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## *The Tontine: Fact and Fiction\**

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« Tonti is dead, and I never saw anyone who pretended to regret him », wrote Robert Louis Stevenson and his stepson-collaborator Lloyd Osbourne as they began a brief comic novel entitled *The Wrong Box*. The authors' opinion of the tontine, Lorenzo Tonti's creation, is equally low. Nonetheless they are quite indebted to the relatively obscure Neapolitan banker. In the tontine system Stevenson found a theme for a farcical story replete with coincidence, misunderstanding, and mistaken identity. Two of the characters in the novel happen to be surviving members of a group of tontine holders — that is, persons sharing in the annual proceeds of an annuity in which the right of survivorship is vested solely in members of the group. As each member died, the annual income due to surviving shareholders in the tontine increased until the last member had at his disposal a fortune. At his death the tontine was extinguished.

More than two centuries before Stevenson's time, Tonti had suggested themes that governments, insurance companies, and fiction writers have since exploited. In a blatant appeal to the contemporary fascination with gambling, the Italian promoter around 1652 had promised to the French monarchy a successful loan and to the borrowing public a regular income with prospects of great riches for a few survivors. Were it not for the novelty of his scheme, Tonti might well have disappeared from memory along with

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other "givers of advice" who infiltrated the French fiscal administration in that decade. If Tonti held out glowing prospects of benefits for all takers, Stevenson and Osbourne contended that no one really could profit through the tontine although « its fine sportsmanlike character endeared it to our grandparents ». As the group of shareholders approaches extinction, « the proceeds are fluttered for a moment in the face of the last survivor, who is probably deaf, so that he cannot even hear of his success ».

Stevenson's novel makes clever use of the system he despised. The characters complicate their lives as they assiduously guard the health of an aging uncle, a tiresome bore but, far more important, a shareholder in a tontine. When the uncle appears to meet death in a railway accident — actually a case of mistaken identity — the nephews try to conceal his fate and contrive to collect by fraud the "deceased's" share in the annual proceeds of the tontine. Meanwhile the uncle remains at liberty, glad to be rid of the two watchdogs. As they attempt to hide the body of a complete stranger, thought to be the uncle's, the plotters are confounded by their own greed and ineptitude.

In our language, writers of fiction have done more than professional historians to publicize the tontine. Most widely known is a two-volume best seller published in 1955 by Thomas Costain and entitled simply *The Tontine*. Reminiscent of a Victorian novel, Costain's story is a chronicle of the lives of certain shareholders in a Waterloo Tontine (designed to pay benefits to veterans of the Napoleonic Wars) and of their families over the better part of the nineteenth century. Even if some coincidences seem forced, the novel provides a panoramic view of England in that era and, more interesting, it stirs up some genuine suspense as the tale draws to a close. While the number of shareholders dwindles to a very few, book-makers gamble as to who the winner, the last survivor, will be; all England awaits the outcome of the sweepstakes. Meanwhile a conspiracy is afoot to conceal the death of one tontine shareholder by hiring a capable (but alcoholic and undependable) actor to portray him and deceive the tontine inspectors. At the same time another member is involved in a plot to murder a fellow member and thereby profit from the crime. Costain has provided more melodrama than even the inventive Tonti apparently envisioned.

Closer to Tonti's time, a French playwright, Alain-René Lesage, wrote a comedy called *La Tontine* (1708), doubtless to capitalize on the renown enjoyed by that instrument of government credit. Lesage's play supposes that a father, a physician in fact, had purchased a tontine on the life of an elderly but robust peasant, whose good health the doctor loyally (and clumsily) attended to. The income from the tontine would enable the father to grant his daughter a dowry. Although Lesage has told us little about the tontine itself, he has devised plot complications suitable to a Rossini opera.

