Mobilizing Savings, Shaping Regions: The Financial Geography of U.S. Life Insurance*

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Abstract

This paper uses newly digitized annual firm-level data from 1880 to 1940 to study how life insurance companies reshaped the geography of American finance before the advent of Social Security. I document rapid growth in the scale and geographic reach of the industry, as firm entry expanded beyond traditional financial centers into the Midwest and South. Despite this dispersion, premium collection remained highly concentrated: for most states, over 85 percent of premiums continued to flow to insurers headquartered elsewhere, and major financial centers, especially New York, retained a disproportionate share of excess cash. I show that large insurers expanded primarily along the intensive margin, benefiting from spatial risk pooling and stable loss experience, while smaller entrants operated at limited scale. On the demand side, declining relative prices increased household insurance use, and during the Great Depression households relied on existing contracts for liquidity. I quantify regional spatial dynamics and introduce a new measure of interstate capital transfers based on net cash flows. While total inter-regional transfers increased substantially over time, local retention rose during the Progressive Era before reversing during the Depression. Together, the results challenge the view of life insurance as a static oligopoly and instead portray it as a dynamic intermediary whose expansion, regulation, and capital flows shaped regional finance in the first half of the twentieth-century United States.

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1 Introduction

The insurance industry has played a prominent role as a financial intermediary in the United States for over 150 years, mobilizing household savings into long-term investment in a national market. For example, the mortgage debt held by life insurance firms in 1928 was three times that of state and national banks combined. Their municipal debt holdings were on par with nationally chartered banks, and they were among the first and largest institutional investors in corporate bonds (Figure I). Yet, in the 1800 plus pages of Stanley Engerman and Robert Gallman's *The Cambridge Economic History of the United States* on the long nineteenth and twentieth centuries, insurance markets are discussed on only 18 pages (Engerman and Gallman (1996)).[1] One potential explanation for why the economic history of U.S. insurance is relatively understudied is the perception that life insurance was dominated by an oligopoly of a few large firms (e.g., New York Life, Mutual, Equitable), characterized by stability, limited entry, and little economically meaningful variation.

This paper shows that this view is incomplete. While a handful of large insurers did dominate national volume, the broader industry exhibited substantial spatial and temporal heterogeneity. Using newly digitized annual firm-level data on the universe of life insurers operating in the United States from 1880 to 1940, I document extensive entry, geographic dispersion, and variation in firm scale across states and over time. Close to 1,000 firms operated outside the traditional financial centers, and their behavior generated rich variation in market structure, household participation, and inter-regional capital flows.

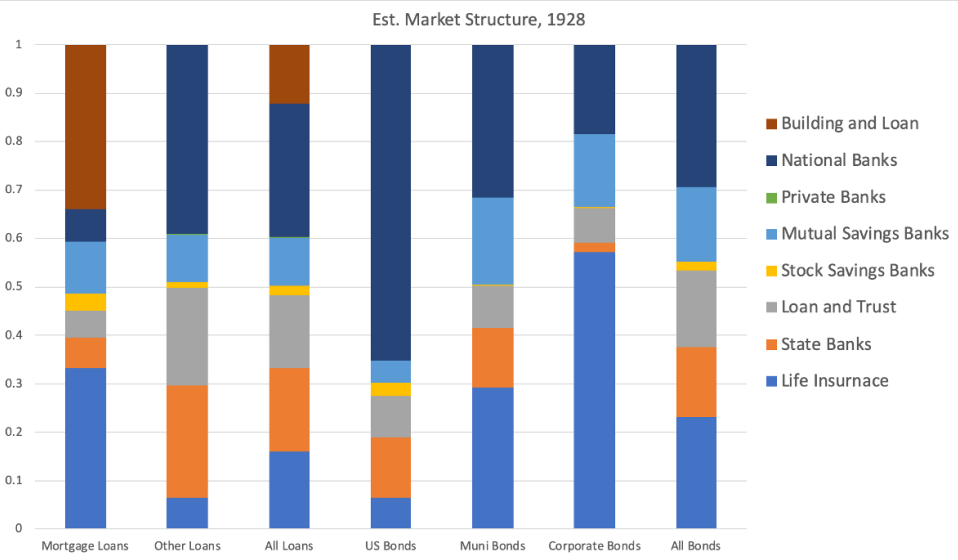
The paper makes three main empirical contributions. First, I document the rapid geographic expansion and structural transformation of the U.S. life insurance industry, showing that firm formation spread beyond the Northeast into the Midwest and South after 1900, though unevenly and with persistent concentration. Despite this dispersion, most states remained heavily reliant on out-of-state insurers: for much of the period, over 85 percent of premiums collected within a state flowed to firms headquartered elsewhere. Second, I show that firm growth occurred primarily along the intensive margin. Large insurers scaled nationally, benefited from spatial and temporal risk pooling, and achieved stable loss experience under binding regulatory constraints, while smaller entrants operated at limited geographic scope and scale. On the demand side, declining relative prices expanded household insurance use, but during the Great Depression households relied on existing contracts for liquidity rather than expanding coverage.

