a couple possible reasons why we cannot find them in the census. We would be unable to match someone if they had changed their name or recorded it drastically differently in the two records, if they had been absent on the Census date, or if they moved between the Census and their death, especially if they had previously lived outside Fermanagh.

Looking more closely at the unmatched sample, the principal phenomenon that seems to be at work is that some people must have moved to the location reported in the index after the Census, or been otherwise absent on the Census date. We are often able to find the townland listed by an individual, but not find a record of them or their family within the townland. This may be due to occupation such as an itinerant priest or a roving reporter (occupations among the unmatched) or to a family move. The fact that we are able to match such a high percentage speaks to the generally low mobility of the population within Ireland – according to the Census 86 percent of individuals enumerated in the whole of Ireland lived in the county where they were born on the Census date.[23]

The lack of a perfect match brings up the question of potential selection bias. We need to be concerned if those individuals that we are not able to match are somehow systematically different in a manner relevant to their estate distribution decisions. Given the high match rate, selection is unlikely to be a major issue, nonetheless it is a concern. To look more systematically at sample selection, I predict the probability of being matched in the Census based on the information available in the Calendars. Fortunately, the Calendars are a rich data source. I include information on gender, occupation, estate value, whether the deceased was intestate or not, whether estate administration occurred in Dublin or Armagh, whether the individual lived in the city of Enniskillen, and the amount of time between the Census and the individual's death. Nearly all women included in the sample are labeled as Widows or Spinsters in the Calendars. While according to the Census definitions, spinsters are involved in an industrial occupation, in the context of the Calendars this appears to designate a never married woman. As a

[23] Ireland is know for its high out migration rates, but these individuals would have died outside of Ireland as well.

result, we include a spinster indicator in the regression and do not include spinster as an industrial occupation.

Marginal effects from a Probit model predicting matching are presented in Table 10. We present the results for the total population in Column 1 and then separately for males and females in Columns 2 and 3. The occupational categories are based on the Census occupational definitions; results using occupations based on social status yield a consistent result. For the entire population, the only attribute that predicts matching is occupation. Farmers are 15 percent more likely to be matched than managers and professionals (the omitted category). Given that farmers are tied to the land, and that the Census date of March 31 is at the start of the planting season, it is not surprising that they are easy to find. I also find that those with industrial occupations are easier to match. This may demonstrate increased geographic mobility among managers and professionals (the omitted occupational category).

When we look separately by sex, we find that no attributes predict matching among women while occupation, residence in Enniskillen, and having a will probated in Dublin predict matching among men. The marginal effect for farmers is far larger than the other estimates. Residence in Enniskillen may influence the results because Census enumeration had better coverage in an urban area or because individuals in Enniskillen were more likely to reside in the same town according to the Calendars and the Census. We are 4% more likely to match individuals with estates probated or administrated in Dublin than individuals probated or administrated in Armagh. The registry in Dublin was the principal registry while the Armagh registry was the district registry covering Fermanagh and nearby counties. There was no administrative or geographic reason to prefer one registry over another, but the Dublin registry may have been more prestigious and may have attracted more established families who would also have been easier to find in the Census.

The variable measuring having a will is not significantly different from zero and the point estimate is small. We also estimate the probability of having a will based on the variables observed in the Calendars including an indicator of whether the individual was matched to the Census. Being matched to the Census has a small and statistically insignificant effect on will writing. Combined, these results indicate that selection into

the matched sample is unlikely to influence the results. As a result, we do not adjust the sample for selection.

While we have a great deal of information concerning those individuals who we are unable to match to the Census, we have very little information concerning individuals whose died, but who did not have estates go through administration or probate. The principal reason to be excluded from these legal channels would be the absence of any possessions of value upon death. In general, in order for administration or probate to occur someone would need to initiate the process for the transmission of assets and desire the assets of the deceased. Individuals who possessed nothing of value would not have their death lead to estate distribution. Some of these individuals would have passed their possessions to their heirs via intervivos transmission, and others would have had nothing to begin with. Therefore, our results characterize the will writing decision among individuals with assets at death. Presumably individuals without assets would not have wills because they have nothing to gain from changing the distribution of their minimal estates. Moreover, the cost of writing a will may exceed their assets.

The total lack of assets would particularly characterize two groups among the deceased -- dependent children and married women. Dependent children would not have accumulated any possessions – the property of children under 21 was in practice the property of their parents. The property rights and holdings of married women were also very limited. The personal property held by women who were married in1882 or earlier was the "absolute property of the husband" with some minor exceptions. (British Almanac, 1901) Women married after 1883 could more easily own property independent of their husbands, but this was limited in practice except for among women in the upper reaches of society.

In order to get a better picture of the potential nature of selection into the Probate and Administration processes from the overall deceased population, we perform some simple calculations based on vital statistics data. (Mitchell 1962) We use death rates by age group and gender for all of Ireland, to generate approximations of deaths by age group and year in Femanagh. We then compare these numbers to our sample.

The county of Fermanagh contained 65,430 people according to the 1901 census. If we assume that the population was divided by age group and gender in the same

manner as was Ireland as a whole, we arrive at the population by gender by age category estimates presented in the first column of Table 11 for men and Table 12 for women. If we further assume that the annual death rate, by age group and gender were the same at those prevailing in Ireland in 1900-1902, we can generate estimates of the number of people who would have died, by age group and gender, per year. Those estimates are presented in the third column of Table 11 and Table 12.

Our sample covers people who died between April 5, 1901 and Nov 13, 1905. Because of the timing of the census, we do not have people for all of 1901. Because some people have their estates probated quite a while after their deaths, and we only look at the calendars through the end of 1905, we do not have many people who died in 1905. As a result, we have three full years of data 1902-1904. We probably have a nearly complete sample of individuals who died between 1902 and 1904 because approximately 85% of estates are probated within a year of death indicating we would have observed in the calendars through the end of 1905 nearly everyone who died through the end of 1904.[24] Assuming that we have three years of data, the total deaths would be about three times the annual death rates, again presented in Tables 11 and 12, column 4. Across both genders, this leads to a countywide three year death total of 3582 people

For deaths between 1902 and 1904, we have a matched deceased sample of 372 individuals. This indicates that we are capturing about 10% of individuals who died. This 10% is not evenly split across age and gender groupings. We present the percent of deceased people captured in our sample by age and gender in column 5 of the two tables. These representation rates are graphed by age group and gender in Figure 6. This indicates that we are capturing 6% of women aged 25 and over and 24% of men. The pattern of these rates is consistent with the earlier discussion with no children represented and low representation of women. The representation of men is also fairly low indicating that property ownership at death was far from universal, even among prime aged males.

We could potentially adjust for selection by weighting individuals in a manner inversely proportional to their representation in our sample. In that way, we could generate a sample that represented the entire deceased population. However, doing so

[24] According to the Almanac, executors were liable for penalties if probate was not taken out within six months of the testator's death.

would not be accurate because individuals are not randomly selected from their age and sex categories, but rather are selected based on their asset value and we have no information on the asset value of individuals who died but did not have estates (aside from a general assumption that it is low). Rather than trying to correct for this issue, we conclude that our sample represents all deceased individuals with assets rather than all deceased individuals.

The third source of selection involves the absence of individuals who died prior to December 1905, who had their estates go through probate or administration, but after December 1905. In other words, we are missing some individuals who have a lengthy delay between death and probate. The date of probate or administration would depend on the executors or administrators submitting the necessary paperwork to the probate registry and the registry being satisfied enough with the information provided to grant probate or administration. We can get some idea of why some individuals might be excluded from the sample by looking at the determinants of the timing between death and probate within our sample.

In Table 13 we present results from regressions predicting the number of days between probate and death. In the first column, we include basic information about the deceased, in the second column we add information about beneficiaries, and in the third column we add more detailed information about the number of sons of the deceased. Our discussion of the results focuses on the final column of the table. We find that probate is faster for wealthier individuals. This result is consistent with the time value of money, with beneficiaries more eager to get their hands on larger estates. We also find that controlling for wealth, land ownership delays the issuing of a grant. Land transmission likely required more extensive paperwork and valuation. Finally, we find that the number of sons increases the time until probate. In particular, families with two sons received a grant over two months later than families with only one son (the omitted category). If we look further, we find that this effect is strongest for estates without wills. The results indicate that estates with multiple sons may be more contentious and it may take the sons, who both lived with their parent on the Census date, more time to generate the consensus needed to apply for probate. Alternately, households with sons at

home may be less eager to divide the assets and may be more able to continue to function without estate division.

We can partly compensate for the lack of observations with lengthy delays between death and probate, by re-weighting the sample, and giving more weight to those with longer days between death and grant issuance. Doing so does not change any of the substantive results.

VII. Implications

We find that the main determinants of having a will at death are age at death and wealth. The result that age influences will writing corresponds to the notion that an individual does not need a will until after he is dead. As a result, individuals who think that they are going to die in the near future, such as the old, are more likely to have a will. The effect of wealth on will writing is indeterminate (or negative under reasonable assumptions) according to the altruism model, but the strong positive effects we find correspond to other theories. For example, we would generate this result if individuals get no utility from assets distributed by intestate succession, but some benefit from assets distributed deliberately by will. Wealthier individuals may also have more specific items that they would like to distribute to certain beneficiaries (e.g. I give my daughter Molly my china). We also see some indication that the type of assets held by an individual influences will writing. In particular, landholding increases the probability of writing a will for men and Protestants.

We also find some evidence of exchange motives for women and non-land owners. In particular, we find that women and non-land owners who live with a prime aged child or who do not report an income generating occupation are more likely to write a will. This supports exchange because these individuals would have been dependent on others for financial support during their waning years and would need a will to compensate these others for the support given and services provided.

We find little support for a more sophisticated model where an individual compares his utility under testacy and intestate succession and optimizes. This model leads to the prediction than beneficiaries and living arrangement should matter. This prediction is not supported in the data. The beneficiary characteristics that we are able to

glean from the Census manuscripts have no effect on will writing. Instead it is the characteristics of the dying himself and his assets that influence the decision to write a will.

Bibliography

Andreioni, James "Impure Altruism and Donations to Public Goods: A Theory of Warm-Glow Giving." Economic Journal, v. 100, June 1990, 464-477.

Bernheim, B. Douglas; Andrei Shleifer; Lawrence H. Summers "The Strategic Bequest Motive," *Journal of Political Economy*, Vol. 93, No. 6, (Dec.., 1985).

Bernheim, B. Douglas and Sergei Severinov, "Bequests as Signals: An Explanation for the Equal Division Puzzle," *Journal of Political Economy,* vol. 111 (2003)

"The British Almanac of the Society for the Diffusion of Useful Knowledge: 1901" Society for the Diffusion of Useful Knowledge, London: Published for the Stationers' Co. by Cassell, 1901.

Criminal and Judicial Statistics, Ireland, 1894, Dublin: Printed for Her Majesty's Stationery Office, By Alexander Thom. & Co, (Limited), 1895.

Guinnane, Timothy, *The Vanishing Irish: Households, Migration, and the Rural Economy in Ireland, 1850-1914.* Princeton, NJ: Princeton University Press, 1997.

Judicial Statistics for Ireland, for 1902, British Parliamentary Sessional Papers, 1903.

Judicial Statistics for Ireland, for 1903, British Parliamentary Sessional Papers, 1904.

Kennedy, Liam, "Farm Succession in Modern Ireland: Elements of a Theory of Inheritance" *Economic History Review*, XLIV, 3(1991), pp. 477-499.