The ingenious Italian, Tonti, had actually anticipated some possibilities later explored by literary men. His own story, indeed, has enough mystery to resemble a novelist's creation. Evidently Tonti became involved in a popular revolt in the Kingdom of Naples in 1647 but, once the insurrection had failed, this French agent went into exile in a more congenial land, where he received an annual pension from Cardinal Mazarin, a fellow Italian and Louis XI's chief minister. Mazarin (neither priest nor bishop) was busily engaged in suppressing noblemen's plots in France, waging a war with Spain, and guiding the young king's education in statecraft. But this adept diplomat could not even manage his own private fortune, much less the revenues of the state. In order to continue the war against the Spanish Habsburgs, Mazarin grasped at all opportunities to raise revenue: taxes, forced loans, the sale of offices, and the like. Whatever scheme promised income to the treasury was welcome news. Tonti's exile in France was fortuitous. His memorandum to Mazarin was well calculated in that it promised "a gold mine for the king" and "a treasure hidden in the realm". The royal council approved the proposal and Lorenzo, or Laurent, Tonti issued a brochure, a sort of prospectus, to advertise what he modestly styled a "tontine".<sup>1</sup>

In return for a nominal sum, Tonti boasted, one could have expectations « disproportionnée to the sum that produces them ». An investment of 300 livres might some day produce an income of a hundred thousand. At worst, the shareholder should expect a revenue of 1% or 2%. Since a parent could purchase a tontine in a child's name, here was a means to provide the latter an income that would increase each year; thus daughters could acquire "enough wealth to marry advantageously". Tonti proposed that noble families endow their children with tontines. Another possibility was to buy a tontine under the name of a third party and receive an income as long as the latter lived, even to bequeath that income to one's heirs. Or a master could purchase a tontine in the name of a servant, thus providing a pension for the servant if the master predeceased him. As for the elderly, they would certainly find themselves endowed « with enough money to oblige respect and care from the persons who shall have an interest in wishing them longevity » (a theme, incidentally, that emerges clearly in a couple of fictional accounts). The royal tontine was to be a gamble for a sum much greater than the initial investment; anyone might try his luck! The crown, for its part, could use the proceeds from the tontine to redeem other bonds and restore public confidence — no small undertaking in the middle of the seventeenth century, when states engaged in war struggled to prevent insolvency.

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<sup>1</sup> Tonti's prospectus is quoted in JULIEN GOUDY, *La "Tontine Royale" sous le Règne de Louis XIV*, « Revue historique de droit français et étranger », 4ème série, XXXV (1957), 128-31.

Tonti's plan divides prospective investors into classes, or age groups. Shareholders in the 1653 tontine were to consist of ten classes; each group would invest a principal of 2,050,000 livres. For 300 livres a person could buy one share within the applicable group: investors of ages 14 to 21, for example, constituted one group. In all, the tontine was designed to draw a principal of 20,500,000 and to pay annual interest of 5%, or 1,025,000 livres. Blissfully ignorant of mortality, Tonti proposed the same interest rate for all ten groups from age zero to 70. Tonti's plan was incorporated in a royal edict of 1653 but never put into effect for lack of approval by the Parlement of Paris. Member of that high court saw no way to determine its cost to the monarchy, and some judges held that interest ought to exceed 7%.<sup>2</sup> At best, the science of probability was still in its infancy.

Not till 1689 did the French government enact the tontine into law. This time the crown specified fourteen age groups, the first group to consist of ages zero to 5; the second, ages 5 to 10; and so on through age 70. The new scheme was more sophisticated than Tonti's original plan in that interest was progressive, ranging from 5% for the lowest ages to 12½% for the highest. In the meantime, Tonti's plan had filtered into the Dutch Republic, where the town of Kampen was issuing its own tontines around 1670. Great Britain followed suit in 1693, in the midst of the Nine Years War. Although the English tontine was designed to raise one million pounds, it actually brought in only £ 108,000. In this respect, English experience ran parallel to that of France, where the first issues of government tontines yielded far less revenue than their promoters had sought.<sup>3</sup>

## II

As we have seen, the French tontine of 1689 encompassed ages zero to 5 in one class. But a cursory glance at mortality data of that era shows that such a class was most unlikely to enroll evenly across the board. To invest in an infant of, say, one year was financially quite risky. The Parisian mathematician Antoine Deparcieux, who assembled mortality data from the French tontines of 1689 and 1696, practically dismissed the possibility of a parent's enrolling the very youngest. Rather he assumed that enrollees must have been close to 3 years old or above. Other data in

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<sup>2</sup> *Ibid.*, p. 133; JULIUS WYLER, *Die Tontinen in Frankreich* (Munich, 1916), pp. 6-8; Pierre Le Roy, *Mémoires concernant le contrôle des rentes* (Paris, 1717), pp. 85-89.

