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TONTINE INSURANCE AND THE ARMSTRONG INVESTIGATION:
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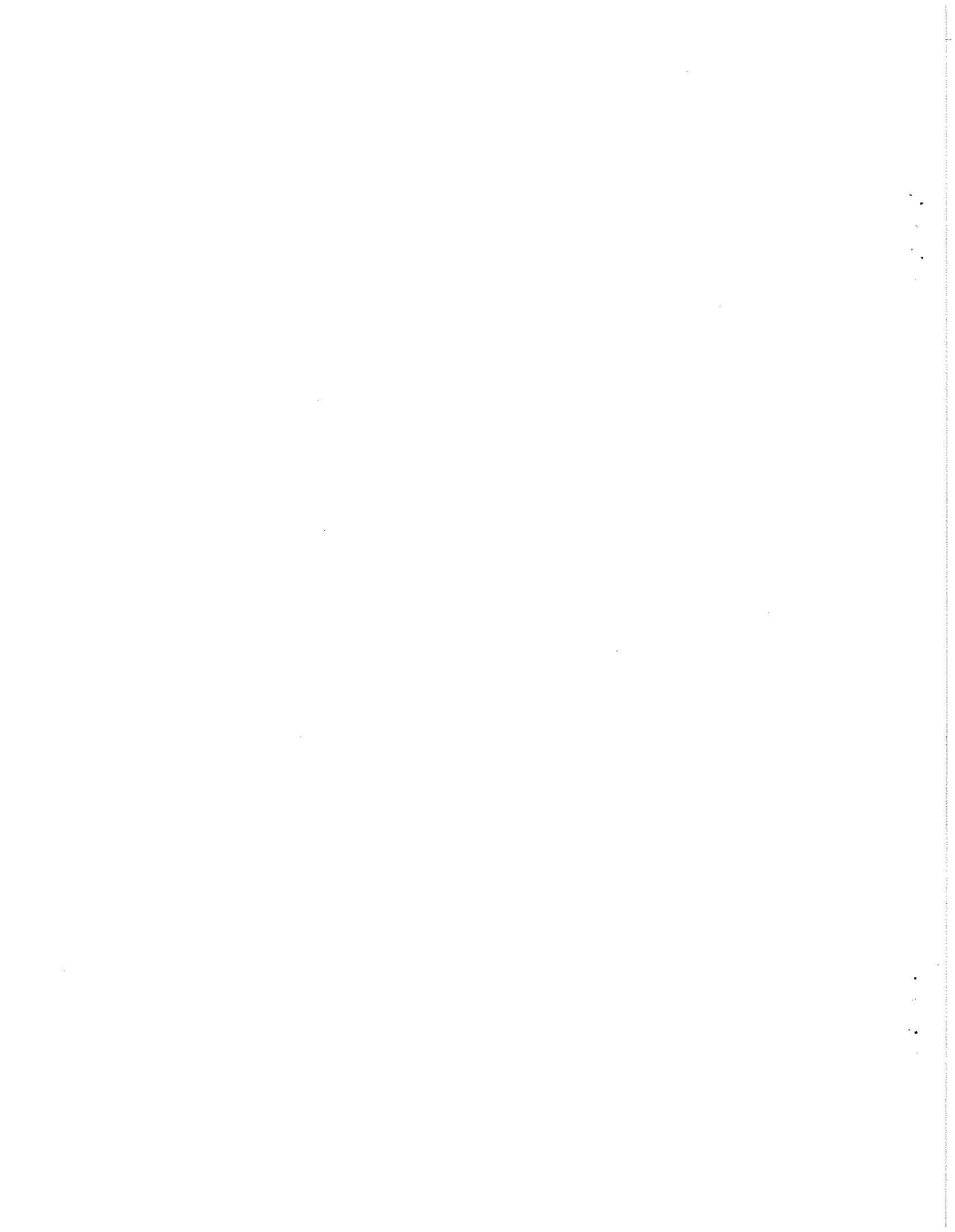
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Abstract

Tontine insurance, introduced in 1868, combined the features of life insurance with an unusual type of old-age saving plan. A portion of the annual premium was held in an accumulating fund that was divided among the surviving policyholders after twenty years. By 1905, two thirds of all insurance in force was of this type. Despite this success, further sales of tontine policies were prohibited in 1906 after the Armstrong Committee Investigation blamed the tontine business for corruption, extravagance, and other ills of the industry. We argue that tontine insurance was an actuarially-sound and attractive investment and that prohibition was probably unnecessary.



It does seem probable that by allowing to assurers the choice among several dividend systems, ... the assurers will, when assuring, choose the class which they instinctively feel will be most profitable to them, and that thus the assurant's self-interest may effect a classification beyond the wisdom of disinterested experts.

Sheppard Homans for the Equitable Life Assurance Society, 1868.¹

The sales pamphlet from which this quotation is taken announced the introduction of "tontine insurance," an innovation which was to transform and propel the American life insurance industry over the next 37 years. Tontine insurance had been developed by Sheppard Homans, probably the most able and certainly the most prominent actuary in the country, and was introduced in 1868 by the Equitable Life Assurance Society of the United States.²

The new type of policy was different from standard life insurance in that the premiums paid had two distinct purposes. One portion of the premium purchased insurance on the life of the policyholder. The remaining portion was deposited in an investment fund managed by the insurance company. This fund grew both from the continuing receipt of payments and from the earnings received on investments. After a stipulated period had elapsed (usually twenty years), the entire amount accumulated in the tontine fund was divided among the surviving policyholders. The beneficiaries of those who died before the terminal date would receive an insurance payment but would not share in the distribution. By restricting the distribution of the tontine

fund to survivors, policyholders could pool the risk of old age. In this respect, the tontine funds shared a key characteristic with modern pension plans.