McGranahan, Leslie "Charity and the Bequest Motive: Evidence from Seventeenth-Century Wills," *Journal of Political Economy*, University of Chicago Press, vol. 108(6), pages 1270-1291, December, 2000.

Mitchell, B.R. with Phyllis Deane, *Abstract of British Historical Statistics.* Cambridge: Cambridge University Press, 1962.

Norton, Edward and Donald Taylor, "Equal Division of Estates and the Exchange Motive," *Journal of Aging and Social Policy*, Volume 17, Issue 1, 2005.

Preston, Samuel H. and Michael Haines, *Fatal Years – Child Mortality in Late Nineteenth Century America,* Princeton: Princeton University Press, 1991.

Seanad Eirann, 1965, Seanad Eireann- Volume 59 – 14 July 1965 Private Business. – Succession Bill, 1965: Second Stage. Available on the WWW at http://www.oireachtas-debates.gov.ie/S/0059/S.0059.196507140007.html.

U.S. Census Bureau, 2003, “Table AVG1. Average Number of People per Household, by Race and Hispanic Origin, Marital Status, Age, and Education of Householder: March 2002.” Internet release date: June 12, 2003.

U.S. Census Bureau, 2005, “Wealth and Asset Ownership,” available on the Internet at www.census.gov/hhes/www/wwealth/wealth.html. Last revised: January 28, 2005. Accessed August 28, 2006.

U.S. Department of Health and Human Services, 2006, “Deaths: Final Data for 2003,” National Vital Statistics Reports, Vol. 54, No. 13, April 19, 2006. Available on the Internet at http://www.cdc.gov/nchs/data/nvsr/nvsr54/nvsr54_13.pdf.

Wilhelm, Mark O, 1996. "Bequest Behavior and the Effect of Heirs' Earnings: Testing the Altruistic Model of Bequests," American Economic Review, American Economic Association, vol. 86(4), pages 874-92, September.

Table 1: Intestate Succession Laws, Ireland 1901

Personal Property (Chattels)

- Married Woman: All to husband
- Widow and Kids: First £500 and ½ of remainder to wife, ½ of remainder split among kids
- Kids Only: Evenly distributed among them
- Widow No Kids: First £500 and half of remainder to wife, ½ as under no widow or kids
- No Widow or Kids: All to father; no Father to mother and siblings evenly
- No Next of Kin: To state

Table 2: Variable Means by Testation Status

	Whole Sample		Intestate		Probated Will		Administrated Will	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Estate Variables								
Testate	0.587	0.493						
Intestate	0.340	0.474						
Administration With Will	0.073	0.260						
Days Death to Probate/Administration	181.488	207.309	174.417	227.919	179.824	198.463	227.889	172.610
Beneficiary Info								
Other Relatives Inherit	0.334	0.472	0.387	0.488	0.317	0.466	0.194	0.401
Wife and Other Relatives Inherit	0.136	0.343	0.167	0.374	0.114	0.318	0.167	0.378
Wife and Children Inherit	0.332	0.471	0.298	0.459	0.334	0.473	0.472	0.506
Children Inherit	0.198	0.399	0.149	0.357	0.234	0.424	0.167	0.378
Age of Youngest Child	22.633	12.613	17.891	11.542	24.849	12.734	23.261	11.845
Age of Oldest Child	28.251	11.330	23.981	10.606	30.210	11.200	28.913	11.441
Has Any Children	0.522	0.500	0.440	0.498	0.559	0.497	0.639	0.487
All Children 16 or Under	0.077	0.267	0.089	0.286	0.069	0.254	0.083	0.280
Has a Child 16 or Under	0.170	0.376	0.202	0.403	0.155	0.363	0.139	0.351
Number of Children	1.322	1.743	1.190	1.699	1.383	1.804	1.472	1.404
Literacy/Culture/Religion								
Roman Catholic	0.423	0.495	0.452	0.499	0.403	0.491	0.444	0.504
Protestant Episcopalian	0.415	0.493	0.393	0.490	0.431	0.496	0.389	0.494
Other Protestant	0.162	0.369	0.155	0.363	0.166	0.372	0.167	0.378
Can Read and Write	0.818	0.386	0.857	0.351	0.803	0.398	0.750	0.439
Can Read but Cannot Write	0.093	0.291	0.071	0.258	0.103	0.305	0.111	0.319
Community								
Deceased Lived in a City	0.168	0.374	0.238	0.427	0.131	0.338	0.139	0.351
Wealth								
Natural Log of Estate Value	4.959	1.304	4.700	1.283	5.153	1.268	4.599	1.432
Household Contains Servants	0.348	0.477	0.292	0.456	0.397	0.490	0.222	0.422
Census Housepoints	7.831	4.497	7.527	3.363	8.024	5.148	7.667	3.260
Lives on Own Holding	0.609	0.489	0.485	0.501	0.666	0.473	0.722	0.454
Landholder Blank	0.162	0.369	0.216	0.412	0.128	0.334	0.194	0.401
Does Not Live on Own Holding	0.229	0.421	0.299	0.459	0.207	0.406	0.083	0.280

Variable name in italics if those with probated will significantly different from the intestate at 95% level
Variable name in bold if those with administrated will significantly different from the intestate at 95% level
Variable name double underlined if probated will significantly different from administrated will at 95% level

Table 2: Variable Means by Testation Status, Continued

	Whole Sample		Intestate		Probated Will		Administrated Will	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Occupation and Occupation Scores								
Census Professional or Commercial Worker	0.047	0.211	0.054	0.226	0.041	0.200	0.056	0.232
Census Agricultural Worker	0.650	0.478	0.577	0.495	0.693	0.462	0.639	0.487
Census Domestic or Industrial Worker	0.107	0.310	0.173	0.379	0.066	0.248	0.139	0.351
Census Class of Worker Unclear	0.196	0.398	0.196	0.398	0.200	0.401	0.167	0.378
Class Professional / Shopkeeper	0.162	0.369	0.196	0.398	0.155	0.363	0.083	0.280
Class Farmer	0.717	0.451	0.655	0.477	0.752	0.433	0.722	0.454
Class Skilled Craft	0.057	0.231	0.071	0.258	0.041	0.200	0.111	0.319
Class Unskilled	0.030	0.172	0.048	0.214	0.024	0.154	0.000	0.000
Class Unknown	0.034	0.182	0.030	0.170	0.028	0.164	0.083	0.280
Haines Income Score /100	3.674	2.419	3.988	2.827	3.506	2.186	3.578	2.052
IPUMS Occupation Status Score	21.772	54.147	28.781	78.740	18.557	37.061	15.153	10.102
IPUMS Occupation Income Score	14.667	9.364	15.560	10.596	14.219	8.805	14.139	7.353
No Market Occupation Given for Scores	0.099	0.299	0.090	0.287	0.100	0.301	0.139	0.351
Indepenent Wealth for Scores	0.024	0.154	0.030	0.171	0.024	0.154	0.000	0.000
Demographics								
Age at Death	64.714	15.170	58.276	15.128	68.219	14.239	66.516	13.090
Male	0.777	0.416	0.768	0.423	0.783	0.413	0.778	0.422
Never Married	0.283	0.451	0.351	0.479	0.255	0.437	0.194	0.401
Married	0.468	0.499	0.464	0.500	0.448	0.498	0.639	0.487
Widowed	0.249	0.433	0.185	0.389	0.297	0.458	0.167	0.378
Exchange Indicators								
Deceased is Parent of Head or Head/Wife with Prime Aged Child	0.097	0.296	0.042	0.200	0.134	0.342	0.056	0.232
Deceased Lives Outside Family of Origin	0.063	0.243	0.095	0.294	0.052	0.222	0.000	0.000
No Obvious Income Source	0.156	0.363	0.131	0.338	0.166	0.372	0.194	0.401
Sample Size	494		168		290		36	

Variable name in italics if those with probated will significantly different from the intestate at 95% level
Variable name in bold if those with administrated will significantly different from the intestate at 95% level
Variable name double underlined if probated will significantly different from administrated will at 95% level

Table 3: Determinants of Will Writing

	(1)	(2)	(3)	(4)	(5)
	Demographics	Beneficiaries	Literacy / Culture / Religion	Environment	Wealth
Age at Death	0.010***	0.010***	0.009***	0.009***	0.009***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Dummy=1 if Deceased is Male	0.032	0.019	0.025	0.001	-0.024
	(0.056)	(0.055)	(0.056)	(0.056)	(0.056)
Dummy=1 if Married	-0.026				
	(0.060)				
Dummy=1 if Never Married	-0.047				
	(0.066)				
Children Inherit		-0.015	-0.015	-0.016	-0.020
		(0.068)	(0.068)	(0.068)	(0.069)
Other Relatives Inherit		-0.046	-0.050	-0.053	-0.052
		(0.056)	(0.057)	(0.057)	(0.058)
Wife and Other Relatives Inherit		-0.106	-0.105	-0.093	-0.086
		(0.074)	(0.074)	(0.074)	(0.074)
Other Protestant			0.040	0.047	0.011
			(0.064)	(0.063)	(0.067)
Protestant Episcopalian			0.027	0.026	-0.010
			(0.049)	(0.049)	(0.050)
Dummy=1 if Can Read and Write			-0.067	-0.055	-0.095
			(0.077)	(0.078)	(0.076)
Dummy=1 if Can Read but Cannot Write			0.049	0.053	0.052
			(0.101)	(0.101)	(0.101)
Dummy=1 if Deceased Lived in a City				-0.148**	-0.211***
				(0.063)	(0.066)
Log of Estate Value					0.074***
					(0.019)
Observations	494	494	494	494	493

Standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table 4: Characteristics of Children

	(1)	(2)	(3)	(4)	(5)	(6)
	Basic Regression	Age of Children	Number of Children	Any Minor Children	All Minor Children	Any Children
Age at Death	0.009***	0.010***	0.009***	0.009***	0.010***	0.009***
	(0.001)	(0.003)	(0.001)	(0.002)	(0.002)	(0.002)
Dummy=1 if Can Read and Write	-0.092	-0.122	-0.095	-0.092	-0.100	-0.095
	(0.075)	(0.093)	(0.075)	(0.075)	(0.074)	(0.075)
Dummy=1 if Can Read but Cannot Write	0.055	-0.050	0.053	0.054	0.053	0.054
	(0.100)	(0.160)	(0.100)	(0.100)	(0.101)	(0.100)
Dummy=1 if Deceased Lived in a City	-0.210***	-0.235**	-0.208***	-0.210***	-0.209***	-0.207***
	(0.064)	(0.093)	(0.064)	(0.064)	(0.063)	(0.064)
Log of Estate Value	0.073***	0.080***	0.071***	0.073***	0.072***	0.072***
	(0.019)	(0.026)	(0.019)	(0.019)	(0.019)	(0.019)
Age of Youngest Child		0.005				
		(0.005)				
Age of Oldest Child		-0.004				
		(0.006)				
Has Any Children						0.052
						(0.045)
All Children 16 and Under					0.107	
					(0.072)	
Has a Child 16 or Under				-0.001		
				(0.059)		
Number of Children			0.010			
			(0.013)			
Observations	493	259	493	493	493	493

Standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table 5: Indicators of Wealth and Income