Third, I introduce a new measure of inter-state capital transfers based on insurers' net

[1] Banking and securities markets, on the other hand, are discussed in multiple chapters and over 100 pages.

cash flows (premiums collected minus losses paid) to quantify the spatial implications of insurance activity. While total inter-regional transfers increased substantially over time, local capital retention rose during the Progressive Era before reversing during the Great Depression. Major financial centers, especially New York, continued to attract a disproportionate share of insurance surplus, underscoring the persistence of structural asymmetries in financial intermediation despite regulatory reform and firm dispersion.

Figure I: Net holdings (%) of various financial instruments (1928)



Sources: Data for national and state banks, loan and trust, stock savings, and mutual banks come from the Office of the Comptroller of the Currency annual reports. Data for life insurance come from the Spectator Insurance *Year Book* and the Proceedings of the Annual Meeting of the Association of Life Insurance Presidents.

While this is not the first attempt at quantifying the impact of life insurers on the broader U.S. economy, it builds upon earlier work that has largely focused on aggregate trends or case-studies. Most prominently, Sharon Ann Murphy documents the origins and the development of the life insurance industry up through Civil War (Murphy (2010)). Pritchett (1970), in an unpublished Ph.D. dissertation from Purdue under the guidance of Lance Davis, was the first to collect comprehensive firm-level data to study capital mobilization in the nineteenth century, but the data are no longer available. Kenneth Snowden has argued that insurance companies in the late 19th and early 20th century came to dominate the national mortgage markets because they were regionally dispersed - used local agents in many parts of the country - while most other intermediaries were concentrated in local markets (Snowden (1995)). Lance Davis and Douglass North showed that life insurance companies, as an industry, became the most important nonbank intermediary after

the Civil war, with assets increasing more than twenty-fold between 1869 and 1914 (Davis (1965); North (1954)).

2 Background and Historical Narrative

This section summarizes the key features and historical context of the U.S. life insurance industry in the late 19th and early 20th centuries, providing background for the descriptive results that follow. I draw on, and refer interested readers to, the works of Zartman (1906), Pritchett (1970), and Stalson (1942) on insurance investment policies in the 19th century. For the development of the insurance industry in the first half of the 19th century and its role on household savings, see Murphy (2010). For a comparison of life insurance with Social Security, see Arthi et al. (2025).

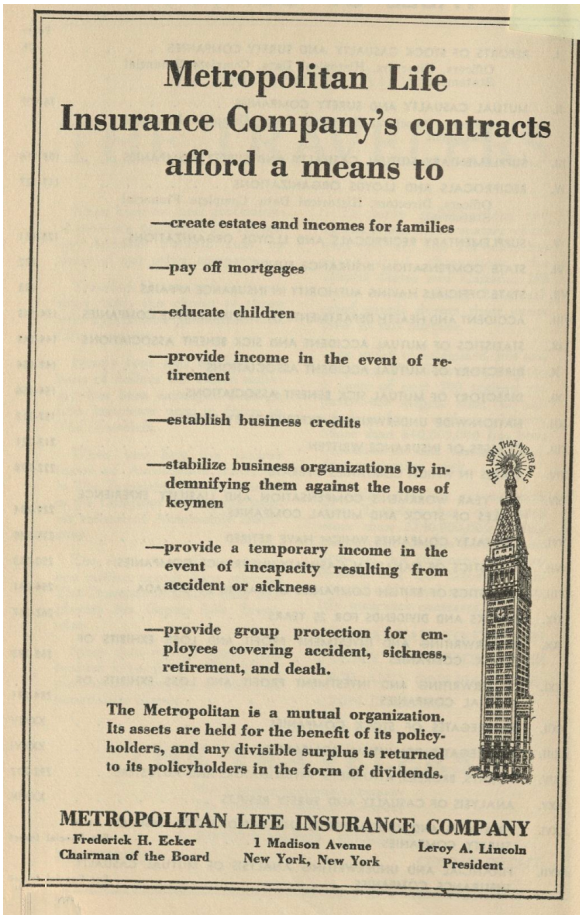
Ordinary life insurance was the primary old-age savings vehicle for American households before the advent of Social Security. Life policies served a dual purpose: they functioned as both a payment upon death and a savings vehicle. These policies typically promised to pay either a lump sum or an annuity to the policyholder if they lived to a specified maturity age, commonly 95, or to their beneficiaries if they died earlier. This structure allowed households to hedge against two major life uncertainties: dying too young to support one's dependents, or living long enough to outlast one's savings. As such, ordinary life policies effectively combined insurance and investment in a single financial product.