<sup>3</sup> *Recueil général des anciennes lois françaises depuis l'an 420 jusqu'à la révolution de 1789*, ed. Isambert (Paris, 1821-33), XX, 89-91; H. WAGENVOORT, *Tontines: een Onderzoek naar de Geschiedenis van de Lijfrenten bij wijze van Tontine* (Utrecht, 1961), p. 165 (resumé in English); J. J. GRELLIER, *The Terms of all the Loans which have been raised for the Public Service* (London, 1812), pp. 3-4.

Deparcieux's book, *Essai sur les probabilités de la durée de la vie humaine* (1746), lend credence to his assumptions: For example, Edmund Halley's table of bills of mortality from Breslau (dated 1687-91) starts with a group of 1,000 persons alive at age *one* and specifies 145 deaths by the age of 2; 57 deaths during the following year; then 38; then 28. Thus a child covered by a tontine at age one would have had only a 73% chance of living, and collecting interest, till age 5. Besides Halley's tables, Deparcieux also included those of Simpson for London and Kerseboom for Holland.<sup>4</sup>

Simpson's table, based on bills of mortality in London, supports the conventional notion of the English capital as a pest-hole. Simpson begins with a population of 1,280 at birth; decedents during the first year number 410; the second year, 170; the third, 65; the fourth, 35; the fifth year, 20 decedents. Indeed J. H. Plumb wrote that in the early eighteenth century «only about one child in four, born in London, survived».<sup>5</sup> Simpson's data may be flawed, as Deparcieux contends, but they certainly imply that a child covered by a tontine at birth would have been a bad risk, with less than a 46% chance of surviving to age 5. Hence, as Deparcieux knew, it would be economic folly for parents to invest the not insignificant sum of 300 livres at 5% interest in the face of such a fearsome mortality rate.

The French mathematician found William Kerseboom's tables for the provinces of Holland and Friesland, in the United Provinces, to be carefully researched. These data, based on a century of experience with lifetime annuities, begin with a sample of 1,400 at birth. They show 436 deaths in the first five years — a survival chance of 69%, compared to the 45% posited in Simpson's table. Kerseboom's results come closer to those of Halley in Breslau. One's chance of surviving the four years from age one to 5 was 73% in Halley's view; 86%, according to Kerseboom. Although drawn from outside of France, the above data throw indirect light on the survival chances of a French tontine holder.<sup>6</sup>

Deparcieux's own data, drawn from records of the French tontines of 1689 and 1696, are the first compilation of actual experience with ton-

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<sup>4</sup> Deparcieux, *Essai*, p. 44; Table XIII. The Simpson table is, in Deparcieux's words, «the order established by M. Smart [based] on death registers of London, & rectified by M. Simpson». Halley's calculations, based on registers of 6,193 births and 5,869 deaths, constituted «the first mortality table... The meagre Breslau Table long remained the only serious attempt to utilize actual observations of mortality for scientific purposes». But Deparcieux's table, based on tontine experience, was «a much closer approximation to the true course of mortality ... than any of its predecessors». Charlton T. Lewis and Thomas A. Ingram. «Life Insurance». *Encyclopaedia Britannica*, 11th ed. (1910). Kerseboom was an eighteenth-century Dutch statistician, whose work Deparcieux encountered in a 1743 periodical.

<sup>5</sup> *England in the Eighteenth Century* (Harmondsworth, Middlesex, 1955), p. 13.