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Basic Regression	Servants / Housing Characteristics	Land Holding	Census Class of Worker	Social Class of Worker	IPUMS Income Score	IPUMS Status Score	Haines Income Score
Age at Death	0.009***	0.010***	0.009***	0.009***	0.009***	0.009***	0.009***	0.009***
	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Dummy=1 if Can Read and Write	-0.092	-0.098	-0.100	-0.106	-0.101	-0.102	-0.098	-0.098
	(0.075)	(0.074)	(0.074)	(0.074)	(0.074)	(0.074)	(0.074)	(0.074)
Dummy=1 if Can Read but Cannot Write	0.055	0.060	0.054	0.047	0.054	0.048	0.050	0.050
	(0.100)	(0.099)	(0.100)	(0.102)	(0.100)	(0.101)	(0.101)	(0.101)
Dummy=1 if Deceased Lived in a City	-0.210***	-0.217***	-0.192*	-0.185	-0.210*	-0.197	-0.166	-0.168
	(0.064)	(0.067)	(0.112)	(0.119)	(0.123)	(0.122)	(0.113)	(0.120)
Log of Estate Value	0.073***	0.063***	0.056***	0.055***	0.056***	0.058***	0.060***	0.058***
	(0.019)	(0.020)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)
Dummy=1 if Household contains Servants		0.065	0.068	0.067	0.074	0.064	0.064	0.065
		(0.050)	(0.050)	(0.050)	(0.051)	(0.051)	(0.051)	(0.051)
Census Housepoints		0.004	0.005	0.004	0.002	0.004	0.006	0.005
		(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Dummy=1 if Deceased is Landholder			0.092	0.101	0.108*	0.117**	0.107*	0.112*
			(0.056)	(0.065)	(0.061)	(0.060)	(0.060)	(0.060)
Dummy=1 if Landholder Blank			0.047	0.066	0.034	0.059	0.056	0.059
			(0.099)	(0.099)	(0.103)	(0.099)	(0.099)	(0.098)
No Market Occupation Given						0.115	0.071	0.073
						(0.087)	(0.075)	(0.097)
Occupation -- Independent Wealth						-0.051	-0.127	-0.120
						(0.179)	(0.163)	(0.189)
Haines Income Score/100								-0.005
								(0.014)
Occupation Status Score							-0.001	
							(0.001)	
Occupation Income Score						0.001		
						(0.004)		

Table 5: Indicators of Wealth and Income, Continued

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Basic Regression	Servants / Housing Characteristics	Land Holding	Census Class of Worker	Social Class of Worker	IPUMS Income Score	IPUMS Status Score	Haines Income Score
Lower Professional / Shopkeeper					-0.106			
					(0.123)			
Skilled Craft					-0.022			
					(0.132)			
Unskilled					-0.090			
					(0.167)			
Farmer					-0.096			
					(0.100)			
No Occupational Info.					-0.013			
					(0.146)			
Agricultural Worker				-0.031				
				(0.121)				
Class Worker Unclear (e.g. Wife)				0.010				
				(0.118)				
Domestic or Industrial Worker				-0.120				
				(0.134)				
Observations	493	489	489	489	489	488	488	488

Standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table 6: Indicators of Exchange

	(1)	(2)	(3)	(4)
	Basic Regression	Exchange -- Lives With Prime Aged Child	Exchange -- Not Lineal to Head	Exchange -- No Income Source
Age at Death	0.009***	0.009***	0.009***	0.009***
	(0.002)	(0.002)	(0.002)	(0.002)
Dummy=1 if Can Read and Write	-0.090	-0.087	-0.085	-0.102
	(0.075)	(0.076)	(0.076)	(0.075)
Dummy=1 if Can Read but Cannot Write	0.049	0.047	0.053	0.036
	(0.101)	(0.102)	(0.100)	(0.104)
Dummy=1 if Deceased Lived in a City	-0.184*	-0.187*	-0.188*	-0.195*
	(0.105)	(0.106)	(0.106)	(0.106)
Log of Estate Value	0.066***	0.067***	0.066***	0.071***
	(0.019)	(0.019)	(0.019)	(0.019)
Dummy=1 if Deceased is Landholder	0.085	0.090	0.065	0.146**
	(0.056)	(0.056)	(0.060)	(0.063)
Dummy=1 if Landholder Blank	0.042	0.047	0.030	0.081
	(0.095)	(0.095)	(0.098)	(0.093)
Deceased is Parent of Head, or Head/Wife with Prime Aged Child		0.111		
		(0.074)		
No Obvious Income Source				0.143**
				(0.058)
Deceased Lives Outside Family of Origin			-0.083	
			(0.099)	
Observations	492	492	492	492

Standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table 7: Determinants of Will Writing by Group, Deceased is Parent of Head

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Whole Population	Men Only	Women Only	Protestants	Catholics	Landholders	Non-Landholders/ Blank
Age at Death	0.009***	0.009***	0.007**	0.009***	0.009***	0.010***	0.007***
	(0.002)	(0.002)	(0.004)	(0.002)	(0.003)	(0.002)	(0.002)
Dummy=1 if Deceased Lived in a City	-0.187*	-0.267**	-0.165	-0.149	-0.242	-0.077	-0.187
	(0.106)	(0.132)	(0.190)	(0.154)	(0.152)	(0.244)	(0.116)
Log of Estate Value	0.067***	0.080***	0.055	0.050**	0.103***	0.082***	0.048
	(0.019)	(0.022)	(0.042)	(0.023)	(0.034)	(0.024)	(0.030)
Dummy=1 if Can Read and Write	-0.087	-0.112	0.001	-0.089	-0.124	-0.097	-0.069
	(0.076)	(0.084)	(0.175)	(0.131)	(0.097)	(0.081)	(0.141)
Dummy=1 if Can Read but Cannot Write	0.047	-0.117	0.347***	-0.180	0.135	0.000	0.110
	(0.102)	(0.139)	(0.090)	(0.224)	(0.117)	(0.123)	(0.177)
Dummy=1 if Deceased is Landholder	0.090	0.138**	-0.097	0.167**	0.002		
	(0.056)	(0.069)	(0.121)	(0.072)	(0.090)		
Dummy=1 if Landholder Blank	0.047	0.066	0.067	0.013	0.137		0.079
	(0.095)	(0.113)	(0.171)	(0.138)	(0.130)		(0.114)
Deceased is Parent of Head, or Head/Wife with Prime Aged Child	0.111	0.044	0.279***	0.133	0.057	-0.020	0.314***
	(0.074)	(0.094)	(0.101)	(0.093)	(0.124)	(0.103)	(0.105)
Observations	492	382	110	283	209	299	193

Standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table 8: Determinants of Will Writing by Group, Deceased Lives Outside Family of Origin

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Whole Population	Men Only	Women Only	Protestants	Catholics	Landholders	Non-Landholders/ Blank
Age at Death	0.009***	0.009***	0.009***	0.010***	0.009***	0.010***	0.009***
	(0.002)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.002)
Dummy=1 if Deceased Lived in a City	-0.188*	-0.267**	-0.141	-0.147	-0.249	-0.074	-0.189
	(0.106)	(0.133)	(0.195)	(0.153)	(0.154)	(0.258)	(0.116)
Log of Estate Value	0.066***	0.080***	0.039	0.051**	0.104***	0.082***	0.049*
	(0.019)	(0.022)	(0.043)	(0.024)	(0.034)	(0.024)	(0.030)
Dummy=1 if Can Read and Write	-0.085	-0.113	0.040	-0.094	-0.124	-0.097	-0.063
	(0.076)	(0.083)	(0.176)	(0.130)	(0.097)	(0.082)	(0.140)
Dummy=1 if Can Read but Cannot Write	0.053	-0.117	0.365***	-0.196	0.146	0.000	0.131
	(0.100)	(0.139)	(0.085)	(0.222)	(0.115)	(0.124)	(0.171)
Dummy=1 if Deceased is Landholder	0.065	0.135*	-0.132	0.151*	-0.024		
	(0.060)	(0.078)	(0.124)	(0.079)	(0.094)		
Dummy=1 if Landholder Blank	0.030	0.065	0.040	-0.003	0.119		0.051
	(0.098)	(0.116)	(0.180)	(0.141)	(0.136)		(0.115)
Deceased Lives Outside Family of Origin	-0.083	-0.001	-0.264	-0.039	-0.160	-0.010	-0.100
	(0.099)	(0.123)	(0.166)	(0.114)	(0.188)	(0.337)	(0.107)
Observations	492	382	110	283	209	299	193

Standard errors in parentheses

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

Table 9: Determinants of Will Writing by Group, Deceased Has No Income Source

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Whole Population	Men Only	Women Only	Protestants	Catholics	Landholders	Non-Landholders/ Blank
Age at Death	0.009***	0.009***	0.009**	0.009***	0.008***	0.010***	0.007***
	(0.002)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.002)
Dummy=1 if Deceased Lived in a City	-0.195*	-0.264**	-0.125	-0.167	-0.244	-0.089	-0.185
	(0.106)	(0.132)	(0.188)	(0.156)	(0.153)	(0.248)	(0.117)
Log of Estate Value	0.071***	0.082***	0.045	0.053**	0.115***	0.082***	0.058*
	(0.019)	(0.022)	(0.043)	(0.024)	(0.035)	(0.024)	(0.031)
Dummy=1 if Can Read and Write	-0.102	-0.114	-0.051	-0.111	-0.135	-0.098	-0.122
	(0.075)	(0.083)	(0.167)	(0.126)	(0.097)	(0.081)	(0.137)
Dummy=1 if Can Read but Cannot Write	0.036	-0.111	0.321***	-0.215	0.127	-0.004	0.095
	(0.104)	(0.139)	(0.109)	(0.224)	(0.120)	(0.125)	(0.181)
Dummy=1 if Deceased is Landholder	0.146**	0.161**	-0.012	0.211**	0.072		
	(0.063)	(0.076)	(0.132)	(0.083)	(0.097)		
Dummy=1 if Landholder Blank	0.081	0.079	0.063	0.050	0.160		0.113
	(0.093)	(0.112)	(0.176)	(0.138)	(0.126)		(0.116)
No Obvious Income Source	0.143**	0.087	0.145	0.093	0.252***	0.048	0.207**
	(0.058)	(0.094)	(0.106)	(0.077)	(0.081)	(0.129)	(0.080)
Observations	492	382	110	283	209	299	193

Standard errors in parentheses

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

Table 10: Determinants of a Match to the Census

	(1)	(2)	(3)
	Whole Sample	Males Only	Females Only
Agricultural Occupation	0.153***	0.169**	
	(0.054)	(0.073)	
No Occupation or Occupation Uncertain (e.g. Widow)	0.036	0.023	
	(0.037)	(0.020)	
Commercial or Industrial Occupation	0.048***	0.033**	
	(0.018)	(0.015)	
Spinster	-0.017		-0.030
	(0.039)		(0.064)
Natural Log of Estate Value	0.008	0.004	0.019
	(0.008)	(0.007)	(0.022)
Deceased is Female	0.006		
	(0.036)		
Resided in Enniskillen	0.006	0.029*	-0.042
	(0.031)	(0.018)	(0.090)
Probate / Administration in Dublin	0.028	0.040**	-0.012
	(0.020)	(0.017)	(0.067)
Wrote Will	0.005	-0.007	0.063
	(0.020)	(0.018)	(0.065)
Years Between Census Date and Probate Date	0.002	0.004	-0.003
	(0.008)	(0.007)	(0.025)
Observations	530	404	126

Standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
Omitted Categories: Professional Occupation, Male, Residence Outside of Enniskillen, Probate in Armagh, Intestate