It is generally acknowledged that the phenomenal expansion of the U.S. life insurance business over the next third century was largely driven by the popularity of the tontine policies, helped along, perhaps, by the aggressive marketing techniques of the large firms.³ Despite this success, tontine insurance came under sharp attack in 1905. This type of policy created enormous funds under the discretionary control of the insurance companies. It was charged that these funds were subject to abuse and had been misused to enhance the social status, political influence, and personal wealth of industry leaders. In 1905 the New York State Legislature conducted an investigation into "the business and affairs" of the industry. The Joint Committee was chaired by State Senator William W. Armstrong and its work became known as the "Armstrong Investigation." Far more prominent than Senator Armstrong in the proceedings, however, was Charles Evans Hughes, the Committee's Counsel. His role in the investigation gave him national prominence and launched his remarkable political career.⁴

After an exhaustive investigation, the New York State Legislature acting on Hughes' recommendation prohibited the further sale of tontine insurance.⁵ Other states followed suit. Ever since, tontine insurance has fared poorly in the opinion of business and economic historians. J. Owen Stalson, whose 1942

book is still the best comprehensive history of the life insurance industry, described the tontine period as "the most wrong-headed era in American life insurance."⁶ Herman Krooss and Martin R. Blyn in their History of Financial Intermediaries judged the tontine policy a "swindle."⁷

There is certainly much about the insurance business in this era worthy of criticism. The industry seems to have indulged in more than its share of unsound practices, questionable marketing techniques, and political manipulation, and it attracted an extraordinary number of corrupt individuals.⁸ Despite this, it is our belief that tontine insurance deserves reassessment. Considered as a financial innovation, it was very successful. Considered as insurance, it was actuarially sound. Considered as a gamble, it was a "fair bet." There was no "percentage for the house" beyond a charge to cover administrative costs. Considered as a life-cycle asset, it proved to be an excellent investment, earning a rate of return substantially in excess of that generally available on other assets. Tontine insurance was the victim, we argue, of an episode of regulatory excess.

The Mechanics of Tontine Insurance

Consider, first, the standard form of life insurance called "level premium" insurance. With a fixed premium, the insured is initially charged more than is warranted by the risk assumed by the issuing company. However, as the insured grows older and the risk of death rises, the level premium eventually becomes less than adequate to cover the risk of death. The excess premiums

paid by young policyholders are used to create a "reserve" which the company invests in income-producing assets until they are needed to pay death benefits to the policyholders' beneficiaries. For safety's sake, the fixed premium is set at a level substantially higher than required to meet anticipated expenses and to generate an adequate reserve. In most years, this excessive charge accumulates a "surplus" over and above the reserve. The companies rebate this surplus to policyholders periodically as "dividends."

The tontine contract was an agreement by the policyholder to defer the receipt of these dividends. The amount due would instead be pooled and invested by the company on behalf of the policyholders for a specified period: five, ten, fifteen, or — most typically — twenty years. At the end of the period this fund, augmented by the investment earnings, would be divided proportionately between all of the surviving policyholders.⁹ The payment could be taken in cash or as a fully-paid life annuity. Beneficiaries of policyholders who died before the end of the tontine period would receive the specified death benefit but neither they nor the deceased's estate would have a claim on the accumulated tontine fund.

In addition to securing conventional life insurance, the purchaser of a tontine policy was creating a retirement fund for old age. Moreover, the rate of return earned by survivors on the investment of the deferred dividends could be expected to be unusually generous since they would share in the accumulated

dividends contributed by deceased policyholders and all forfeitures of those who allowed policies to lapse. The insurance companies, of course, made much of these advantages in their sales pitch for the new policy. Tontine insurance, they argued, was life insurance where the survivors won.¹⁰

The forfeiture of dividends by those who lapsed in their premium payments was occasionally criticized by the public as unfair. In 1883 this feature was dropped by the Equitable and lapsing policyholders were thereafter assured a "surrender value" in cash or paid-up insurance after the third year (later reduced to one year). This new policy, called a "Semi-Tontine" or a "Deferred Dividend Policy," was immediately copied by the other major firms and proved even more popular than the original "Full Tontine."¹¹

A Short History of Tontine Insurance

The first "Tontine Dividend Policy" was sold by Equitable in November 1868. Sales were slow at first, but after the policy was improved in 1871 and rechristened "Tontine Savings Fund Assurance," it proved popular. Equitable soon found that the bulk of its new business was being written on the plan and that its sales were expanding rapidly. That company, which issued \$41 million of new business a year in 1870 and 1871, averaged \$53 million in new policies in 1872 and 1873. As a consequence, Equitable's share of the industry's sales rose from 7.6 percent to 11.0 percent. Meanwhile, New York Life, which had introduced

tontine insurance in 1871, saw its share of business increase from 4.8 to 5.6 percent.¹²