<sup>6</sup> Deparcieux, *op. cit.*, p. 42; see Tables VI, VII, XIII.

tines. He assumes no deaths before age 3 for lack of enrolment. We infer that once the infant had survived the very lowest ages, a parent had ample incentive to enrol him promptly in order to take advantage of the annual interest paid. A very sanguine person might see prospects of regular interest payments for some eighty or ninety years to come. At the other end of the spectrum, where the monarchy paid  $12\frac{1}{2}\%$ , we assume a certain sophistication among the buyers: the thirteenth class, aged 60-65, enrolled twice as many persons as the fourteenth, aged 65-70. It should occasion no surprise that both royal tontines (1689 and 1696) show highest enrolments in classes seven through eleven, that is, ages 40 to 55; presumably these were persons of at least modest means who could still collect a handsome sum at interest ranging from  $7\frac{1}{7}$  to  $10\%$  if they lived to a venerable age.

The income level and apparent shrewdness of tontine buyers may lead us to assume a much higher survival chance for holders of French tontines or, for that matter, of Dutch life annuities. But what happens if we run a short statistical test on the four groups surveyed by Halley, Simpson, Kerseboom, and Deparcieux and include in the test persons of age 3 to age 10? The choice of these ages may seem arbitrary, but (1) Age 3 is Deparcieux's starting point for holders of tontines, (2) The divergence among starting points used in the Halley table (age one) and in the Simpson and Kerseboom tables (age zero) prevents systematic comparison in the infant's first year, (3) The more drastic the mortality rate, as in the first year of life, the more important to know how accurately deaths were calculated around 1700 — a project well beyond the scope of this essay.

We compared the less selective groups of London and Breslau residents with Kerseboom's and Deparcieux's, the latter two based on life annuities and tontines respectively. Under binomial hypothesis testing, the annuitants (tontine and life) demonstrated no significant longevity superiority within ages 3 to 10. Similarly, a  $x^2$  test indicated no significant difference in longevity. The tables at hand do not permit us to assume that an annuitant was a safer risk than a non-annuitant.

### III

It is certainly no accident that Tonti's brochure had strongly emphasized the appeal to the prospective gambler. Similarly, Pascal's calculations on probabilities (1654) stemmed out of the craze for games of chance. On one occasion in the 1660s we find Louis XIV organizing a lottery ostensibly for the amusement of the court. Notoriously popular in Paris was a game called *hocca*, in which bettors placed their money on a table into thirty spaces; a number was drawn from a sack and the banker paid the winner at twenty-eight to one. Mazarin had imported the game from his native Italy into France, where it threatened financial ruin to families that

indulged in it. To prevent that catastrophe, Louis XIV and the minister Jean-Baptiste Colbert directed the Paris police to stamp out *hocca* and other pernicious games of chance.<sup>7</sup> The crown even granted to an entrepreneur a patent on a game called *jeu de lignes*, intended as an educational exercise in military fortifications and designed to deny Parisians the opportunity to lose any money. As *jeu de lignes* devolved into a disguise for illegal games, the crown outlawed it, too.

If the monarchy strove without great success to eliminate harmful private gambling, it continued to challenge the public to risk money in new tontine schemes, one of which was a complicated lottery-tontine of 1714.<sup>8</sup> One out of seven persons could actually win the lottery; the losers were consoled with tontines whose classes were based not on age but on ticket numbers. Such devices only reflected the financial plight of the crown at the close of the War of Spanish Succession. Across the Channel, as Queen Anne's reign drew to an end, the English government sponsored lotteries in 1712, 1713, and 1714.

Meanwhile Lorenzo, or Laurent, Tonti had disappeared into the shadows. Traces of his activities in the 1650s remain: for example, he had « collected a lot of money from gullible investors » in the ill-fated 1653 tontine and sought temporary refuge in Poland.<sup>9</sup> But Tonti's fortunes remained tied to France. In that same decade one hears of his plan to raise money to construct a pump and stone bridge near the Tuileries in Paris. Later, in the 1660s, he pleaded with Colbert for the restoration of the 6,000 livres annual pension he had received regularly from Mazarin and, as if to prove his worth, Tonti deluged Colbert with gratuitous advice. Why not, he asked, forbid traffic in silk of English origin and plant mulberry trees along the roads of France? Tonti talked of a scheme to turn an "Indies" company into the most powerful in Europe in less than a year. If the government drained some of the proceeds from the company on the sly, the investors could not complain since they would be well compensated. Colbert seemed disinclined to listen. Tonti's pension remained curtailed and, worse still, he went to jail.