Table 11: Vital Statistics for Males, By Age

Age Group	Males	Death Rate per 1000	Deaths Per Year	Deaths in 3 Years	Number in Sample, 1902-1904	Representation
0-4	3299	39.4	130	390	0	0%
5-9	3352	3.9	13	39	0	0%
10-14	3437	2.9	10	30	0	0%
15-19	3449	4.8	17	51	1	2%
20-24	3189	7.1	23	69	1	1%
25-34	4709	9.0	42	126	11	9%
35-44	3431	10.6	36	108	19	18%
45-54	2854	15.6	45	135	41	30%
55-64	2483	29.5	73	219	69	32%
65-74	1413	63.1	89	267	67	25%
75-84	559	140.0	78	234	58	25%
85+	110	317.1	35	105	24	23%
Total	32285		591	1773	291	16%
Total 25 and up	15559		398	1194	289	24%

Table 12: Vital Statistics for Females, By Age

Age Group	Females	Death Rate per 1000	Deaths Per Year	Deaths in 3 Years	Number in Sample, 1902-1904	Representation
0-4	3198	35.0	112	336	0	0%
5-9	3265	4.8	16	48	0	0%
10-14	3308	3.9	13	39	0	0%
15-19	3490	6.0	21	63	0	0%
20-24	3330	6.6	22	66	1	2%
25-34	4926	8.6	42	126	0	0%
35-44	3654	10.8	39	117	7	6%
45-54	3214	14.9	48	144	11	8%
55-64	2671	29.6	79	237	25	11%
65-74	1388	67.2	93	279	16	6%
75-84	583	142.2	83	249	16	6%
85+	120	292.6	35	105	5	5%
Total	33147		603	1809	81	4%
Total 25-	16556		419	1257	80	6%

Table 13: Determinants of the Days Between Death and Grant of Probate or Administration

	(1)	(2)	(3)
	Determinants of Days Until Grant	Adding Beneficiary Info	Number of Sons
Log of Estate Value	-12.642	-15.550**	-15.182*
	(7.825)	(7.760)	(7.759)
Age at Death	0.428	0.091	0.079
	(0.630)	(0.654)	(0.654)
Probated Will	-12.104	-17.280	-15.118
	(21.052)	(20.625)	(20.624)
Administrated Will	20.088	20.872	26.051
	(37.397)	(36.722)	(36.782)
Dummy=1 if Deceased is Male	-40.093*	-44.410*	-45.409*
	(22.788)	(23.104)	(23.135)
Dummy=1 if Household contains Servants	-28.035	-13.911	-11.720
	(20.341)	(20.234)	(20.293)
Dummy=1 if Can Read and Write	32.510	27.497	27.537
	(32.356)	(31.728)	(31.932)
Dummy=1 if Can Read but Cannot Write	-18.268	-26.252	-30.600
	(42.259)	(41.511)	(41.708)
Dummy=1 if Deceased is Landholder	104.355***	82.971***	81.881***
	(23.695)	(23.947)	(23.939)
Dummy=1 if Landholder Blank	13.858	-9.687	-15.932
	(42.729)	(42.487)	(42.589)
Dummy=1 if Deceased Lived in a City	-58.039	-42.426	-37.421
	(41.441)	(40.819)	(40.890)
Children Inherit		51.835*	42.302
		(31.298)	(38.249)
Wife and Children Inherit		41.374	29.987
		(31.764)	(38.438)
Wife and Other Relatives Inherit		-21.341	-21.803
		(29.249)	(29.226)
Number of Sons		34.035***	
		(12.106)	
Number of Daughters		-14.863	-13.239
		(10.953)	(11.151)
No Sons			-37.481
			(33.040)
2 Sons			79.637**
			(31.894)
3 or More Sons			46.461
			(42.200)
Constant	182.539***	203.530***	239.537***
	(59.952)	(58.890)	(66.699)
Observations	492	492	492
R-squared	0.100	0.150	0.160

Standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Figure 1: Raw Data Example

A. Record from Calendar of Probates
   a. 12 September 1902 Probate of the Will of Christopher Armstrong late of Ballylucas Co. Fermanagh Farmer who died 17 May 1901 granted at Dublin to Mary Armstrong the Widow Effects £20.

B. Information from the Census
   a. Form N: Enumerator's Abstract for a Townland or Street

      Ballylucas – A town or village, not a city or urban district: 14 Families, 59 Residents (34 Males, 25 Women), 42 are Roman Catholic, 17 are Protestant Episcopal, None have other Religious Professions (also includes information on location within Fermanagh such as the Poor Law Union)

   b. Form A: Return of Household Members

First Name	Surname	Relation to Head	Religious Profession	Education	Age	Sex	Profession or Occupation	Marriage	Birth Place
Christopher	Armstrong	Head	CI	RW	50	M	Farmer	Married	Fermanagh
Mary	Armstrong	Wife	CI	RW	40	F	None	Married	Fermanagh
John C.	Armstrong	Son	CI	RW	8	M	Scholar	Not Married	Fermanagh
Archibald	Armstrong	Brother	CI	RW	30	M	Farmer	Not Married	Fermanagh
Patrick	McCahery	Servant	RC	RW	27	M	Farm Servant	Not Married	Fermanagh

   c. Form B.1. Household and Building Return

1	State whether Private Dwelling, Public-house etc:	Private Dwelling
2	Number of Out-Offices and Farmsteadings (e.g. Piggery):	7
3	WALLS: If Walls are of Stone, Brick, or Concrete enter 1; if they are Mud, Wood, or other perishable material enter 0	1
4	ROOF: If Roof is of Slate, Iron or Tiles, enter 1; if it is Thatch, Wood or other perishable material enter 0	0
5	ROOMS: For each House with 1 Room only enter 1, For Houses with 2,3,or 4 Rooms enter 2, 5 or 6 Rooms enter 3, etc…	3
6	Windows in Front: State the exact Number of Windows in Front of House:	5
7	Total the Figures in 3-6 *(housepoints)* :	9
8	CLASS OF HOUSE: If Total is 1 or 2 enter "4th"; 3, 4, or 5, enter "3rd", 6, 7, 8, 9, 10, or 11 enter "2nd", 12 or over enter "1st":	2nd
9	Name of the Head of Family	Christy Armstrong
10	Number of Persons who were sick on 31st March 1901:	0
11	Name of the Landholder (if any) on whose Holding the House is situated	Christy Armstrong