One by one, the smaller companies followed the lead of Equitable and New York Life and introduced tontine plans of their own.¹³ Many of those that did not do so failed during the depression that followed the panic of 1873.¹⁴ In 1881 Northwestern Mutual introduced tontine insurance after a decade of sales decline and promptly doubled its new business within two years.¹⁵ Most companies that had not already done so followed Northwestern immediately. But it was not until 1885 that Mutual Life, the largest insurance company in the country, finally introduced tontine insurance.¹⁶ Immediately thereafter, the new policy dominated Mutual's business. Within three years less than one-half of one percent of Mutual's new business was being written on the old plan.¹⁷ By 1905 only three companies, Connecticut Mutual, Mutual Benefit Life of New Jersey, and Provident Life and Trust of Pennsylvania, had held out against the trend.¹⁸

The Volume of Tontine Insurance Issued

We have found no reliable way of estimating the total volume of tontine business for years before 1905. Not one of the state Insurance Commissions required specific reports on these policies and, of the major companies, only Northwestern kept the tontine

business distinct in its own books.¹⁹ In the absence of data, the Armstrong Committee made an attempt to collect statistics for 1905, but their effort was only partially successful. There are figures for 21 companies on the fraction of all insurance outstanding that was on the deferred-dividend plan at the time of the inquiry. These percentages are reported in the second column of Table 1. Unfortunately, no figures were provided to the Committee by the three largest issuers of tontine policies: New York Life, Mutual, and Equitable.²⁰

[Table 1]

Table 1 presents estimates of the volume of tontine insurance in force at the end of 1905 for 34 large companies. Insurance in force is measured by the insurance value of the policy in dollars. For the 21 companies that responded to the Armstrong Committee, the value of all insurance in force for each company at the end of 1905 is multiplied by the percentage that was on a deferred-dividend basis to obtain the estimate given in the last column of the table. To extend the table's coverage to include the other large companies (including the three largest issuers of tontine insurance) we have extrapolated data for 1907 back to 1905. The New York Insurance Commissioner's Report for 1908 reports tontine insurance in force for 26 companies at the end of 1907.²¹ However, there was considerably less tontine insurance in 1907 than in 1905 because further sales of tontine policies had been prohibited early in 1906. After the prohibition of new sales, continuing terminations of pre-1906

policies through maturation, death, or surrender reduced the number of deferred dividend policies remaining in force. Thirteen of the 26 companies included in the 1907 list had reported a 1905 figure to the Armstrong Committee and each one showed a decline in the outstanding amount of deferred-dividend insurance. Overall, the volume fell 22.6 percent.

To extrapolate the 1907 figures back to 1905 for the companies without 1905 data, we assume that -- due to the prohibition -- they issued no new tontine policies in 1906 or 1907. If so, the entire change in the tontine insurance in force for these firms must have been the consequence of terminations during the two-year period. The terminations of tontine policies are estimated as a fraction of terminations on all policies issued by the company. Data on the volume of all terminations are provided in the Insurance Year Book for each company. By comparing the fraction of terminations that were tontine policies with the fraction of all insurance in force that was on the tontine plan for the 13 companies that reported both 1905 and 1907 data, we were able to establish that a consistent relationship existed between the two.²² This relationship is used to estimate the terminations of tontine insurance during 1906 and 1907 for the companies that did not report in 1905. It is then a simple matter to estimate the volume of tontine insurance at the end of 1905. The third column of Table 1 presents these estimates as percentages of the total. To indicate the accuracy of the estimating technique we also present

the estimated percentages for the 13 companies for which we already had the 1905 percentage.

The value of tontine insurance outstanding at the end of 1905 for 34 companies totals to more than six billion dollars. Based on these 34 estimates, we suggest that about 64 percent of all insurance was on the deferred dividend plan at the time of the Armstrong Investigation.²³ This finding assumes that the missing companies, on average, had the same percentage of tontine insurance as the 34 companies reported.²⁴ If so, the total volume of tontine insurance in force exceeded 7.5 percent of the total national wealth in 1905.²⁵ As a rough guess, we estimate there may have been as many as 9 million individual tontine policies in 1905 for a population of about 18 million households.²⁶ Ownership must have been widespread.

The Appeal of Tontine Insurance

American life insurance companies were among the first businesses to employ widespread advertising and an organized sales effort in pursuit of business. The use of hypothetical examples promising high returns was a common feature of these sales programs. Yet it would be simplistic to suggest that high-pressure marketing or false expectations could have sold an inferior product to so many people over such a long period of time. The popularity of tontine insurance must also reflect the genuine advantages of this asset over both ordinary insurance and conventional forms of saving.

Purchasers of a tontine policy expected to receive -- and actually did receive, if they survived -- a greater rate of return on their investment than was available on ordinary assets. In Table 2 we present the calculated rate of return on an illustrative tontine; a twenty-year life policy purchased at age 35 from Equitable in 1871 and held until paid in 1891.²⁷ For this policy, the company's prospectus had forecasted a return of 10.4 percent; survivors actually received a nominal return of 6.5 percent. However, prices in the United States had fallen steadily over the period between 1871 and 1891 so the amount disbursed in 1891 was more valuable when evaluated in the prices of 1871 than the nominal sum would suggest. The real rate of return earned by survivors was 7.8 percent. Had the same money been invested in a savings bank it would have earned a nominal return of only 4.3 percent. Purchasers may have been disappointed that the real returns were not as high as initially advertized, but they were hardly swindled.²⁸

