

# FINANCIAL PROJECTS of Daniel Defoe

BY DANIEL D. SKWIRE

**R**obinson Crusoe, published in 1719, is one of the world's best-known adventure stories. The hero, finding himself shipwrecked and stranded on a desert island, survives for over 20 years before being rescued, relying on his own ingenuity and on the loyal assistance of his servant, Friday, a native whom he rescues from cannibals.

Less well known, but perhaps even more adventurous, is the story of Daniel Defoe, the novel's author. An incompetent investor of tragicomic proportions, Defoe spent the better part of his life losing fortunes in one absurd scam after another, before finally turning to novel-writing as a form of income in his old age. Along the way, however, he developed a fascination for the rapidly evolving world of insurance, pensions, and actuarial science.

Born in London in 1660, Defoe survived both the Great Plague of 1665-1666 and the Great Fire of September 1666. He was trained for the ministry but chose not to pursue a career in the church, working instead as a traveling merchant. He found plenty of excitement along the way, being captured by Algerian pirates in 1683 and fighting on behalf of William of Orange during the Glorious Revolution of 1688.

During his career as a merchant, Defoe was a part owner of various ships, and he participated in insurance schemes that were designed to spread losses of cargo among shipowners. Unfortunately, England and France were engaged in naval struggles in the years following the Glorious Revolution, resulting in very high losses for English merchants. As both an investor and an insurer, Defoe lost a fortune. It wouldn't be the last time.

## Debt and Default

In 1692, he began a series of unsuccessful attempts to regain his losses with other investments. For example, he borrowed a large sum of money from a friend in order to purchase a number of civet cats, intending to sell their musk for perfume, but then could not afford to feed and care for the cats and lost the entire investment. Later, inspired by the story of a merchant who had salvaged a cargo from a sunken

ship, he invested in a company that intended to use a diving bell to find and salvage other treasures. Again, the scheme was a failure, and Defoe lost everything.

The result of all these financial setbacks was Defoe's bankruptcy and confinement to debtors' prison in October of 1692. His total losses were about £17,000, an enormous sum in those days, and due primarily to his shipping losses. Defoe eventually managed to work out agreements with his creditors, and he was freed from prison in 1693. He then began work in a series of government jobs, including positions related to taxes and lotteries.

While working in these bureaucratic roles, Defoe published his first book, *An Essay Upon Projects*. Long forgotten by all but the most intrepid scholars, the book lays out in great detail a series of projects for the public good, from banking and road-building to the education of women. At times ponderous, the book becomes more interesting and insightful when Defoe turns to his favorite subjects of insurance and pensions.

In his preface and introduction, Defoe recognizes that "projecting," as it was called at the time, had a bad reputation as being the work of financial schemers and con men, a population with whom he was not wholly unacquainted. He specifically disclaims any intention to make money from the projects he describes in the book, saying that he wishes only to discuss those projects of the "public advantage." He acknowledges, however, that many of his ideas were inspired by his own trading losses during the war with France.

In a background discussion, Defoe describes the importance of marine insurance and defends its low cost (citing a rate of 40s. for £100 of coverage) by discussing the comparative risks of the merchant and the insurer. He also makes





clear that he disapproves of life insurance, a concept he associates with ill-mannered foreigners:

*Insuring of life I cannot admire; I shall say nothing to it but that in Italy, where stabbing and poisoning is so much in vogue, something may be said for it, and on contingent annuities; and yet I never knew the thing much approved of on any account.*

Of much greater interest to Defoe was the notion of “friendly societies,” which he defined as “a number of people entering into a mutual compact to help one another in case any disaster or distress fall upon them.” These societies were the precursors of mutual insurance companies, and Defoe saw them as the solution to a wide variety of social problems. In *An Essay Upon Projects*, he discusses in detail three specific projects involving friendly societies, focusing in turn on sailors, widows, and pensions. The discussions reveal a surprisingly deep understanding of the principles of risk and insurance.