Figure 2: Wealth Distribution by Testacy Status

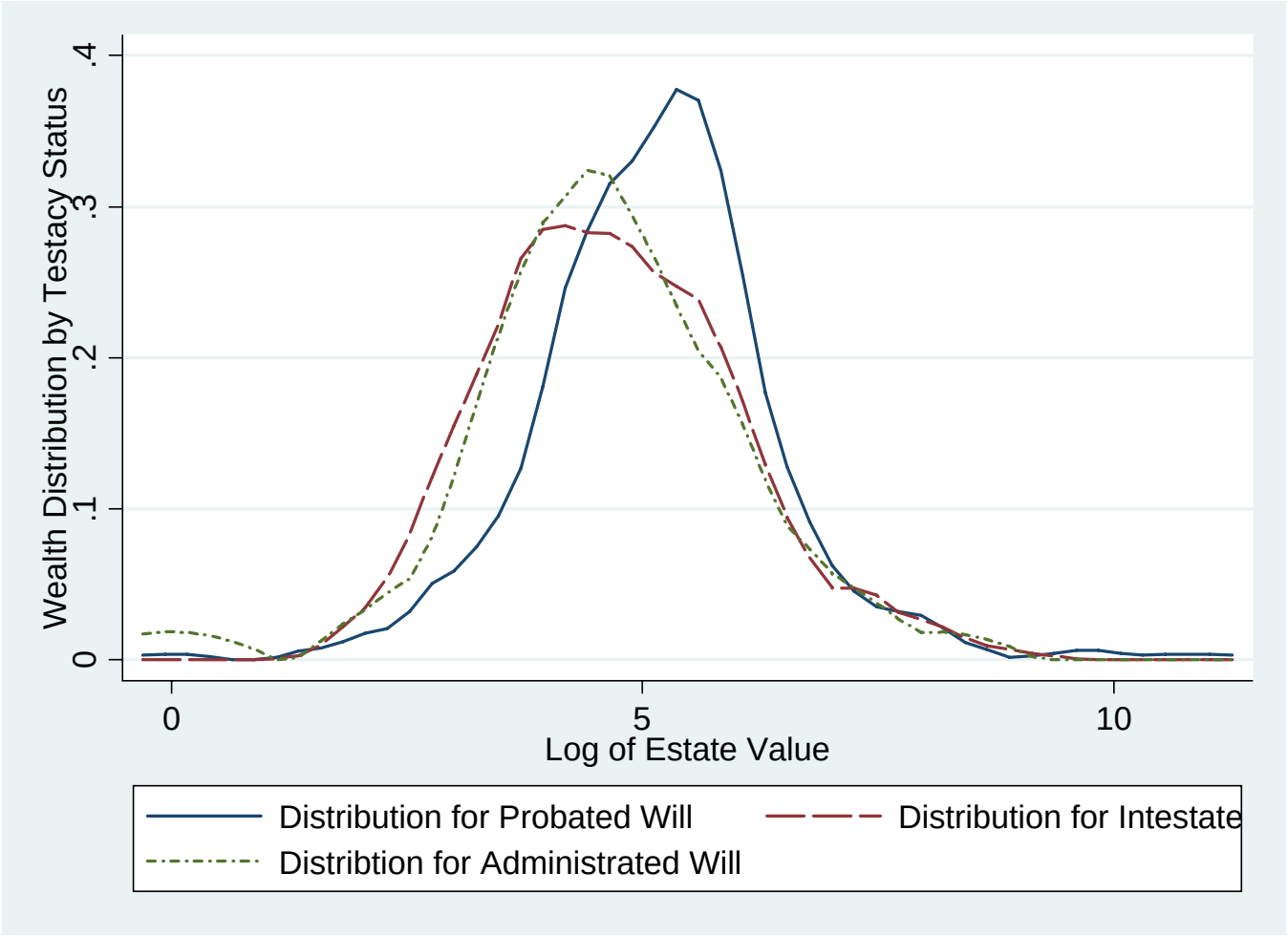


Figure 3: Wealth Distribution by Confessional Group

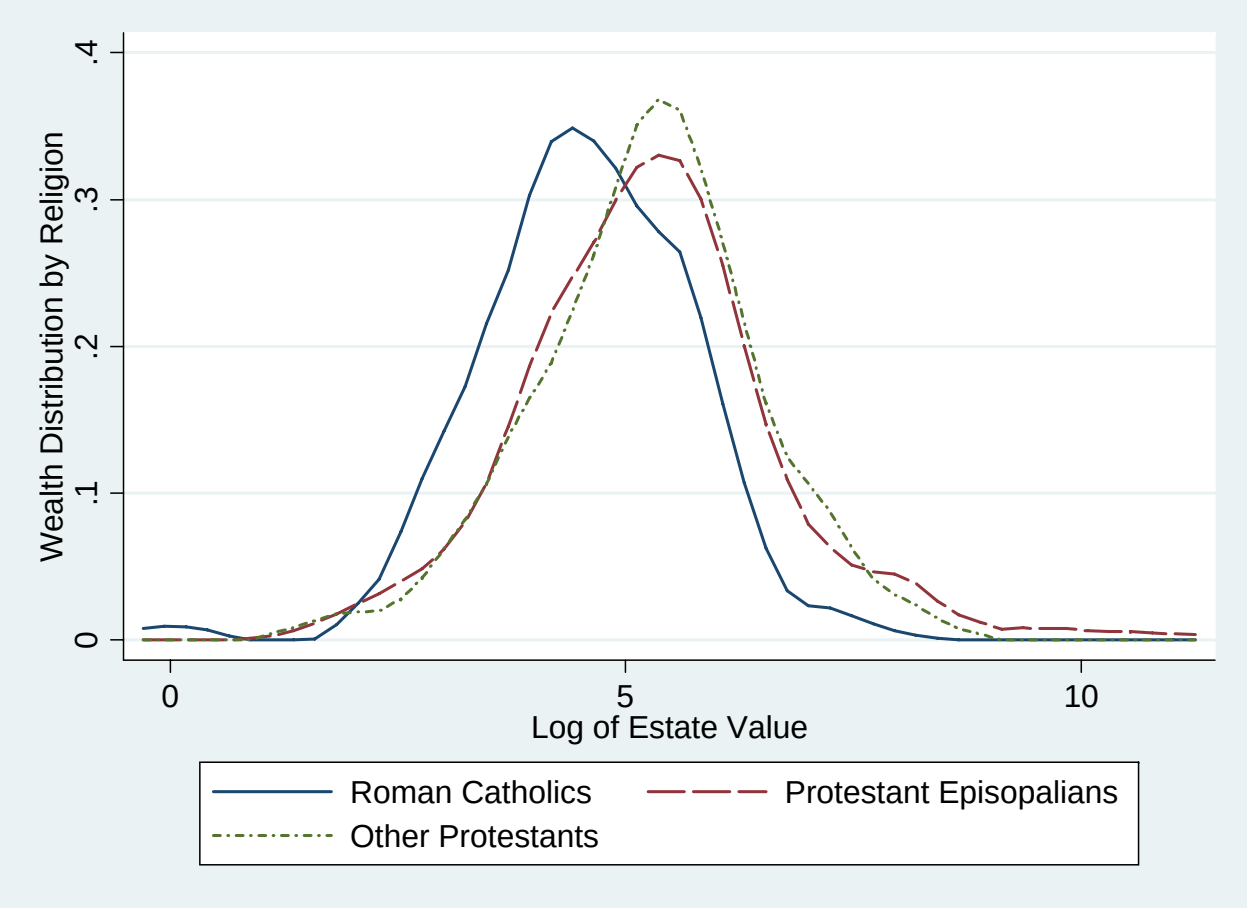


Figure 4: Age Distribution by Testacy and Probate Status

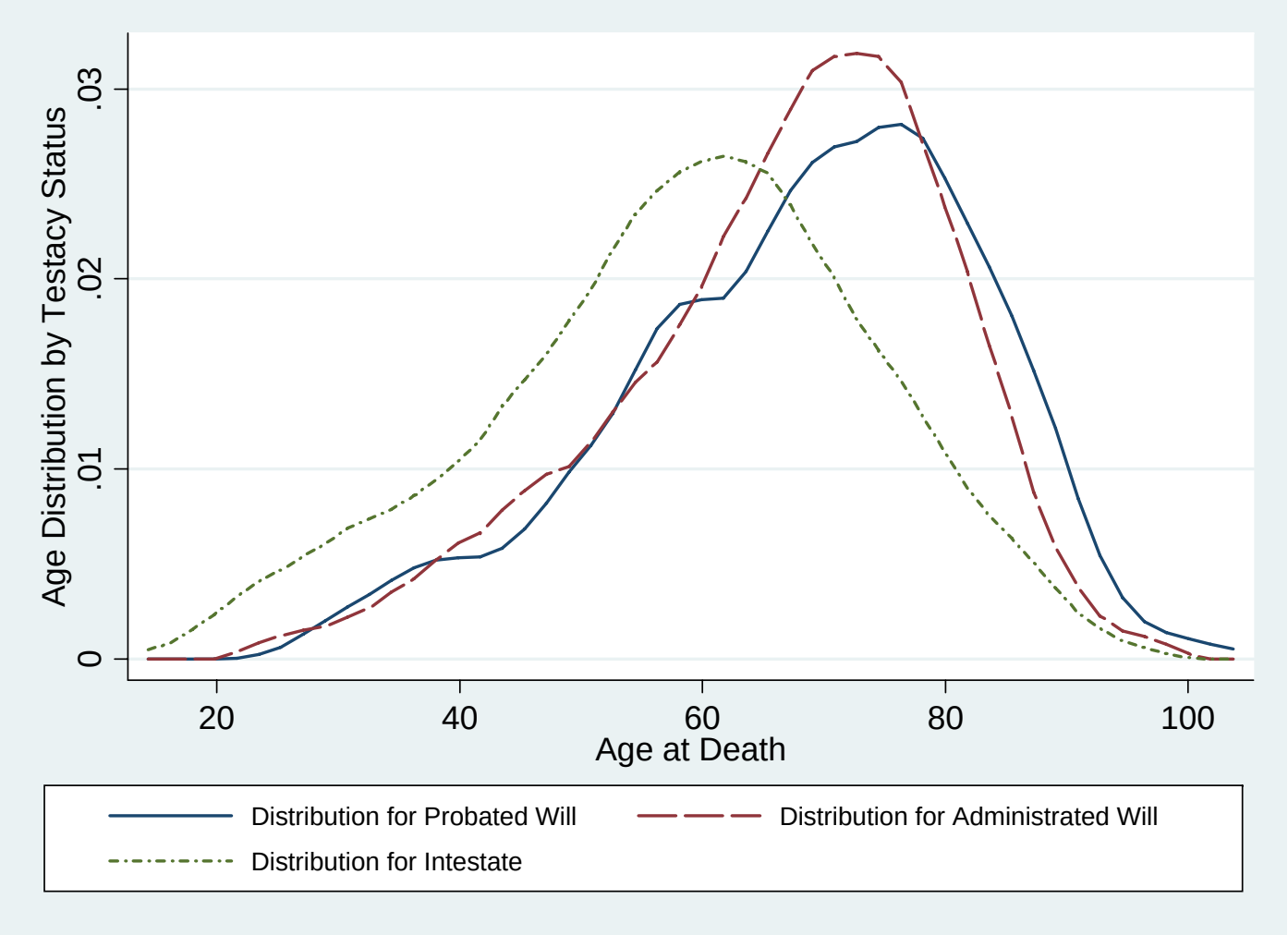


Figure 5: Age Frequencies

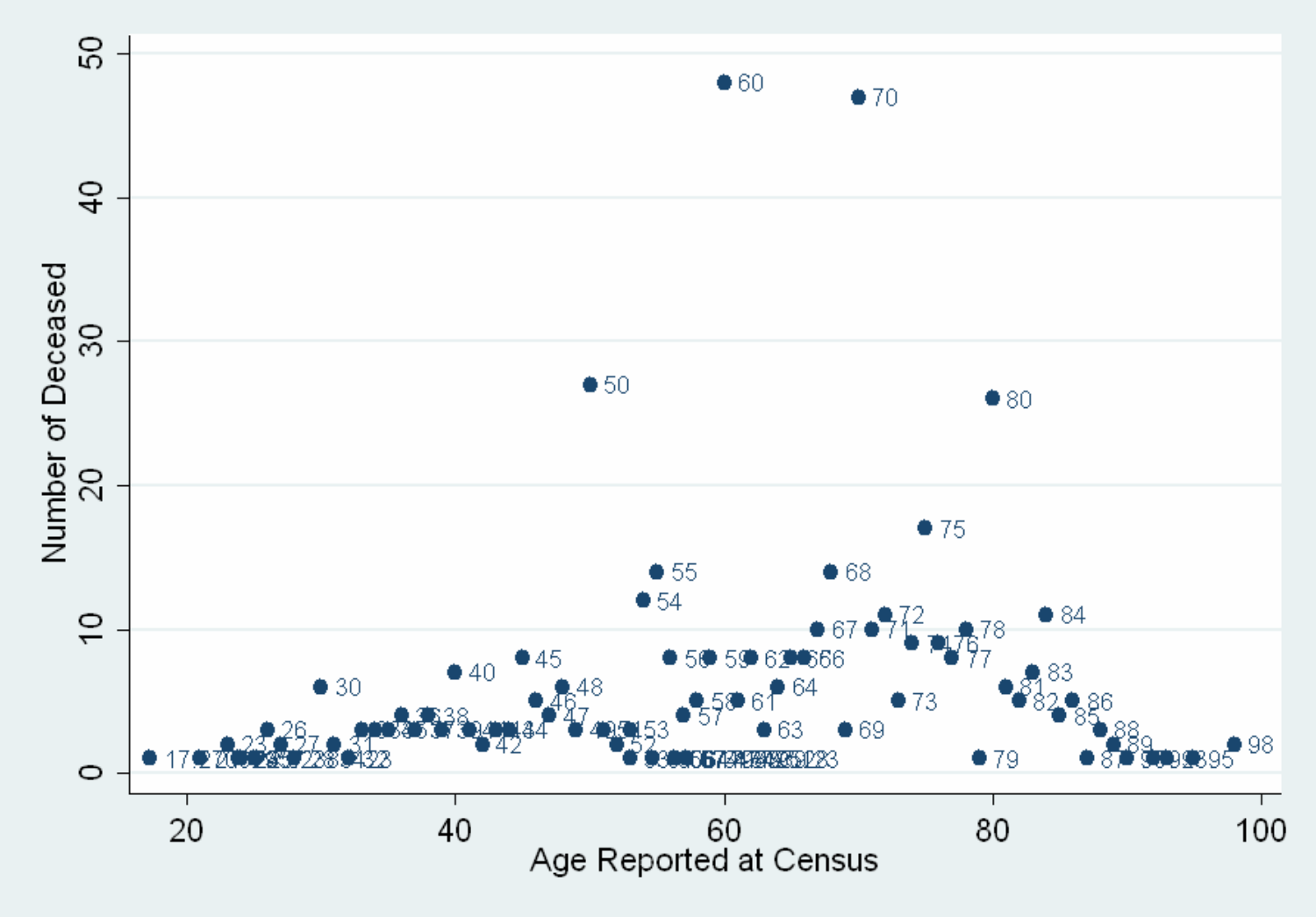
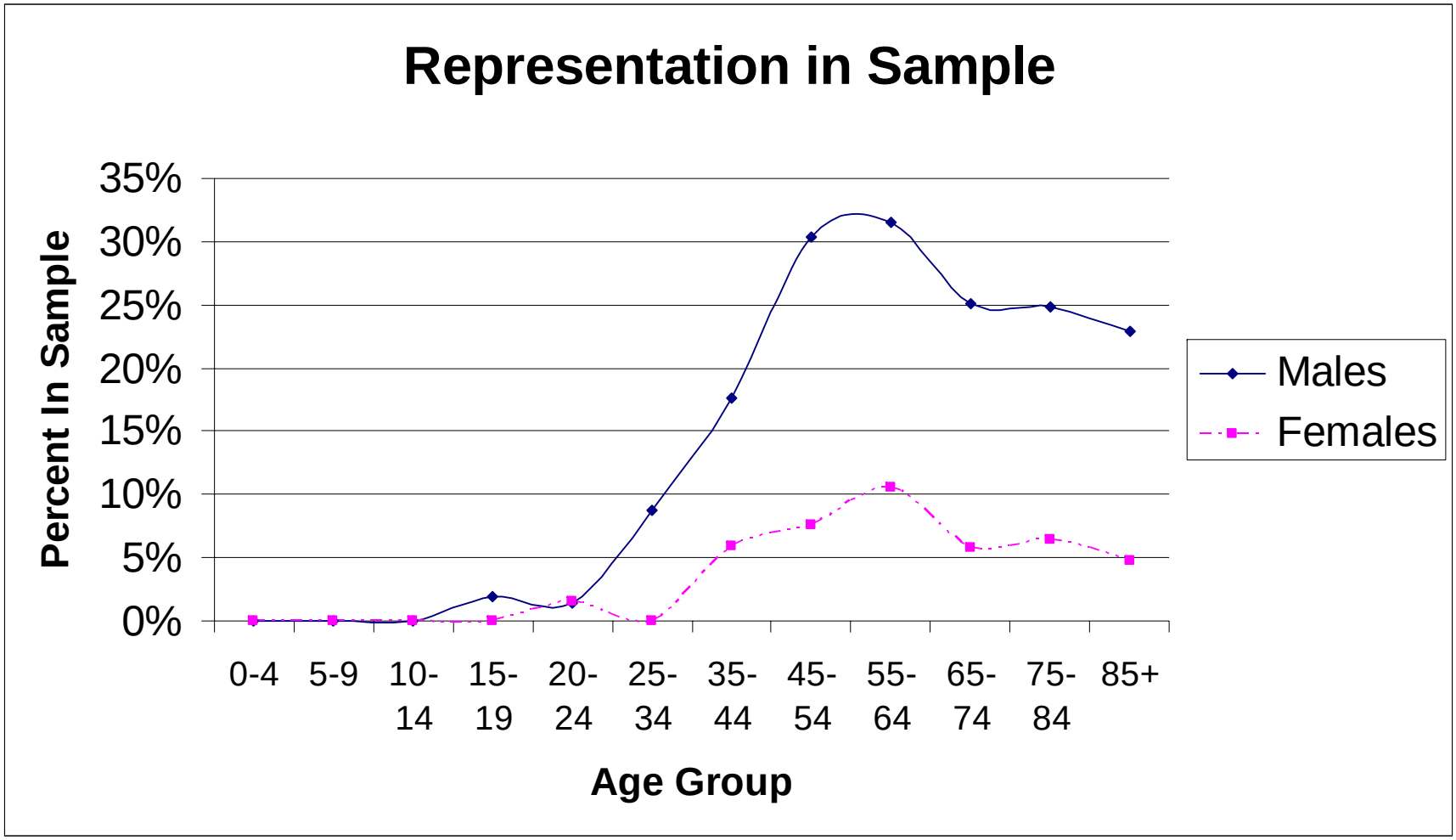


