



## Tontines and their modern (re)discovery

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Tontines are financial arrangements in which participants pool their funds and receive periodic payouts that are shared among the surviving participants in the pool. Though often thought of as “historical curiosities,” tontines have a centuries-long track record as both a personal finance instrument and a public-policy tool. Over the past two decades, the economics and actuarial science literatures—e.g., Piggott et al. (2005); Milevsky (2006, Chaps. 10 and 12); Sabin (2010); Milevsky and Salisbury (2015) and Chen et al. (2020)—have begun to re-examine tontines as a potential solution for pressing retirement-financing challenges. These challenges include rapidly aging populations, deep uncertainties about aggregate mortality, and public-sector fiscal constraints (OECD 2020).

While the idea of tontines is intuitive, there are many ways to structure a tontine, and a number of theoretical and practical questions about the design of “modern” tontines remain unresolved. In particular, lingering doubts about the sustainability of tontine arrangements have sparked an active research literature on the product design, market structure, regulatory considerations, and cultural receptiveness to tontines. The four articles in this special issue of the *Geneva Risk and Insurance Review* each provide new insights. This editorial introduces the articles and highlights both how they connect to each other and how they fit into the broader developing literature on tontines.

One of the important questions in the modern discussion of tontines concerns their relationship to annuities. It has been well known since Yaari (1965) that perfect, frictionless markets for life annuities are, under standard assumptions, sufficient

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for allowing retirees to achieve their first-best consumption profiles. In such a frictionless market, there would be no role for tontines in funding retirement. Existing annuity markets feature important frictions, however—frictions that can imply an important role for tontines.

Real-world annuities feature sizable administrative loadings, for instance, and there is good reason to think that tontines can be offered with lower loads. Indeed, one reason that annuities have administrative loads is so that insurers can hedge against the aggregate longevity risk that the annuity provider carries on its balance sheet when it promises lifetime income to annuitants. Because their benefit payouts naturally adjust to group survival rates, tontines, by contrast, do not need to pass on longevity risk to an insurer—and thus could be offered with lower administrative loading. See, for instance: Stamos (2008); Hanewald et al. (2013); Milevsky and Salisbury (2015); Bernhardt and Donnelly (2019); Chen et al. (2020) and Chen et al. (2021a).<sup>1</sup>

Gaps between subjective and objective beliefs about health provide a second possible reason that tontines can coexist with annuities in real-world markets: If individuals overestimate their longevity relative to peers, then tontines could be subjectively appealing relative to annuities for many individuals, as discussed for instance, in Chen et al. (2021b) and Chen and Rach (2023).

As such, and in contrast to Yaari's frictionless ideal, there may be scope—as in Chen et al. (2020) and Weinert and Gründl (2021)—for individuals to hedge risks by diversifying their retirement products across a mix of annuities and tontines, or else to desire products with both annuity and tontine features such as the “tonuity” described in Donnelly and Young (2017); Chen and Rach (2019); and Chen et al. (2019).

The first article in this special issue, Moenig and Zhu (2024), makes a novel contribution to this co-existence literature. In particular, and following Valdez et al. (2006), it notes that when tontines and annuities coexist, adverse selection—well documented in both annuity markets (Finkelstein and Poterba 2004, 2014) and historical tontine markets (Li and Rothschild 2020)—may impact the two markets differentially. The received wisdom, in the literature following Valdez et al. (2006), was that adverse selection will be more acute in annuity markets when the two markets coexist. Moenig and Zhu (2024) show that this received wisdom is at best incomplete: It only holds when annuitants/tontine-investors display increasing relative risk aversion. In the empirically plausible case of constant or decreasing relative risk aversion, adverse selection will, in fact, be as or more severe in tontine markets as it is in annuity markets.