### Friendly Societies

As a former merchant, Defoe sympathized with the plight of merchant sailors, who faced a significant risk of accidental injury, but unlike navy sailors were not covered by any form of pension for their disabilities. He argued that a pension scheme for merchant sailors would encourage them to fight harder to protect their cargoes from storms and pirates. He then proposed creating a friendly society through which sailors would receive either a lump sum or an annual pension of the following amounts, varying by type of loss:

Type of Loss	Lump Sum (£)	Annual Pension (£)
One eye	25	2
Both eyes	100	8
One leg	50	4
Both legs	80	6
Right hand	80	6
Left hand	50	4
Right arm	100	8
Left arm	80	6
Both hands	160	12
Both arms	200	16
Broken arm or leg	£10 toward the cure	
Capture by Turks	£50 toward the ransom	
Infirmity of age or sickness	£6 per annum for life	
Killed in service or drowned	£50 to surviving wife	

The total amount of claims paid would be shared equally among the participating members of the society on a periodic basis, with an additional fee of 1s. per quarter for administration of the program. According to Defoe, the scheme was “so rational that hardly anything but a hare-brained fellow, that thinks of nothing, would omit entering himself into such an office.”

The structure of this friendly society, with claims shared in arrears, did not require accurate predictions of claim frequency in order to determine contribution rates. However, it is interesting to note the use of an annuity factor of approximately 12.5 in determining the annual pension equivalent to the lump sum in the

proceeding table. According to the Carlisle Table, an early mortality table based on late 18th-century mortality rates, life annuity factors at 5 percent interest were in the range of about 16.8 at age 20 to 12.7 at age 50. Defoe’s factors were more conservative but perhaps appropriate for a disabled population.

Defoe was ahead of his time in understanding the difficulties faced by women in late 17th-century society and proposing steps to address these problems. In *An Essay Upon Projects*, he not only argues for greater educational opportunities for women but also suggests the creation of a friendly society that would provide income for widows following the death of their husbands. This project is more complex than his proposal for merchant sailors.

Defoe imagines a society of 2,000 women, each of whom would receive the sum of £500 if she were widowed. The cost of the payment would be shared among the members, resulting in a charge of 5s. each. There were some important limitations. A woman could not receive a benefit unless she had been a member for at least six months at the time she was widowed (12 months if her husband had “any visible distemper”). Wives of sailors and soldiers would not be accepted into the society. And no women would be accepted whose husbands were much older or “infirm.”

These rules suggest that Defoe understood the danger of adverse selection and knew the value of underwriting. If soldiers and sailors had higher mortality rates than other men, their wives would join the society in disproportionately high numbers, and their losses would be subsidized by the other members. Defoe realized such a scenario would threaten the viability—and the friendliness—of the society.

He also thought carefully about the expected level of claims. He cites William Petty, an economist and a friend of John Graunt (who constructed one of the first life tables in the mid-17th century) as saying that one in 40 residents of London would die each year. Defoe argues that excluding “children and ancient people” would reduce the mortality rate to one in 50. He further argues that half of these deaths would be women predeceasing their husbands, in which case, no benefit would be paid. Therefore, he anticipates 20 claims per year for a society of 2,000 women, meaning that each member would be liable for a maximum annual contribution of £5 (20 deaths times 5s. per death). He felt this would be a very reasonable cost for a potential benefit of £500.

His analysis was somewhat simplistic, of course. It assumed a stationary population, since changes in size or age distribution would alter the expected level of claims. And it ignored potential mortality differences between men and women, and between spouses of different ages. When one considers, however, that the science of mortality rates and life tables had been developed only a few decades earlier, Defoe’s project was very carefully conceived.

### Pension Scheme

The most complex financial project Defoe proposes in his book is the creation of a pension office that he claimed would eliminate poverty in England. This pension scheme would be open to all working men and women except soldiers and beggars. Each would pay an initial fee of 6d., followed by a quarterly contribution of 1s. In return, they would become eligible for a wide range of benefits, ranging from free medical care for accidents and sickness (unless caused by “drunkenness and quarrels”) and lifetime pensions of 12d. per week for loss of limbs, to residence in a hospital for the elderly and infirm. Defoe also addressed

an issue of personal concern by including a small pension for tradesmen confined to debtors' prison as the result of a business failure. No claims would be allowed in the first year of the program for any cause.