The contractual structure of these policies was well-defined. Policyholders made fixed periodic premium payments and were guaranteed a fixed payout upon death or maturity. In addition to these benefits, policies accrued an equity value representing the insured's ownership stake. Policyholders could borrow against it, as many did during the Great Depression, or convert their policy to a paid-up contract requiring no further payments, switch to a term insurance policy, or cash out entirely. Benefits were exempt from income tax (after 1913) and estate tax, and were not subject to probate. This made them a convenient and efficient way to transfer wealth. Policies were assignable and could be used as collateral, for example, to secure a mortgage. Typical policy returns were steady, averaging around 3.5 percent nominally.

The popularity of ordinary life insurance was broad and widespread. It was heavily used by working- and middle-class households, and particularly embraced by Black Americans, who often faced exclusion from other forms of financial institutions (Arthi et al. (2023)). It was primarily sold through door-to-door sales with local agents, who played a critical role in explaining the product and guiding potential customers through the purchasing process. Figure II shows a typical print

advertisement and the various benefits touted by the Metropolitan and Home Life, such as financial literacy ("educate children"), estate planning, mortgage liquidity, and asset surplus.

Figure II: Ads for Metropolitan Life (1920) and Home Life (1891), *The Insurance Year Book*



Metropolitan Life Insurance Company's contracts afford a means to

—create estates and incomes for families

—pay off mortgages

—educate children

—provide income in the event of retirement

—establish business credits

—stabilize business organizations by indemnifying them against the loss of keymen

—provide a temporary income in the event of incapacity resulting from accident or sickness

—provide group protection for employees covering accident, sickness, retirement, and death.

The Metropolitan is a mutual organization. Its assets are held for the benefit of its policyholders, and any divisible surplus is returned to its policyholders in the form of dividends.

METROPOLITAN LIFE INSURANCE COMPANY

Frederick H. Ecker, Chairman of the Board — 1 Madison Avenue, New York, New York — Leroy A. Lincoln, President

NOT HOW BIG? BUT HOW STRONG?

THE

Home Life Insurance Co.

OF NEW YORK

Has over $126 of Assets to secure every $100 of Liabilities.

BONDS AND STOCKS OWNED BY THE COMPANY.

United States 4 per cent Bonds.
Brooklyn City, Public Parks, 7 per cent Bonds.
Erie R. R. 2d Mortgage, Cons. 6 per cent Bonds.
Erie R. R., funded, 5 per cent Bonds.
New York, Chicago and St. Louis R. R. 4 per cent Bonds.
New York, Lack. and Western R. R. Cons't 5 per cent Bonds.
Albany and Susquehanna R. R., 1st Cons. 6 per cent Bonds.
Morris and Essex R. R., 1st Cons. 7 per cent Bonds.
Chicago and North-Western R. R. Cons. 7 per cent Bonds.
Oswego and Syracuse R. R. Cons't 5 per cent Bonds.
Fidelity Loan and Trust Co. 6 per cent Bonds.
Jefferson R. R., 1st 5 per cent Bonds.
Delaware and Hudson R. R., Pa. div. 7 per cent Bonds.
Monmouth Co., N. J., 5 per cent School Bonds.
Central Trust Co. Stock.
American Exchange National Bank Stock.
National Bank of Commerce Stock.

CHARLES A. TOWNSEND, President. — GEORGE E. IDE, Secretary.
GEORGE H. RIPLEY, Vice-President. — WM. A. MARSHALL, Actuary.

2.1 Regulation

Insurance companies were (and still are) regulated at the state level.[2] In the 1869 Supreme Court decision *Paul v. Virginia (1869)*, the Court ruled that insurance was not "commerce" under the Constitution, thereby affirming that regulation was the responsibility of individual states, not the federal government.