[Table 2]

The superior performance of the tontine investment can be attributed to two distinct causes. First, the insurance companies were able to achieve a higher net rate of return on their portfolio of assets than that paid by banks. The Equitable's portfolio earned a return net of expenses of 5.3 percent. Second, the distinguishing feature of tontine funds were that they transferred to the survivors the accumulations that had been paid for by those who died and by those who allowed

their insurance to lapse. A simulation of the 1871 Equitable tontine fund reveals that 59 percent of the survivor's dollar return was produced by the accumulation of his own deposits, 12 percent was transferred from those who died, and 30 percent was contributed by those who lapsed.²⁹

Tontine insurance with its promise of a high return for survivors ought to have been particularly attractive to those whose saving was motivated by the desire to build a retirement fund. In the nineteenth century there were neither public nor private pension plans, so retirement saving had to be individually managed.³⁰ The problem for individual retirement savers is deciding how much income to save when one's life span is unknown. Too little saving when young may mean relative poverty in old age, particularly if one lives "too long." On the other hand, too much saving may produce an overly-large and unintended bequest for one's heirs at the cost of relative privation.³¹ A life annuity is a perfect solution to this problem. It permits an individual to pool the risks of old age with others by providing a fixed stream of income for life. Annuity holders who live long will win at the expense of those who die young. Tontine insurance allows the purchase of an annuity on the installment plan, a feature that would have been particularly attractive to those primarily dependent on labor income.³² Since the tontine policy also included regular life insurance, either whole life or term, it was also an insurance

against the risk of premature death that would have been attractive to workers with families.

There seems to be little doubt that the companies favored tontine policies; they typically paid their agents an additional commission if they could persuade an insurance buyer to defer annual dividends. The major attraction of the tontine contract to the insurance companies lay in the fact that the accumulating dividends quickly built up enormous surpluses that were left entirely in the companies' discretionary control under the lax insurance regulation of the time.³³ The tontine funds were not offset by a liability on the company books. They were neither separately reported or accounted for during the tontine period, and thus they could be used (and misused) for many purposes.³⁴ These funds financed the expansion of the existing insurance business at home as well as the larger companies' new ventures abroad. The existence of the surplus undoubtedly helped them to sail through periods of business downturn. By the end of the century, surpluses were sufficiently large to enable the insurance companies to manipulate the stock market, gain control of banks, firms, and even industries, and, in general, to wield unprecedented economic power. This situation was brought to public attention when the Boston stockbroker, Thomas Lawson, broke ranks to join the muckraking crusade. Lawson's articles in Everybody's Magazine helped bring on the Armstrong Investigation.³⁵

The Prohibition of Tontine Insurance

When the Armstrong Committee recommended that tontine insurance be prohibited the case was made with the following arguments:

[1] There would seem to be nothing in the supposed attractiveness of the opportunity to derive gain from the accumulations of other members which furnishes a sound argument for the continuation of this form of insurance. The feature of an additional benefit in the case of survivorship appealed to the gambling instinct ...

[2] [T]he popularity [of tontine insurance] has been largely due to the representations which have accompanied it and to the fact that delusive statements have been encouraged ... through the payment of larger commissions than were allowed for other forms of insurance. Estimates relied upon when the policies were issued have been falsified by the event.... The disappointing returns upon these policies ... has been more largely due to the wasteful methods of the companies ...

[3] The deferred dividend policies had conspicuous advantages for the companies, as they permitted the accumulation of profits for long periods without accounting.... [T]he huge surpluses of the companies have ... facilitated corruption.... [P]roper accountings have been refused.... [T]he companies should be compelled each year to state the results of their management by annual accounting.... But if there is to be an annual accounting there is no reason why there should not be an annual distribution; on the contrary, this is needed to make the remedy complete.³⁶

Although these arguments were sufficient reason for the New York Legislature and ultimately the other insurance states to require annual dividends, they do not strike us as a compelling economic case. The only point which addresses the financial attractiveness of tontine insurance is the first one and the Committee's argument seems to us to be mere gainsaying. The suggestion that the policy had a speculative appeal is a moral rather than an economic argument. Yet all forms of insurance

are, in this same sense, a gamble; nevertheless, the Committee saw nothing morally wrong with ordinary life insurance. It is also important to note that insurance differs from parimutuel betting or a state lottery in that the insurance gamble is a fair one; the price of the policy is equal to its expected actuarial value plus the costs of administration. The purchaser of tontine insurance, moreover, acted to reduce the risk inherent in life rather than to increase it.

The fact that the tontine plans were advertised by prospectus does not strike us as a fatal flaw. Misleading advertising could in principle, at least, have been dealt with directly through "truth in advertising" legislation and expense account abuses could also have been dealt with directly. Moreover, it is not so clear that misrepresentation was common. The position of the Committee was supported by numerous tables of exhibits contrasting the forecasted return on various tontine policies with their actual return. In every case the comparison was in dollars. Yet the major reason for the disappointing results was not extravagance, as the Committee charged, but rather the general fall in the rate of interest over the last three decades of the nineteenth century. Much of the dollar loss produced by the fall in the rate of return was restored in real terms by the simultaneous fall in prices. In any case, disappointed investment goals seem hardly to be a reason to prohibit financial innovation.