As with the friendly society for widows, Defoe's pension scheme showed an understanding of basic risk principles. The exclusion of soldiers and the prohibition of first-year claims helped address potential adverse selection. He also required strict proof of loss, recognizing the inherent subjectivity of disability claims, and he reflected that the system would work best if participation were compulsory. By allowing members to pay a rate greater than 1s. per quarter in exchange for proportionately higher benefits, however, Defoe failed to consider the potential adverse selection that would result if the members paying the higher contributions were less healthy than those paying the lower rates.

Defoe estimates that 100,000 or more people would join his pension scheme, and he devotes several pages to a detailed—if not perfectly accurate—calculation of future revenues and expenses. The revenue projection includes the quarterly fees, reduced slightly each quarter to reflect the lack of contributions from those who filed claims. It also includes investment income on the accumulated contributions at an unrealistically high rate of 7 percent, a rate he admits would not always be available.

Projecting claims was considerably more difficult, and Defoe acknowledges that a rough estimate is necessary in the absence of good data. In the first year, there would be no claims, according to the terms of the pension scheme. In the second year, Defoe estimates that one in 500 members would file a claim, increasing to one in 100 for year three, and one in 50 for years four and beyond. Each claim is valued at an annual cost of £2 10s. 0d. per year, apparently equal to the weekly pension of 12d. times 50 weeks per year. The costs for providing medical services, hospital residence, and other types of benefits are not separately identified.

For the early years of the projection, no deaths or recoveries are assumed among the pensioners. By the fifth year, Defoe assumes that the system will reach a steady state, where current pensioners die off at the same rate as current members qualify for pensions and new members join the pension scheme. This model for mortality among pensioners—zero for five years and then a constant number of deaths each year thereafter—is overly simplistic. The flaw should not be surprising, however, since the first paper on the proper valuation of life annuities was only published by Edmund Halley in 1692, when Defoe was already at work on *An Essay Upon Projects*.

Defoe was not a mathematician or scholar like Halley or John Graunt, two of the founders of actuarial science. But *An Essay Upon Projects* shows that he grasped the new and complex financial con-



## A Note on English Money

**The pound is the basic unit of English currency. While the modern pound consists of 100 pence, the system was more complex in Defoe's time. In those days, a pound was made up of 20 shillings, and each shilling was made of 12 pence. An amount such as 10 pounds, five shillings, and six pence was expressed as £10 5s. 6d., and the arithmetic requires some practice for those accustomed to today's decimal systems. For example, a company that sold four items priced at £2 8s. 6d. apiece would collect a total of £9 14s. 0d.**

cepts being more precisely formulated by his contemporaries. The reason for Defoe's interest was undoubtedly his own firsthand experience with risk and loss. In fact, he deals with the same issues in the later books that made him famous. *Robinson Crusoe*, after all, is the story of an unsuccessful merchant sailor who suffers losses at sea. And *A Journal of the Plague Year* deals extensively with the bills of mortality that formed the basis for Graunt's life table.

While *An Essay Upon Projects* did not lead directly to the creation of the various financial schemes Defoe proposed, it did provide inspiration for at least one later pioneer in the field. Benjamin Franklin, who helped organize some of the first insurance schemes in colonial America, was motivated in part by Defoe's work. Recalling the contents of his father's library in his *Autobiography*, Franklin wrote, "There was also a book of Defoe's called an *Essay on Projects* . . . which perhaps gave me a turn of thinking that had an influence on some of the principal future events of my life."

Given his extraordinary talent at losing capital, Defoe was probably fortunate

that he never had the opportunity to invest in his own pension office. It is likely that the scheme, after generating an initial surplus of contributions over benefits, would eventually have struggled to keep pace with the level of claims. The same can be said of today's social insurance programs, however, and Defoe's ambitious project was not so different in concept from its modern counterparts. ●

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