This precedent, which held until 1944, meant that each state established its own insurance laws and regulatory bodies. By the late 19th century, many states had created insurance departments or commissioner offices (New Hampshire was the first, in 1851) to license companies, monitor

[2]During World War I, the War Risk Insurance Act of 1917 established government-sponsored life insurance for servicemen, temporarily introducing a federal role in providing coverage.

solvency, and protect policyholders. These state regulators required annual financial statements and set minimum capital and reserve requirements to ensure companies could honor claims. The first restrictive regulation on insurance investment occurred in 1836, when Massachusetts passed a law authorizing local municipal bonds as suitable investments of insurance assets. Other states followed suit in the second half of the 19th century and early 20th century, often allowing firms to invest in "riskier" securities. For example, Wisconsin initially allowed investments in mortgages within, but not outside, the state, while Texas and Washington mandated that a certain percentage of all assets be set aside for government securities and mortgages within their respective states.

A watershed in insurance regulation came with the Armstrong Committee investigation in New York. Spurred by scandals at major life insurers (notably Equitable Life, where a 1905 exposé revealed corruption and extravagant misuse of funds), New York legislators launched an inquiry into life insurance companies' practices. The Armstrong Committee's findings in 1906 uncovered dubious accounting and excessive executive perks to risky investments and conflicts of interest. In response, the committee recommended sweeping reforms, which were swiftly enacted as eight new statutes tightening control over life insurers. These laws, and similar measures soon adopted by other states, placed limits on insurers' operations: for example, they banned certain speculative investment practices, capped the size of agents' commissions and operational expenses, and outlawed the sale of controversial policies like tontines with long deferred payouts. The reforms also forced greater transparency and solvency: companies had to maintain higher reserve ratios and file more detailed financial reports, requirements that ultimately produced a key component of the archival data used in this paper.

2.2 Investment and Capital Flows

Public outrage at the insurance scandals, exemplified by the Armstrong investigation, reflected a broader Progressive Era movement to rein in large financial institutions at the turn of the 20th century. Political rhetoric of the time often cast elite insurers, especially the major New York companies, as part of a "money trust" centered on Wall Street. Populist leaders and agrarian interests in the South and West frequently accused Eastern financial firms, including insurers, of draining wealth from the hinterlands. A common grievance was that life insurance premiums paid by farmers and small-town residents in places like Alabama or Kansas ended up financing New York skyscrapers and railroads, rather than being reinvested in their local economies. Insurers pooled policyholder premiums from across the country and reinvested them in loans and securities, often

far from the places where the premiums were collected. By the early 20th century, life insurers had become the nation's largest interregional lenders, supplying long-term credit to the developing South and West (Snowden (1995)).

Snowden documents how firms like Northwestern Mutual (Wisconsin) and several Connecticut companies built lending networks that placed agents in distant states to originate and service loans. These networks created a direct pipeline for Eastern savings to flow into Western farms and Southern enterprises, with life insurers as intermediaries. A striking insight from Snowden is the extent to which state regulations shaped these capital flows. For example, New York restricted its domestic life insurers from making mortgage loans outside the state for many years. Given New York's dominant share of industry assets, this rule kept a substantial amount of insurer capital locked in the Northeast. Snowden estimates that had New York insurers been allowed to invest like their Connecticut counterparts, they would have held an additional $82 million in interregional mortgage loans by 1890.

This growing discontent with capital outflows spurred state-level efforts to promote local insurance companies. Many states passed laws to encourage the creation of "home companies." Some imposed higher taxes on out-of-state insurers or required them to deposit securities in-state as a condition for doing business. These measures aimed to incentivize the formation of local firms. Texas Governor Charles Culberson, for instance, noted that between 1886 and 1897 Texans paid about $25 million more in premiums than they received in claims, attributing this imbalance to capital shortages in Texas and surpluses in New York (Zartman (1906)). Zartman further estimated that by 1903, residents of Southern states had paid an estimated $50 million in premiums to Northern companies. In response, several state legislatures enacted laws compelling insurers to invest a portion of their reserves locally or imposed special taxes to discourage the export of savings.

Importantly, differences in state regulatory regimes strongly guided where companies chose to incorporate and operate. Each state imposed its own capitalization requirements and investment rules for insurers, creating a patchwork of regulatory environments. Many entrepreneurs opted to found companies in states with more permissive laws or lower entry barriers. For instance, states that set low minimum capital requirements for mutual (policyholder-owned) insurers saw far more mutual companies form than states with stricter requirements. One study finds that in the early 20th century, "mutuals were formed in states that had low initial capital requirements for mutuals and differentially higher requirements for stock firms", whereas in states without that advantage, new mutual companies were rare (Zanjani (2007)). This indicates that insurance promoters took

the path of least resistance by choosing states where regulations favored their desired organizational form. Conversely, New York's notoriously stringent regulatory regime (strengthened after the 1905 Armstrong investigation) may have deterred new incorporations and even prompted some insurers to relocate or form subsidiaries elsewhere (Zartman (1906)). By the 1930s, virtually every state had an insurance department and an array of laws governing insurance business, but the stringency and focus of these laws varied widely. Some states (e.g. Virginia, North Carolina, Alabama, Florida) still imposed almost no limits on how insurers invested most of their funds, whereas others tightly regulated all investments (Halaas (1932)). Such differences plausibly influenced both the expansion of insurers into new regions and their operations.