Figure 6: Sample Representation by Age Group and Sex



Appendix A:

The goal of this Appendix is to investigate the effect of wealth on the benefit of writing a will according to the altruism model.

Assume two children 1 and 2, with endowments E_1 and E_2.
The potential testator, *i*, has a wealth of amount W_i to divide between these two children by giving bequests of amount b_1 and b_2. Writing a will requires a lawyers fee of amount l_i, and a psychic cost of p_i. There is no psychic cost in the absence of a will.

Assume his utility is measured by the equation $U(\bullet) = \log(E_1 + b_1) + \log(E_2 + b_2) - p_i$.
In other words he is an altruist who values the utility of his two children equally and is subject to a psychic cost that enters the utility function linearly.

Under intestacy his bequests are determined by the state as $b_1 = \frac{W_i}{2}$ and $b_2 = \frac{W_i}{2}$

Utility under intestacy is $U(\bullet) = \log\left(E_1 + \frac{W_i}{2}\right) + \log\left(E_2 + \frac{W_i}{2}\right)$

Is he writes a will, he chooses b_1 and b_2 to solve the optimization problem:
$Max_{b_1,b_2} \log(E_1 + b_1) + \log(E_2 + b_2) - p_i \quad s.t.\ b_1 + b_2 + l_i = W_i, b_1, b_2 > 0$

Substituting in the constraint gives us:
$Max_{b_1} \log(E_1 + b_1) + \log(E_2 + W_i - l_i - b_1) - p_i$

<u>Interior Solution</u>
First order condition:

$$\frac{1}{E_1 + b_1} - \frac{1}{E_2 + W_i - l_i - b_1} = 0$$

solving for b_1

$b_1 = \frac{E_2 - E_1 + W_i - l_i}{2}$ similarly $b_2 = \frac{E_1 - E_2 + W_i - l_i}{2}$
We can see from this that a child's bequest is decreasing in his own endowment and increasing in the endowment of his sibling.

After the transfer, each child's resources equal: $\frac{E_1 + E_2 + W_i - l_i}{2}$

This is the standard implication of the altruism model. Namely, that the altruist divides the entire set of resources evenly across the children.

Substituting this into the utility function, we find that

Utility under testacy is: $U(\bullet) = 2\log\left(\frac{E_1 + E_2 + W_i - l_i}{2}\right) - p_i$

Note that this is only defined so long as $E_1 + E_2 + W_i - l_i > 0$. This implies that if lawyer's fees are larger than the endowments of parents and children the decision is meaningless. We can assume that if $l_i > W_i$ the individual cannot write a will and will die intestate with certainty.

Corner Solution Case

If we assume that $E_2 > E_1$, we have an interior solution so long as the bequest to the wealthier child, 2, is positive. This is the case if $\frac{E_1 - E_2 + W_i - l_i}{2} > 0$ or so long as $W_i - l_i > E_2 - E_1$. In words, as long as the bequeathable amount is greater than the difference in the endowments.

If $W_i - l_i < E_2 - E_1$, a testator will maximize his utility by giving the entire bequest to the poorer child.

With a corner solution, after the transfer child 1's resources will be: $E_1 + W_i - l_i$, child 2's resources will be E_2.

Utility under testacy is: $U(\bullet) = \log(E_1 + W_i - l) + \log(E_2) - p_i$

The will writing decision:

If $W_i - l_i > E_2 - E_1$:

The potential testator will write a will if:

$$2\log\left(\frac{E_1 + E_2 + W_i - l_i}{2}\right) - p_i > \log\left(E_1 + \frac{W_i}{2}\right) + \log\left(E_2 + \frac{W_i}{2}\right)$$

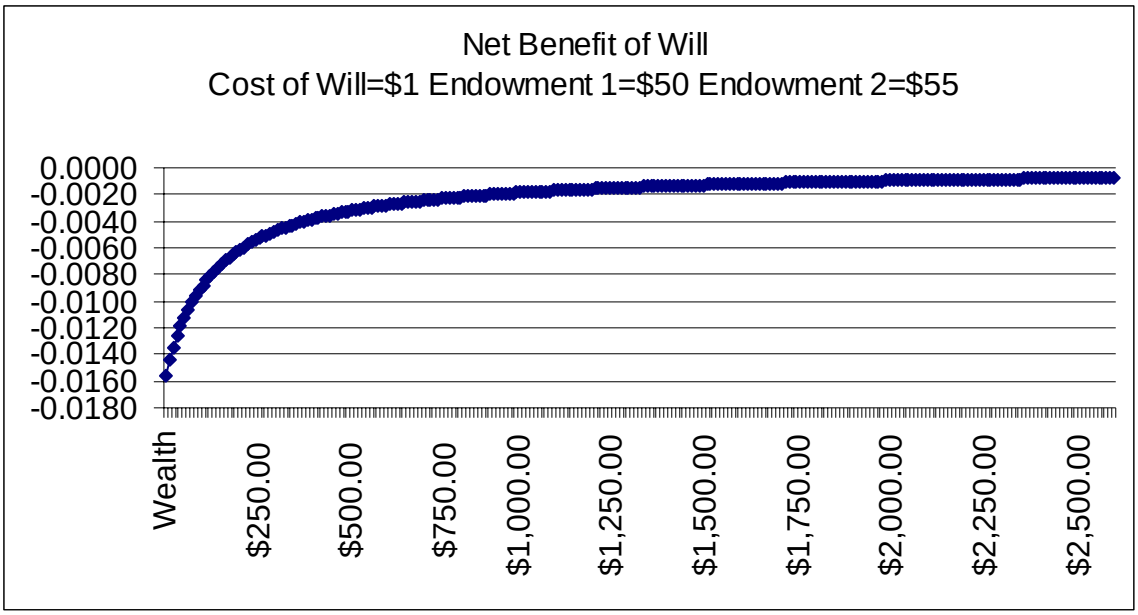
If $W_i - l_i < E_2 - E_1$:

The potential testator will write a will if:

$$\log(E_1 + W_i - l) + \log(E_2) - p_i > \log\left(E_1 + \frac{W_i}{2}\right) + \log\left(E_2 + \frac{W_i}{2}\right)$$

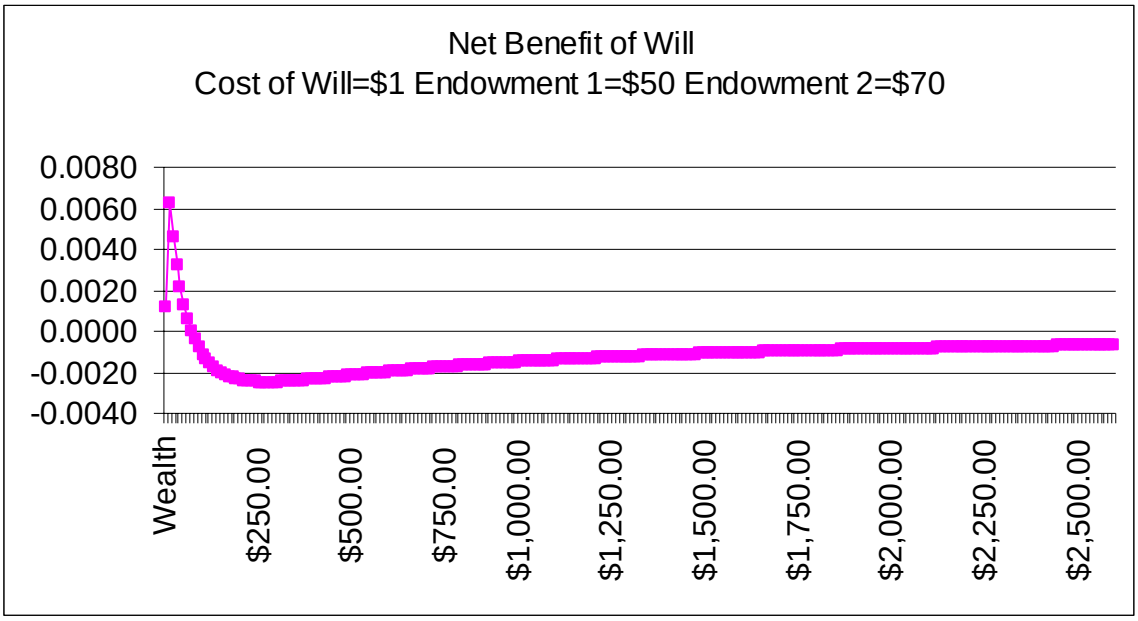
Because of the complicated role of W, it is difficult to take and sign derivatives. Instead, I perform a series of simulations that look at how the net benefit of writing a will changes as wealth changes. For these simulations, I drop the psychic cost, p_i, as it only serves to shift the net benefits down and has no impact on the dynamics.

Case 1: Low cost relative to endowments, endowments close together (always an interior solution).