It may well be that a commentary he wrote on the French monarchy was the real cause of Tonti's imprisonment in the Bastille in 1668. Indeed the government had directed him not to publish the work. Yet we find nothing in the book but a defence of Louis XIV and his financial admini-

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<sup>7</sup> *Lettres, instructions, et mémoires de Colbert*, ed. Pierre Clément (Paris, 1861-82), VI, 54, 77, 229-30; LEON BERNARD, *The Emerging City: Paris in the Age of Louis XIV* (Durham, N. C., 1970), pp. 184-85.

<sup>8</sup> COUDY, *op. cit.*, pp. 145-46.

<sup>9</sup> JULIAN DENT, *Crisis in Finance: Crown, Financiers and Society in Seventeenth-Century France* (New York, 1973), p. 157; *Correspondance administrative sous le règne de Louis XIV*, ed. G. B. Depping, III (Paris, 1852), XXII-XXIV, 17-21; COUDY, *op. cit.*, pp. 129, 133-134.

stration (with no apparent satirical overtones) and a hearty condemnation of the moneylenders who had defrauded the crown during the recent war. One must conclude, along with the records of the Bastille, that Tonti was imprisoned for "causes unknown".<sup>10</sup> While in prison he pleaded with Colbert for the financial security of his family. After his release some seven years later, Tonti died in obscurity, no one knows when. Curiously, the name Tonti has been preserved in American annals through the legendary career of Laurent's son Henri, who accompanied the La Salle expedition and eventually traveled thousands of miles of wilderness exploring lands from Quebec to Mobile. As for Laurent Tonti, conjectures place his death around the time of the first or second French tontines, the issues of 1689 and 1696. But the Italian promoter's name is conveniently omitted from the edicts establishing the first tontine. Not till 1696 did the French crown officially acknowledge that it would sell « lifetime annuities called... the Tontine ».<sup>11</sup>

The Old Regime French monarchy issued ten tontines in all before banning them on the ground that they were burdensome to the state. Presumably the research done by Deparcieux and others led the crown to the conclusion (1763) that it would issue no new ones. Yet the tontine principle survived in numerous ways. For example, Secretary of the Treasury Alexander Hamilton's First Report on the Public Credit suggested that the United States float a tontine. Although Hamilton's plan was disregarded, the tontine was incorporated in a number of life insurance policies issued in the nineteenth century by British and American companies. Finally, as late as 1972 an American business magazine reported the existence of a trust agreement utilizing the tontine principle: the Great Northern Iron Ore Properties Trust, a legacy of James J. Hill, the railroad magnate of the early twentieth century. We probably have not heard the last of those « disagreeable lotteries called Tontines ».<sup>12</sup> As long as there is zest for novelty and suspense and a willingness to gamble, they are likely to reappear, if only in the imaginations of literary men or promoters.

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<sup>10</sup> *Archives de la Bastille*, ed. F. Ravaisson, VII (Paris, 1874), 294-95; Depping, *op. cit.* pp. xxiv-xxv. In the edition that we consulted, the author Tonti is identified as « L. T. »: *Rélation de la conduite présente de la Cour de France adressée à un Cardinal à Rome, par un Seigneur Romain ...* 2nd ed., revised and corrected (Cologne, 1665). The title page says this « Roman lord » was in the suite of Cardinal Flavio Chigi, papal legate in France.

<sup>11</sup> COUDY, *op. cit.*, pp. 129, 134.

<sup>12</sup> DENT, *op. cit.*, p. 157; *Forbes*, 15 September 1972, p. 60; JULIEN COUDY, *La "Tontine Royale" sous le règne de Louis XV*, « *Revue historique de droit français et étranger*, 4ème série, XXXVI (1959), 339.