3 Conceptual Framework

This section describes a conceptual framework organizing the empirical analysis around the three main agents in the life-insurance industry: firms, households, and state regulators. The framework is intentionally descriptive and designed to clarify how the observed data (firm-by-state premiums and losses and detailed balance-sheet information for New York firms) map into the incentives and constraints facing each agent, while highlighting how those incentives and constraints shift in the long run as the industry expands, reforms unfold, and macroeconomic conditions change.

3.1 Life Insurance Firms

Life insurers are modeled as firms whose behavior is governed by a set of state variables capturing (1) their current financial condition, (2) future contractual obligations, and (3) the state regulatory environment. These state variables include the level and composition of assets, segmented by risk (e.g., volatility of cash flows across bonds, equities, and mortgages), maturity, and liquidity, as well as the stock of liabilities associated with in-force policies, including surrender options and maturity structure. Firms are constrained by statutory reserves, which translate mandatory discount rates and actuarial assumptions into balance-sheet liabilities, and by surplus or capital requirements, which determine solvency risk. Insurers also face exogenous shocks to demographic and financial conditions, including realized and expected mortality and longevity trends, lapse and surrender behavior, yield-curve dynamics, credit conditions, and asset-market volatility.

Conditional on this state vector, firms choose (1) contract terms, (2) underwriting standards, (3) asset allocation (across space and time), and (4) policies governing dividends.[3] The aforemen-

[3]The distinction between stock and mutual insurers arises in how surplus and net earnings are valued.

tioned reserve requirements, capital thresholds, and asset admissibility rules make financial distress exceptionally costly, inducing insurers to internalize the dynamic consequences of current decisions for future solvency. As a result, the objective function places substantial weight on financial strength and long-run continuity rather than short-run cash flows.

In the data, firm behavior is observed through premiums written and losses realized at the firm by state by year level for all insurers between 1880 and 1940, and through detailed balance-sheet and income information for insurers operating in New York. These data allow the analysis to trace the evolution of firm scale, geographic scope, asset composition, reserve accumulation, and firm survival.

3.2 Households

Household demand for life insurance is modeled as a forward-looking decision under uncertainty in which insurance choices are made jointly with consumption, saving, and portfolio allocation. The household's objective reflects preferences over consumption while alive, the welfare of dependents after death, and the evolution of wealth over the life cycle. The main state variables typically include (1) current wealth, (2) expected future income, (3) family composition and the strength of the bequest motive, (4) perceived survival probabilities, and (5) the menu of available insurance contracts. The choice *between* contract types also matters: for term life insurance, coverage primarily reallocates resources across survival and death states, whereas for whole life policies, insurance embeds a saving component through cash values and dividend participation. Conditional on these states, households choose coverage levels and policy types to balance current consumption against both insurance protection and the accumulation of future financial resources. Premiums for whole life policies reduce current consumption but generate a combination of death benefits, future cash values, and implicit returns that can serve as precautionary savings, tax-advantaged wealth, or collateral for future liquidity needs. Optimal demand therefore reflects a trade-off among expected returns, liquidity, and risk, as well as the household's ability to self-insure through other assets.

Household choices are not observed directly. Instead, premiums written, insurance in force, and the composition of insurance products are interpreted as revealed-preference outcomes of household demand. Variation in per-capita premiums, product composition, and growth rates across states and over time is used to characterize the evolution of insurance demand and to assess how households' insurance and saving behavior responds to economic conditions and major aggregate shocks.

3.3 State Regulators

State regulators seek to promote a stable local insurance sector that delivers promised benefits with high probability over long horizons, even when this entails conservative balance-sheet regulation, limits on risk-taking, or higher costs borne by firms and policyholders in the short run. They aim to maximize policyholder welfare subject to within-state market structure and administrative constraints. The key state variables shaping regulatory objectives include (1) the financial condition of insurers operating in the state, (2) the risk profile of their assets and liabilities, (3) prevailing economic and demographic conditions, and (4) the regulatory regime (e.g., state supreme court decisions and political oversight). Because policyholders face limited ability to monitor insurer risk and insurer failures impose large deadweight costs, regulators behave as if they place substantial weight on minimizing insolvency risk and ensuring timely claim payments. