Tontines in the Western World Today

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Tontines

- Tontines are investment vehicles that combine features of an annuity & a lottery
- Investors pool their money
  - Each year they are alive, members receive investment income
  - As members die, their shares are forfeited to the surviving members ("mortality gains")
A Simple Tontine

Suppose ten 65-year-old men invest in a fund

\[ 10 \times \$1000 = \$10,000 \]
A Simple Tontine

A few years later, one man dies.

The 9 survivors are each eligible for . . .

\[ $1111 = 10 \times $1000 \div 9 $ \]

Meanwhile, the dead man forfeits his $1000.

– But he doesn’t care; he’s dead!
A Simple Tontine

A few years later, another man dies.

The 8 survivors split the $10,000, & each gets $1250 = $10,000 \div 8

The survivors get even more if the tontine earns interest.
History of Tontines in the U.S.

- Alexander Hamilton once suggested that the U.S. could use tontines to pay its debts
- In the late 19th century, tontines were a popular investment for individuals
  - But they fell out of favor at the beginning of the 20th century
  - The problem was not with the tontine form, but with embezzlement and fraud.
Tontine-style Financial Products in the 20th Century

- Social Security
- Annuities
- Defined benefit plan pensions
- Defined Contribution plans that offer annuities
Overview of the U.S. Economy

- Population ~ 323 million
- Gross Domestic Product ~ $18 trillion
- $53,657 Median Household Income in 2014
- $28,851 Median Wage in 2014
  - $44,569 Average Wage
- 2016 Federal Poverty Guidelines
  - $11,880 for a one-person household
  - $16,020 for a two-person household
Social Security

- Established in 1935
- Now provides retirement benefits to more than 40 million retired workers
  - average benefit paid to a retired worker is more than $1300 a month
- 61% of elderly Americans receive at least half of their income from Social Security
Annuities

• Like tontines, lifetime annuities incorporate survivorship principles.
• The market for annuities is well-developed in the United States, but the penetration rate is fairly low—annuities represented just 8 percent of retirement assets in 2015.
  – When given the choice, people rarely choose to buy annuities voluntarily.
Early History of Defined Benefit Plans

• “Voluntary” private pension system
• Early pensions included military and civil service employees
• American Express established the first private pension plan in 1875.
• By 1920, many railroads, utilities, banks, mining, and manufacturing companies had pensions.
The Recent Decline of Defined Benefit Plans

• After World War II, unions pushed for pensions
• Recent shift from traditional defined benefit plans to defined contribution plans
  – just 20% of Fortune 500 companies offered salaried employees a defined benefit plan in 2015, down from 59% in 1998.
Defined Contribution Plans

• Usually make lump sum or periodic distributions to plan participants, not lifetime annuities
• Few plans offer annuities, and, in any event, few participants elect those annuity options
• Exception is TIAA
  – around 75 percent of its beneficiaries receive annuity payments
New Possibilities for Tontines in the Western World

• Products to protect against longevity risk
• Pooled annuities
  – TIAA’s College Retirement Equities Fund (CREF) has been offering a tontine-style product since 1952
    • The mortality risk falls entirely on the annuitants and is not guaranteed by TIAA
• Other ideas include “defined ambition plans” & “variable annuity pension plans”
True Tontines

- Variations on the tontine principle—*that the share of each, at death, is enjoyed by the survivors*—can be used to create a variety of innovative financial products.
  - Survivor Funds
  - Tontine annuities
  - Tontine pensions
A Simple Survivor Fund

Imagine that 1000 65-year-old men each contribute $1000 to a mutual fund that buys a $1 million, 10-year, zero-coupon bond, paying 5% interest.

- In 10 years, the fund would get ~ $1.6 million
- Each investor (or her heirs) would get ~ $1600
  - $1600 = $1.6 million ÷ 1000
A Simple Survivor Fund

• A simple survivor fund would also divide that $1.6 million—but only among the survivors.
  – If 800 men survived the 10 years (to age 75), each would get ~ $2000.
    • $2000 = $1.6 million ÷ 800
    • That’s $400 more!
    • That’s ~7% interest!
Run by a Mutual Fund

• Survivor funds could be managed by a mutual fund
  – Could invest in stocks and/or bonds
  – No money for insurance agent commissions
  – No money for insurance company reserves, risk-taking, or profits

• Could accept investors of different genders and ages, & who have different levels of investment
Tontine Annuities

• In a tontine annuity, mortality-gains would not be paid out when other members die.
• Instead, mortality-gains would accrue in individual accounts for the survivors. If a member is alive at the end of the month . . .
  – She would be paid the accrued mortality-gains in her account as a monthly distribution.
  – She would also receive a portion of her original contribution.
Tontine Annuities

• Could be designed to have monthly benefits
  – That are level throughout retirement like an immediate, level-payment annuity,
  – Or, alternatively, that increase gradually throughout retirement, like an immediate, inflation-adjusted annuity
Tontine Pensions

• Would work like a defined contribution plan that only pays benefits in the form of an actuarially-fair life annuity

• At retirement, the balance in each participant’s individual account would be paid out to her in the same manner as if she had purchased her own tontine annuity with the employer contributions made on her behalf.
Tontine Pensions

• Instead of investing its contributions in stocks and bonds, the employer would invest in a tontine annuity for its employees.
• Those contributions would be invested allocated to the individual accounts.
• Monthly tontine-pension distributions would be paid to retirees.
Conclusion

• Tontines were popular in the United States in the latter part of the 19th century, but they have since disappeared.
• With increasing longevity, there is a great need for low-cost lifetime income products.
• We believe that new low-cost, tontine-style products will soon find popularity where high-premium retail annuities have not.
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