There is no doubt that the Armstrong Committee hit home with the third argument. Their investigation had revealed institutional and personal corruption on a shocking scale. The tontine surpluses were apparently a temptation difficult for some executives to resist. New York State Legislators, newspaper editors, and Insurance Commissioners had also been corrupted in the process and the fact that their bribes and sweetheart loans were financed with funds accumulated on behalf of policyholders infuriated the public. It is also clear that much of this abuse might have been avoided had accounting procedures been in place that would have compelled full and timely reporting. What is not clear, however, is the last step of the Committee's argument. There is no reason why annual accounting and annual audit control require annual dividends. We think the Committee -- unable to make the distinction between the misdeeds of the insurance tycoons and the instrument which enabled them to acquire sufficient power to make those misdeeds politically significant -- made the mistake of throwing out the baby with the bath water.

Tontine insurance, we conclude, does not deserve the reputation it acquired as a consequence of the Armstrong Committee's investigation. During the late nineteenth century, this innovation helped many Americans save for their old age by providing an efficient, high-yield, low-risk investment available on an installment plan. In a time before either pension funds or social insurance existed, such an asset fulfilled an important

economic function. Indeed, it may be that the prohibition of tontine insurance in 1906 hastened the introduction of both private pension plans and publicly-funded social insurance programs.

In the process of reassessing the merits of tontine insurance, historians should be careful to retain the distinction between the performance of the insurance industry and the role of the deferred-dividend policy. After this reassessment, we are no more entitled to excuse the corruption of the insurance tycoons and their manipulation of the industry than we are entitled to forget the excesses of Ford and Rockefeller because of our admiration for the gasoline automobile.

Table 1

Estimates of the Volume of Tontine Insurance in Force,
Thirty-Four Companies, December 31, 1905

(Thousands of Dollars)

Company	Percentage Tontine, 1905			Total Tontine Insurance In Force
	Total Insurance In Force	From Armstrong Testimony	Estimated From 1907 Data	
New York Life	\$2,061,594		87.9	\$1,812,822
Mutual	1,589,549		82.6	1,312,481
Equitable	1,465,123		80.3	1,176,938
Prudential [a]	431,778		90.8	391,857
Northwestern	764,266	25.1		191,984
Metropolitan [a]	388,585		42.8	166,163
Penn Mutual	366,870	43.0	42.5	157,754
Union Central	233,933	49.0	28.9	114,627
National of Vermont	145,481	69.7	71.4	101,371
Provident Savings	101,709	78.2	78.1	79,536
Germania [a]	109,128		69.2	75,550
Fidelity Mutual	114,888		61.2	70,291
Home	79,775	75.0	83.4	59,832
Manhattan	78,051	73.0	78.4	56,977
Berkshire	64,578	87.8	87.9	56,674
Washington	63,255	78.6	70.6	49,744
Security Mutual	51,011		73.8	37,627
Union Mutual	64,163		57.2	36,728
John Hancock [a]	149,847		24.3	36,393
United States	39,793	89.3	87.4	35,531
Hartford Life	60,322	50.0		30,161
Columbian National [a]	33,530		84.5	28,331
Minnesota Mutual	25,307	95.9		24,269
State Mutual	114,424	20.1	15.7	22,999
New England	165,816	12.6	17.0	20,826
Michigan Mutual	49,837	29.0		14,453
Bankers of N.Y.	21,343		62.9	13,426
Phoenix Mutual	89,292	13.5	14.6	12,054
Reliance Life	7,202	98.6		7,102
Life Assoc. of America	4,748		83.7	3,973
Connecticut General	30,224	1.5	6.2	453
Mutual Benefit	388,009	0.0		0
Provident Life and Trust	177,779	0.0		0
Connecticut Mutual	169,413	0.0		0
Total, 34 Companies	9,700,625		63.9	6,198,929
Residual, 75 Companies	1,353,607			
Total 109 Companies	11,054,232			

a. This firm also sold industrial insurance, only the non-industrial business is presented here.

Source Notes for Table 1

Total Insurance in Force: The Spectator Company, The Insurance Year Book, 1906-1907 [Life, Casualty and Miscellaneous], Thirty-Fourth Annual Issue, the company, 1906, Exhibit XXXV, pp. 568-569. Only non-industrial insurance is included; see footnote 23.

Tontine Insurance as Percentage of the Total According to Armstrong Testimony: New York, State Legislature, Armstrong Committee, Testimony, Exhibits, Report and Index of the Joint Committee of the Senate and Assembly of the State of New York to Investigate and Examine into the Business and Affairs of Life Insurance Companies Doing Business in the State of New York, J.B. Lyons Company, 1906, Volume V, pp. 4614-4856, and Volume VII, pp. 9-245. These percentages from the Armstrong testimony probably refer to the end of 1904 or sometime in mid-1905.

Tontine Insurance as a Percentage of the Total in 1905 as Estimated from 1907 Data: For the 13 companies that reported data both for 1905 and for 1907, a regression equation was estimated in which the proportion of tontine insurance in 1905 was predicted from (a) the volume of tontine insurance in force in 1907 divided by the total insurance in force in 1905 and (b) the ratio of total terminations during 1906-07 to insurance in force in 1905. The coefficients were then used to estimate the 1905 proportion of tontine insurance for the 13 companies that lacked a 1905 estimate. The predicted values for all 26 companies are given.