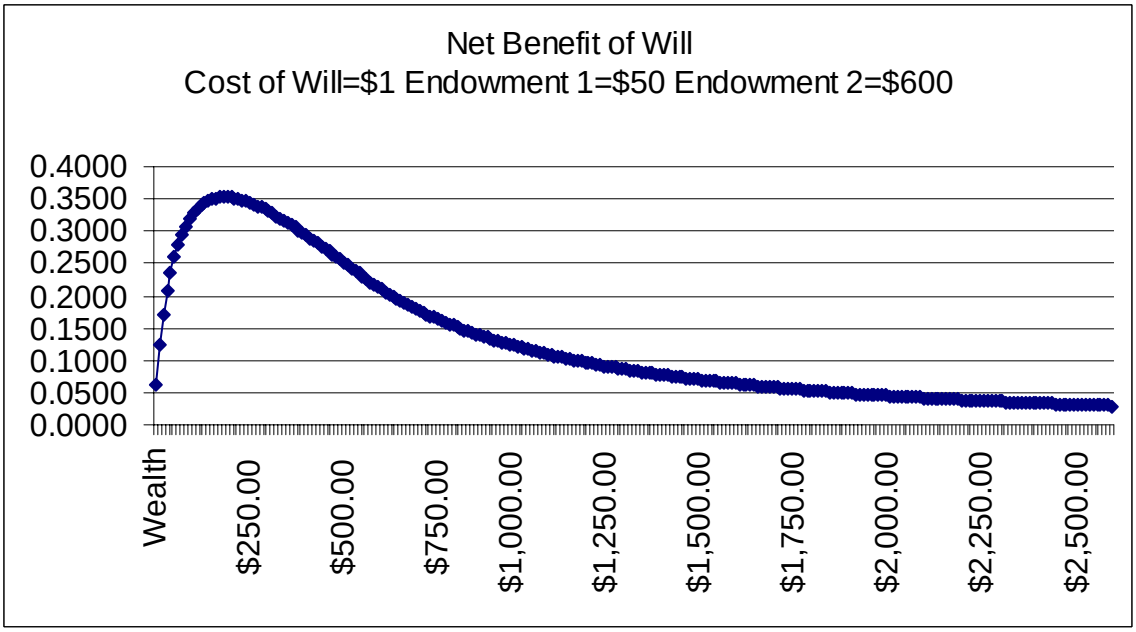
The high utility value of the cost dominates when wealth is low, making will writing unattractive. As wealth increases, the cost becomes small relative to wealth, and will writing grows more attractive but the distribution under intestacy and the distribution under testacy converge making will writing pointless. With these costs and endowments, no level of wealth will lead to a will.

Case 2: Low cost relative to endowments. Endowments are not too far apart.



This individual begins as a will writer giving all to one child. As wealth increases, he moves to an interior solution. When wealth increases further he becomes intestate. He switches to intestacy because the utility cost of the financial cost exceeds the utility gain from distributing optimally.

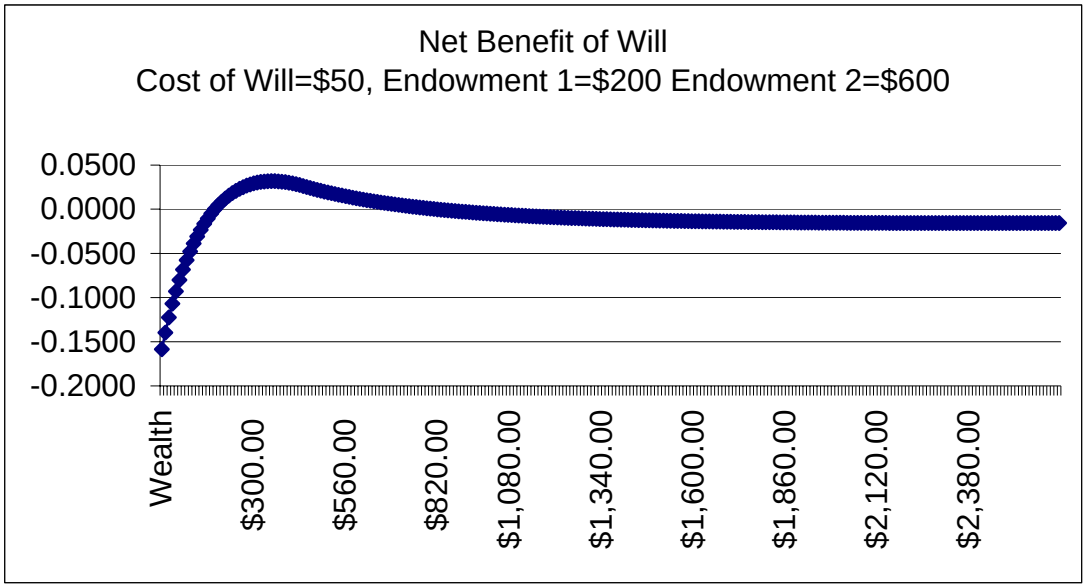
Case 3: Low cost relative to endowments, endowments far apart.



As wealth increases, will writing grows more attractive for low levels of wealth. In this part of the graph, we have a corner solution where all assets go to one child. Will writing

is increasingly attractive because giving all of the added wealth to a poorer child with a higher marginal utility of wealth adds more value than giving half to the poorer child and half to the richer child. Subsequently, the value of a will falls over time because as wealth increases the intestate succession distribution converges to the will distribution. In the limit, this individual will be intestate because the cost cannot be justified for distributions that are practically identical.

Case 4: High cost of will writing relative to endowments. Endowments are far apart.



In this case, for low levels of wealth, increasing wealth makes will writing more attractive. This individual is initially intestate, but switches to writing a will. The switch occurs because the utility cost of the cost of a will is prohibitively high at low levels of wealth, but declines as wealth increases. A similar pattern would emerge if the cost of will writing was greater than the wealth of the potential testator.

Combining these cases, we find that the effect of wealth is indeterminate. We can find circumstances where growing wealth leads an intestate individual to write a will, and we can find circumstances where growing wealth leads a testator to die intestate. All cases share the dynamic that in the limit, when wealth gets extremely large relative to costs and endowments, individuals will be intestate. This is the case because the distribution under intestacy converges to the distribution under a will and therefore the cost cannot be justified. This result would be even more pronounced if psychic costs were incorporated into the model.

The only case where increasing wealth leads an intestate individual to write a will relies on very specific assumptions about costs and only holds for low levels of wealth. For most individuals, costs are likely to be small relative to wealth. As a result, we can conclude that for a wide class of individuals, the altruism model leads to the prediction that the effect of wealth on will writing should be negative.

Appendix B

In this appendix, I compare the values of variables coded from the Census to data from the Census report to put the sample in context. This comparison is presented in Table B1. The Table compares Census data on all of Ireland (column 1), to Census Data on the Provence of Ulster (column 2 – the six counties of Northern Ireland plus three adjacent Counties), Census data on Co. Fermanagh (column 3), the entire population of towns where someone in the deceased sample lived (column 4), the families the deceased lived in (column 5), and the deceased themselves (column 6). The data in Columns 1-3 come from the official Census Report (Census of Ireland 1901, 1902), while the data in Columns 4-6 are tabulated from the matched sample.

A number of patterns are evident in the Table. As mentioned earlier, Fermanagh's religious split is more Catholic than the rest of Ulster, but more Protestant than Ireland as a whole. The Protestant denominational split is quite different from the remainder of Ireland. Fermanagh has more Methodists and Episcopalians than the rest of Ulster, and fewer Presbyterians. The quality of the housing stock and literacy of the population are broadly similar to the remainder of the country with the exception that Fermanagh has a lower proportion of first class houses than the Country or Provence. This is probably due to the predominantly rural nature of the County – First Class houses tended to be in cities. When we compare data from the Census Report to data from the families of the deceased sample, we observe that the matched sample is more Protestant and less Catholic than Fermangh overall and lives in higher class houses. This is consistent with individuals who leave estates coming from richer families. When we look at the occupational breakdowns of the population, we see that the deceased individuals were more likely to be from agricultural families and families where the individuals are older. In the final column, we show attributes of the deceased themselves. This is a much older sample than the individuals represented in the earlier columns. Seventy-two percent of the deceased are 55 and over. About 78% of the sample is male largely as a result of the near exclusion of married women from estate distribution. The famous Irish marriage patterns are also evident in the sample. At death 29% are never married while 48% are married and 23% are widowed.

Table B1: Comparisons Between Census and Matched Samples

	Whole of Ireland	Ulster	Fermanagh	Town Sample	Family Sample	Deceased Sample
	(Census Report)	(Census Report)	(Census Report)	(Matched Data)	(Matched Data)	(Matched Data)
Population	4,458,775	1,582,826	65,430	23,683	2165	494
Families	910,256	NA	NA	5,364	482	482
Houses	858,158	NA	NA	5,033	482	482
Read and Write	79%	79%	78%	NA	82%	81%
Read Only	7%	9%	9%	NA	6%	9%
Neither Read Nor Write	14%	13%	13%	NA	12%	9%
Roman Catholic	74%	44%	55%	55%	44%	42%
Protestant Episcopalians	13%	23%	35%	35%	41%	41%
Presbyterians	10%	27%	2%	3%	3%	4%
Methodists	1%	3%	7%	7%	11%	13%
All Other Denominations	1%	3%	0%	0%	0%	0%
1st Class	9%	8%	4%	NA	15%	11%
2nd Class	61%	65%	63%	NA	71%	71%
3rd Class	29%	27%	31%	NA	14%	18%
4th Class	1%	1%	1%	NA	0%	0%
Sick at their Own Homes per 10K	33.4	35.4	47.1	NA	111	365
	0.3%	0.4%	0.5%		1.1%	3.7%
Marital Status of Population Over 15						
Married	38%	NA	NA	NA	32%	47%
Widowed	10%	NA	NA	NA	10%	24%
Never Married	53%	NA	NA	NA	58%	29%
Born in Same County	86%	NA	NA	NA	86%	87%
Irish Born from Different County	11%	NA	NA	NA	13%	12%
Born in England	2%	NA	NA	NA	1%	1%
Born in Scotland	1%	NA	NA	NA	0%	1%
Born in Rest of World	1%	NA	NA	NA	1%	0%
Professional Class	3%	NA	NA	NA	2%	3%
Domestic Class	5%	NA	NA	NA	7%	0%
Commercial Class	2%	NA	NA	NA	1%	1%
Agricultural Class	20%	NA	NA	NA	35%	65%
Industrial Class	14%	NA	NA	NA	9%	10%
Indefinite or Unproductive Class	56%	NA	NA	NA	46%	20%
Under 20	41%	NA	NA	NA	26%	0%
20-55 Years Old	45%	NA	NA	NA	47%	28%
55 Years and Up	14%	NA	NA	NA	27%	72%
Male	NA	NA	NA	51%	50%	78%
Female	NA	NA	NA	49%	50%	22%

Working Paper Series

A series of research studies on regional economic issues relating to the Seventh Federal Reserve District, and on financial and economic topics.

Working Paper Series *(continued)*

Measuring Productivity Growth in Asia: Do Market Imperfections Matter? **WP-03-15**
John Fernald and Brent Neiman

Revised Estimates of Intergenerational Income Mobility in the United States **WP-03-16**
Bhashkar Mazumder

Product Market Evidence on the Employment Effects of the Minimum Wage **WP-03-17**
Daniel Aaronson and Eric French

Estimating Models of On-the-Job Search using Record Statistics **WP-03-18**
Gadi Barlevy

Banking Market Conditions and Deposit Interest Rates **WP-03-19**
Richard J. Rosen

Creating a National State Rainy Day Fund: A Modest Proposal to Improve Future State Fiscal Performance **WP-03-20**
Richard Mattoon

Managerial Incentive and Financial Contagion **WP-03-21**
Sujit Chakravorti and Subir Lall

Women and the Phillips Curve: Do Women's and Men's Labor Market Outcomes Differentially Affect Real Wage Growth and Inflation? **WP-03-22**
Katharine Anderson, Lisa Barrow and Kristin F. Butcher

Evaluating the Calvo Model of Sticky Prices **WP-03-23**
Martin Eichenbaum and Jonas D.M. Fisher

The Growing Importance of Family and Community: An Analysis of Changes in the Sibling Correlation in Earnings **WP-03-24**
Bhashkar Mazumder and David I. Levine

Should We Teach Old Dogs New Tricks? The Impact of Community College Retraining on Older Displaced Workers **WP-03-25**
Louis Jacobson, Robert J. LaLonde and Daniel Sullivan

Trade Deflection and Trade Depression **WP-03-26**
Chad P. Brown and Meredith A. Crowley

China and Emerging Asia: Comrades or Competitors? **WP-03-27**
Alan G. Ahearne, John G. Fernald, Prakash Loungani and John W. Schindler

International Business Cycles Under Fixed and Flexible Exchange Rate Regimes **WP-03-28**
Michael A. Kouparitsas

Firing Costs and Business Cycle Fluctuations **WP-03-29**
Marcelo Veracierto

Spatial Organization of Firms **WP-03-30**
Yukako Ono

Government Equity and Money: John Law's System in 1720 France **WP-03-31**
François R. Velde

Working Paper Series *(continued)*

Deregulation and the Relationship Between Bank CEO Compensation and Risk-Taking **WP-03-32**
Elijah Brewer III, William Curt Hunter and William E. Jackson III

Compatibility and Pricing with Indirect Network Effects: Evidence from ATMs **WP-03-33**
Christopher R. Knittel and Victor Stango

Self-Employment as an Alternative to Unemployment **WP-03-34**
Ellen R. Rissman

Where the Headquarters are – Evidence from Large Public Companies 1990-2000 **WP-03-35**
Tyler Diacon and Thomas H. Klier

Standing Facilities and Interbank Borrowing: Evidence from the Federal Reserve's New Discount Window **WP-04-01**
Craig Furfine

Netting, Financial Contracts, and Banks: The Economic Implications **WP-04-02**
William J. Bergman, Robert R. Bliss, Christian A. Johnson and George G. Kaufman

Real Effects of Bank Competition **WP-04-03**
Nicola Cetorelli

Finance as a Barrier To Entry: Bank Competition and Industry Structure in Local U.S. Markets? **WP-04-04**
Nicola Cetorelli and Philip E. Strahan

The Dynamics of Work and Debt **WP-04-05**
Jeffrey R. Campbell and Zvi Hercowitz

Fiscal Policy in the Aftermath of 9/11 **WP-04-06**
Jonas Fisher and Martin Eichenbaum

Merger Momentum and Investor Sentiment: The Stock Market Reaction To Merger Announcements **WP-04-07**
Richard J. Rosen

Earnings Inequality and the Business Cycle **WP-04-08**
Gadi Barlevy and Daniel Tsiddon

Platform Competition in Two-Sided Markets: The Case of Payment Networks **WP-04-09**
Sujit Chakravorti and Roberto Roson

Nominal Debt as a Burden on Monetary Policy **WP-04-10**
Javier Díaz-Giménez, Giorgia Giovannetti, Ramon Marimon, and Pedro Teles

On the Timing of Innovation in Stochastic Schumpeterian Growth Models **WP-04-11**
Gadi Barlevy

Policy Externalities: How US Antidumping Affects Japanese Exports to the EU **WP-04-12**
Chad P. Bown and Meredith A. Crowley

Sibling Similarities, Differences and Economic Inequality **WP-04-13**
Bhashkar Mazumder

Working Paper Series *(continued)*

Determinants of Business Cycle Comovement: A Robust Analysis **WP-04-14**
Marianne Baxter and Michael A. Kouparitsas

The Occupational Assimilation of Hispanics in the U.S.: Evidence from Panel Data **WP-04-15**
Maude Toussaint-Comeau

Reading, Writing, and Raisinets[1]: Are School Finances Contributing to Children's Obesity? **WP-04-16**
Patricia M. Anderson and Kristin F. Butcher

Learning by Observing: Information Spillovers in the Execution and Valuation **WP-04-17**
of Commercial Bank M&As
Gayle DeLong and Robert DeYoung

Prospects for Immigrant-Native Wealth Assimilation: **WP-04-18**
Evidence from Financial Market Participation
Una Okonkwo Osili and Anna Paulson

Individuals and Institutions: Evidence from International Migrants in the U.S. **WP-04-19**
Una Okonkwo Osili and Anna Paulson

Are Technology Improvements Contractionary? **WP-04-20**
Susanto Basu, John Fernald and Miles Kimball

The Minimum Wage, Restaurant Prices and Labor Market Structure **WP-04-21**
Daniel Aaronson, Eric French and James MacDonald

Betcha can't acquire just one: merger programs and compensation **WP-04-22**
Richard J. Rosen

Not Working: Demographic Changes, Policy Changes, **WP-04-23**
and the Distribution of Weeks (Not) Worked
Lisa Barrow and Kristin F. Butcher

The Role of Collateralized Household Debt in Macroeconomic Stabilization **WP-04-24**
Jeffrey R. Campbell and Zvi Hercowitz

Advertising and Pricing at Multiple-Output Firms: Evidence from U.S. Thrift Institutions **WP-04-25**
Robert DeYoung and Evren Örs

Monetary Policy with State Contingent Interest Rates **WP-04-26**
Bernardino Adão, Isabel Correia and Pedro Teles

Comparing location decisions of domestic and foreign auto supplier plants **WP-04-27**
Thomas Klier, Paul Ma and Daniel P. McMillen

China's export growth and US trade policy **WP-04-28**
Chad P. Bown and Meredith A. Crowley

Where do manufacturing firms locate their Headquarters? **WP-04-29**
J. Vernon Henderson and Yukako Ono

Monetary Policy with Single Instrument Feedback Rules **WP-04-30**
Bernardino Adão, Isabel Correia and Pedro Teles

Working Paper Series *(continued)*

Firm-Specific Capital, Nominal Rigidities and the Business Cycle **WP-05-01**
David Altig, Lawrence J. Christiano, Martin Eichenbaum and Jesper Linde

Do Returns to Schooling Differ by Race and Ethnicity? **WP-05-02**
Lisa Barrow and Cecilia Elena Rouse

Derivatives and Systemic Risk: Netting, Collateral, and Closeout **WP-05-03**
Robert R. Bliss and George G. Kaufman

Risk Overhang and Loan Portfolio Decisions **WP-05-04**
Robert DeYoung, Anne Gron and Andrew Winton

Characterizations in a random record model with a non-identically distributed initial record **WP-05-05**
Gadi Barlevy and H. N. Nagaraja

Price discovery in a market under stress: the U.S. Treasury market in fall 1998 **WP-05-06**
Craig H. Furfine and Eli M. Remolona

Politics and Efficiency of Separating Capital and Ordinary Government Budgets **WP-05-07**
Marco Bassetto with Thomas J. Sargent

Rigid Prices: Evidence from U.S. Scanner Data **WP-05-08**
Jeffrey R. Campbell and Benjamin Eden

Entrepreneurship, Frictions, and Wealth **WP-05-09**
Marco Cagetti and Mariacristina De Nardi

Wealth inequality: data and models **WP-05-10**
Marco Cagetti and Mariacristina De Nardi

What Determines Bilateral Trade Flows? **WP-05-11**
Marianne Baxter and Michael A. Kouparitsas

Intergenerational Economic Mobility in the U.S., 1940 to 2000 **WP-05-12**
Daniel Aaronson and Bhashkar Mazumder

Differential Mortality, Uncertain Medical Expenses, and the Saving of Elderly Singles **WP-05-13**
Mariacristina De Nardi, Eric French, and John Bailey Jones

Fixed Term Employment Contracts in an Equilibrium Search Model **WP-05-14**
Fernando Alvarez and Marcelo Veracierto

Causality, Causality, Causality: The View of Education Inputs and Outputs from Economics **WP-05-15**
Lisa Barrow and Cecilia Elena Rouse

Working Paper Series *(continued)*

Competition in Large Markets **WP-05-16**
Jeffrey R. Campbell

Why Do Firms Go Public? Evidence from the Banking Industry **WP-05-17**
Richard J. Rosen, Scott B. Smart and Chad J. Zutter

Clustering of Auto Supplier Plants in the U.S.: GMM Spatial Logit for Large Samples **WP-05-18**
Thomas Klier and Daniel P. McMillen

Why are Immigrants' Incarceration Rates So Low?
Evidence on Selective Immigration, Deterrence, and Deportation **WP-05-19**
Kristin F. Butcher and Anne Morrison Piehl

Constructing the Chicago Fed Income Based Economic Index – Consumer Price Index:
Inflation Experiences by Demographic Group: 1983-2005 **WP-05-20**
Leslie McGranahan and Anna Paulson

Universal Access, Cost Recovery, and Payment Services **WP-05-21**
Sujit Chakravorti, Jeffery W. Gunther, and Robert R. Moore

Supplier Switching and Outsourcing **WP-05-22**
Yukako Ono and Victor Stango

Do Enclaves Matter in Immigrants' Self-Employment Decision? **WP-05-23**
Maude Toussaint-Comeau

The Changing Pattern of Wage Growth for Low Skilled Workers **WP-05-24**
Eric French, Bhashkar Mazumder and Christopher Taber

U.S. Corporate and Bank Insolvency Regimes: An Economic Comparison and Evaluation **WP-06-01**
Robert R. Bliss and George G. Kaufman

Redistribution, Taxes, and the Median Voter **WP-06-02**
Marco Bassetto and Jess Benhabib

Identification of Search Models with Initial Condition Problems **WP-06-03**
Gadi Barlevy and H. N. Nagaraja

Tax Riots **WP-06-04**
Marco Bassetto and Christopher Phelan

The Tradeoff between Mortgage Prepayments and Tax-Deferred Retirement Savings **WP-06-05**
Gene Amromin, Jennifer Huang,and Clemens Sialm

Why are safeguards needed in a trade agreement? **WP-06-06**
Meredith A. Crowley

Working Paper Series *(continued)*

Taxation, Entrepreneurship, and Wealth **WP-06-07**
Marco Cagetti and Mariacristina De Nardi

A New Social Compact: How University Engagement Can Fuel Innovation **WP-06-08**
Laura Melle, Larry Isaak, and Richard Mattoon

Mergers and Risk **WP-06-09**
Craig H. Furfine and Richard J. Rosen

Two Flaws in Business Cycle Accounting **WP-06-10**
Lawrence J. Christiano and Joshua M. Davis

Do Consumers Choose the Right Credit Contracts? **WP-06-11**
Sumit Agarwal, Souphala Chomsisengphet, Chunlin Liu, and Nicholas S. Souleles

Chronicles of a Deflation Unforetold **WP-06-12**
François R. Velde

Female Offenders Use of Social Welfare Programs Before and After Jail and Prison:
Does Prison Cause Welfare Dependency? **WP-06-13**
Kristin F. Butcher and Robert J. LaLonde

Eat or Be Eaten: A Theory of Mergers and Firm Size **WP-06-14**
Gary Gorton, Matthias Kahl, and Richard Rosen

Do Bonds Span Volatility Risk in the U.S. Treasury Market?
A Specification Test for Affine Term Structure Models **WP-06-15**
Torben G. Andersen and Luca Benzoni

Transforming Payment Choices by Doubling Fees on the Illinois Tollway **WP-06-16**
Gene Amromin, Carrie Jankowski, and Richard D. Porter

How Did the 2003 Dividend Tax Cut Affect Stock Prices? **WP-06-17**
Gene Amromin, Paul Harrison, and Steven Sharpe

Will Writing and Bequest Motives: Early 20th Century Irish Evidence **WP-06-18**
Leslie McGranahan