Adverse selection can undermine the stability and efficiency of insurance markets, and, indeed, can lead to unraveling of those markets à la Akerlof (1970). The second paper in this special issue, Bernard et al. (2024), studies a related sort of selection-based unraveling that can happen in tontine markets even when longevity

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<sup>1</sup> In fact, as noted by Bommier (2006), individuals may be temporally risk averse with respect to their unknown expected lifespans; such individuals may find the natural adjustment to group survival an *intrinsically* desirable feature of tontines.



type is symmetrically observed. This contribution demonstrates that tontine markets will tend to “unravel,” toward only those tontine pools which feature the so-called Sabin pricing rule (Sabin and Forman 2016) under which each participant’s expected present value of benefits matches their initial premium. While the Sabin rule has some desirable features, Bernard et al. (2024), following Chen and Vanduffel (2023), argue that it has undesirable fairness properties. It follows from this second contribution to this special issue that some *a priori* desirable types of tontine payout rules may be unsustainable in a market equilibrium.

The third article in this special issue, Milevsky and Salisbury (2024), considers a distinct reason that some desirable types of tontine payout rules may be unsustainable in a market equilibrium: regulatory constraints. A potential advantage of tontines is that they do not require a risk-bearing counterparty. In practice, this means they will be regulated as financial securities rather than insurance products. Motivated by the financial regulations imposed on a tontine product recently introduced in Canada, Milevsky and Salisbury (2024) characterize the optimal properties of a tontine whose payout rule is required to ensure that investors receive at least their money back on average in each period. As Milevsky and Salisbury (2024) emphasize, the “money back in expectation” requirement can also be motivated by investors’ willingness to even consider participating. Indeed, for reasons that likely lie outside of traditional economic models of decision-making and instead in the psychological and socio-cultural domain, investors appear particularly reluctant to purchase life annuities that do not have some form of ‘return of principal’ guarantee; similar reluctance will likely apply as tontine markets develop.

The final article in this issue, McDiarmid (2024), resonates with these ‘broader’ socio-cultural determinants of investor behavior theme in providing a fascinating historical study of the importance of socio-cultural factors in shaping investors’ taste for tontines and tontine-like products. By contrasting the development of such products in the late 18th and early 19th centuries in Ireland and Scotland, McDiarmid shows that distinct socio-cultural understanding of tontines in Ireland and Scotland had a direct influence on the development of these markets. For instance, he documents that Ireland and Scotland both developed and employed a similar financial product, but used very different languages to describe them—mutual aid tontines in Ireland versus the “dividing” Friendly Societies of Scotland. Economists and actuaries writing about tontines—not to mention policymakers, regulators, and financial product innovators—would do well to recognize their influence on these broader cultural understandings.

Tontines, popularized by Lorenzo de Tonti in the 1650s, soon found favor across Europe (Milevsky 2014, 2015). Their popularity reflected their usefulness for public finance, but also their cultural resonance in different locales. McDiarmid (2024)’s contribution in this issue reminds us that this historical legacy can shape not only how we remember tontines, but also how new forms of tontines might be perceived going forward.

Looking ahead, the challenge is to design tontines in ways that preserve their natural attractions while addressing legitimate concerns about fairness, adverse selection, regulation, and appeal (and basic scrutability) to retirees. The potential scope for innovation is large: from hybrid tontine–annuity solutions (Chen et al. 2019,



2020; Weinert and Gründl 2021; Milevsky and Salisbury 2024) to carefully calibrated group-payout rules (Sabin 2010; Chen et al. 2021c; Bernard et al. 2024) to novel marketing and rebranding strategies that make the product culturally acceptable. As our societies fight the challenges of an aging population and rising life expectancy, we are optimistic that the evolving research on tontines will continue to illuminate fresh ideas for structuring retirement finance—and that the centuries-old tontine concept may yet offer new solutions for the future.

The articles in this special issue will represent an important step toward further development of the interdisciplinary scholarly literature on tontines. Our hope is that they will spur scholars toward further study the potential role for tontines in the decumulation phase of retirement, and toward the integration of tontines into public policy and private retirement planning solutions that are downstream of it.

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