Total Tontine Insurance in Force: Estimated by applying the Armstrong percentage, if available, to the total insurance in force. When the Armstrong data is not available, the percentage estimated from the 1907 data is used.

Table 2

Estimated Rate of Return on the 1871 Twenty-Year Tontine Policy
Sold by the Equitable Life Assurance Society

(Percent)

	Real Rate	Nominal Rate
Forecasted in Advertising	10.4	
Actually Received by Survivors	7.8 ^a	6.5
Rate Earned at a Typical Savings Bank ^b		4.3
Rate Earned on Equitable's Portfolio ^c		5.3

a. Based on the consumer price index prepared by Paul A. David and Peter Solar, "A Bicentenary Contribution to the History of the Cost of Living in America," Research in Economic History: An Annual Compilation of Research 2 (1977), Table 1, p. 16.

b. Based on the rate paid by the Bowery Savings Bank of New York reported in Sidney Homer, A History of Interest Rates Second Edition, Rutgers University Press, 1977, Table 44, p. 319.

c. Based on the gross earnings rate on total assets held by Equitable reported in Lester W. Zartman, The Investments of Life Insurance Companies, Henry Holt and Company, 1906, p. 74. From the gross figures we deducted three-tenths of one percent for the expenses incurred in managing the portfolio on the authority of Zartman, pp. 116-117.

Source: Roger L. Ransom and Richard Sutch, "Swindle or Security? A Reexamination of Tontine Insurance, 1871-1905," Working Papers on the History of Saving Number 6, The University of California Project on the History of Saving, Institute of Business and Economic Research, University of California, Berkeley, November 1986.

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1. Sheppard Homans and George W. Phillips, "Tontine Dividend Life Assurance Policies," Equitable Life Assurance Society of the United States, pamphlet dated December 22, 1868, as quoted in R. Carlyle Buley, The Equitable Life Assurance Society of the United States: 1859-1964 two volumes, Appleton-Century-Crofts, 1967, I, p. 93. Sheppard Homans was the Actuary of the Mutual

Life Insurance Company from 1855 to 1871. Despite the fact that he was in Mutual's employ, he consulted for other firms including, in this case, Equitable. George Phillips was Equitable's Actuary.

2. Shepard B. Clough, A Century of American Life Insurance: A History of the Mutual Life Insurance Company of New York, 1843-1943, Columbia University Press, 1946, pp. 59-75. Buley, Equitable I, pp. 60-63, 92-93, and 98-99.

3. R. Carlyle Buley, The American Life Convention, 1906-1952: A Study in the History of Life Insurance two volumes, Appleton-Century-Crofts, 1953, I, pp. 86-192. Douglass C. North, "Capital Accumulation in Life Insurance between the Civil War and the Investigation of 1905," William Miller, editor, Men in Business: Essays on the Historical Role of the Entrepreneur, Harvard University Press, 1952; reprinted by Harper and Row, 1962: 238-253 and 363-368. Daniel Pope, The Making of Modern Advertising, Basic Books, 1983, pp. 57-60 and 221-223. The total assets held by life insurance companies grew at an annual rate of over 7.2 percent from \$203 million in 1868 to \$2,706 million in 1905. The 1868 figure comes from B. Michael Pritchett, Financing Growth: A Financial History of American Life Insurance Through 1900, S.S. Huebner Foundation Monograph Number 13, Richard D. Irwin, 1985, Table 10, p. 22. The 1905 figure is based on the compilation by the Spectator Company, The Insurance Year Book for 1906: Life, Casualty and Miscellaneous Thirty-fourth annual volume, the

company, 1906, Exhibit III, p. 499. Although the title varies somewhat, these volumes are hereafter cited as Spectator Year Book.

4. Hughes defeated William Randolph Hearst for Governor of New York in 1906. He resigned the Governorship during his second term to accept an appointment to the United States Supreme Court. He resigned in 1916 in order to run for President against Woodrow Wilson. He later served as Warren Harding's Secretary of State and was appointed Chief Justice of the Supreme Court by Herbert Hoover.

5. New York State Legislature, Testimony, Exhibits, Report and Index of the Joint Committee of the Senate and Assembly of the State of New York to Investigate and Examine into the Business and Affairs of Life Insurance Companies Doing Business in the State of New York seven volumes, J.B. Lyon Company, 1906, VII, pp. 322-324. Hereafter, cited as Armstrong Committee.

6. J. Owen Stalson, Marketing Life Insurance: Its History in America, Harvard University Press, 1942, p. 405.

7. Herman E. Krooss and Martin R. Blyn, A History of Financial Intermediaries, Random House, 1971, p. 110. One exception to the general disapproval of tontine insurance found in the literature is the brief assertion that "tontine insurance possesses many merits in theory" made in passing in Lance E. Davis, Jonathan R.T. Hughes, and Duncan M. McDougall, American Economic History:

The Development of a National Economy third edition, Richard D. Irwin, 1969, pp. 204-205.

8. Douglass North, "Entrepreneurial Policy and Internal Organization in the Large Life Insurance Companies at the Time of the Armstrong Investigation of Life Insurance," Explorations in Entrepreneurial History [First Series] 5 (March 1953): 139-161, provides a useful summary of the development of the management techniques of insurance companies that gives adequate attention to the unscrupulous features of the business.

9. The distinguishing feature of a tontine is that only the survivors share in the distribution. The name "tontine" recalled the scheme adopted in 1689 by Cardinal Mazarin to raise money for Louis XIV of France. Mazarin's plan had been suggested by Lorenzo Tonti a Neapolitan physician and banker living in Paris. Shares were sold at 300 livres each. The principal earned interest but was never repaid. The distinguishing feature of the plan was that the survivors inherited the interest of those who died, thus as time went on the whole annuity fund was divided among fewer and fewer survivors, the last of whom drew an annual income of 73,500 livres.

10. The companies were able to turn their embarrassingly-high lapse rates into virtues by advertising gains that might be anticipated from the contributions of those who would forfeit; Buley, Equitable I, pp. 126-127; and Stalson, p. 492.

11. Buley, Equitable I, pp. 258-259.

12. Buley, Equitable I, pp. 94 and 126-128; and Buley, American Life Convention I, pp. 92-96. Sales figures are from Spectator Year Book 20 (1892), pp. 274-275 and 298-299. The market share estimates are based on the total volume of new business reported by Frederick L. Hoffman, "Fifty Years of American Life Insurance Progress," Journal of the American Statistical Association New Series 95 (September 1911): 667-760, Table XV, p. 727. Hoffman's figures exclude industrial insurance, fraternal insurance, and assessment insurance. On New York Life's adoption of tontine insurance see James M. Hudnut, Semi-Centennial History of the New-York Life Insurance Company, 1845-1895, the company, 1895, pp. 150-151, and 155-159.

13. Since there was no regulatory requirement before 1907 that companies report tontine business it is difficult to establish the date at which companies introduced the plan. Testimony before the Armstrong Commission states that Connecticut General was conducting tontine business in the "early seventies;" Armstrong Committee, Testimony V, 4856. We know about some of the smaller New York companies in 1878 because they reported a surplus "accrued on tontine ... policies;" New York, Insurance Department, Nineteenth Annual Report of the Superintendent of the Insurance Department Part II, "Life & Casualty Insurance," Jerome B. Parmenter, 1878: pp. 9, 13, 32, 39, and 43. For the case of Metropolitan Life, see Marquis James, The Metropolitan Life: A

Study in Business Growth, Viking Press, 1947, p. 56.

14. At least 55 companies out of an initial 128 disappeared between 1872 and 1878; Pritchett, Table 1, p. 6. As far as we have been able to determine, none of the companies that failed had ever issued tontine policies. By contrast, the Equitable and New York Life passed through the crisis period unscathed; William Alexander, My Half-Century in Life Insurance, Harper and Brothers, 1935, p. 46; and Hudnut, Chapter 9.

15. Harold Williamson and Orange Smalley, Northwestern Mutual Life: A Century of Trusteeship, Northwestern University Press, 1957, pp. 101-102.

16. Actually Mutual did offer tontine policies from 1870 to 1872, but only 382 were sold. They were discontinued in 1872 at the insistence of Mutual's President, Frederick Winston; see Clough, p. 141, and Armstrong Committee, Testimony II, p. 1724. Winston died in 1885.

17. Clough, pp. 144-147.

18. It has been said that Massachusetts insurance companies (Massachusetts Mutual, New England Mutual, John Hancock, State Mutual, and Berkshire) were prohibited from issuing tontine policies; Richard Hooker, A Century of Service: The Massachusetts Mutual Story, the company, 1951, pp. 99-100. It is true that for a time companies located in Massachusetts were prevented from deferring dividends for longer than five years, but at least four

of the five Massachusetts companies wrote five-year tontine policies. These could be extended to ten-, fifteen-, and twenty-year policies by automatic roll-over provisions; Best Reporting Company, Best's Insurance Reports [Life] Upon All Legal Reserve Companies, Assessment Associations and Fraternal Societies Transacting Business in the United States, First Annual Edition, 1906-1907, the company, 1906; p. 132. For the volume of tontine business done by the Massachusetts companies, see Table 1 below. The case of Massachusetts Mutual is unclear; that company consistently failed to answer specific inquires on the matter directed by New York authorities.

19. Northwestern kept an individual record for each tontine purchaser and recorded annually the deferred dividends and the redistributions from the accounts of tontine holders who died or lapsed. Other companies did not. Later Northwestern lost a court case because it kept these accounts. The court ruled the existence of individual accounts proved that the company regarded the tontine surplus as a liability. Thus Northwestern, alone among the large insurance companies, was unable to treat the surplus as an unencumbered asset; Armstrong Committee, Testimony II, pp. 1697, 1724-1731, 1786, 1794-1799, 1801-1808, and 1827-1830. Shortly after this ruling, Northwestern began to deemphasize its tontine business. In 1893 over 60 percent of its insurance was on the deferred-dividend basis, by 1905 this had fallen to 25 percent of its insurance in force; Williamson and Smalley, Chart VII-1, p. 112.

20. These three companies were the target of the investigation. Their executives were called to testify before the Committee in person rather than by deposition. However, in the oral testimony, the routine question concerning the fraction of the company's insurance issued on the deferred dividend basis was left unasked.

21. New York, Insurance Commission, Forty-Ninth Annual Report of the Superintendent of Insurance of the State of New York, Part II, "Life Insurance," J.B. Lyon Company, 1908.

22. The data on total terminations were taken from the Spectator Year Book 36 (1908), Exhibit XXXI, pp. 790-795. The relationship was estimated by linear regression techniques as explained in the source notes to Table 1. This procedure demonstrates that the fraction of terminations attributable to the tontine business was lower than the tontine proportion of all business. This is not surprising since there are good reasons to expect that tontine holders were less likely to terminate than holders of other policies. Tontine holders had lower age-specific mortality and were less likely to allow their policies to lapse. Moreover, in many companies tontine policies dominated sales in the period immediately preceding the Armstrong Investigation, thus tontine policyholders were typically younger than the average owner of a standard policy.

23. Table 1 presents data only for non-industrial insurance which was about 83 percent of the total; Hoffman, Tables V, VI, and VII, pp. 717-719. In 1905 industrial insurance was issued by 20 different companies, but three (Metropolitan, Prudential, and John Hancock) accounted for 95 percent of this business. All three issued industrial tontine insurance; Best's Insurance Reports 1(1906), pp. 252-257, 165-170, and 132-133. Of these three, we have been able to ascertain the fraction of the industrial insurance which was issued as tontine policies only for Prudential. For that company, according to the 1908 Report of the New York State Insurance Commission, 63.2 percent of its industrial insurance was on a deferred-dividend basis at the end of 1907, p. 773. Also, a smaller industrial company, Colonial Life, reported two thirds of its total business (which was nearly all industrial) was accounted for by tontine policies, p. 381.

24. We believe this is a conservative assumption since most of the smaller companies omitted from Table 1 were heavily involved in selling deferred-dividend policies. To take several of many examples from Best's Insurance Reports 1 (1906): State Life of Indiana "issues deferred dividend policies chiefly," p. 296; Wisconsin Life does "practically all" of its business as tontine insurance, p. 336; Security Trust and Life "has issued very few policies except upon the deferred dividend plan," p. 283; and "a considerable portion of [Maryland Life's] business is upon the deferred dividend plan basis," p. 158.

25. Hoffman, Table V, p. 717, and Raymond Goldsmith, A Study of Saving in the United States three volumes, Princeton University Press, 1956, III, Table W-2, p. 17. Insurance in force is not part of national wealth, but the reserves and surplus held by insurance companies are included.

26. U.S. Bureau of the Census, Historical Statistics of the United States, Colonial Times to 1970, Bicentennial Edition two volumes, U.S. Government Printing Office, 1975, I, Series A288, p. 41. We assume the average size of a tontine policy in 1905 was about \$1000. The average value of a policy calculated from data on all insurance was about \$600; Hoffman, Table V, p. 717.

27. The Armstrong evidence includes information on the performance of many tontine funds issued by many companies. Examination of this data has convinced us that the relative performance of the Equitable tontine of 1871 is representative.

28. Elsewhere we present evidence that suggests that the forecasted gains from an tontine policy made by Equitable in 1871 were reasonable projections and not deliberate exaggerations; Roger L. Ransom and Richard Sutch, "Swindle or Security? A Reexamination of Tontine Insurance, 1871-1905," Working Papers on the History of Saving Number 6, The University of California Project on the History of Saving, Institute of Business and Economic Research, University of California, Berkeley, November 1986.

29. Ransom and Sutch, "Swindle or Security?"
30. On the relatively high incidence of retirement during this period see Roger L. Ransom and Richard Sutch, "The Labor of Older Americans: Retirement of Men On and Off the Job, 1870-1937," Journal of Economic History 46 (March 1986): 1-30.
31. The economic theory of saving for old age is known as the "life cycle hypothesis" and is associated with the work of Franco Modigliani; see Andrew Abel, editor, The Collected Papers of Franco Modigliani, Volume 2 "The Life Cycle Hypothesis of Saving," MIT Press, 1980. Life-cycle saving without annuities will lead to a systematic over saving and substantial bequests even if there is no bequest motive; Franco Modigliani, "Life Cycle, Individual Thrift, and the Wealth of Nations," American Economic Review 76 (June 1986), p. 307.
32. Neither life cycle saving nor ordinary life insurance would be attractive to those whose primary source of income is from wealth; Stanley Fischer, "A Life Cycle Model of Life Insurance Purchases," International Economic Review 14 (February 1973): 132-152.
33. American insurance companies are subject to state rather than federal regulation. A decision of the U.S. Supreme Court in Paul v. Virginia in 1868 declared that insurance was not an act of interstate commerce; Stalson, p. 559; and Buley, Equitable I, p. 92. A "race to the bottom" between states in the matter of

insurance regulation left accounting methods and control largely up to the companies themselves; Douglass North, "The Large Life Insurance Companies Before 1906," PhD Dissertation, Economics, University of California, Berkeley, 1952, Chapter 8.

34. Buley, Equitable I, p. 172; II, p. 736. Ellerbe W. Carter, "Suits for Accounting on Tontine Life Insurance Policies," Virginia Law Review 2 (1914): 18-32.

35. Thomas Lawson's articles were later reprinted as Frenzied Finance: The Crime of Amalgamated, Ridgeway-Thayer, 1905. See Lawson, pp. 414-415; North, "Large Life Insurance Companies," pp. 35-36; Vincent P. Carosso, Investment Banking in America: A History, Harvard University Press, 1970, pp. 112-115; and Buley, American Life Convention I, 199-201.

36. Armstrong Committee, Report VII, pp. 322-324. We have rearranged the sentences somewhat and supplied the numbering.



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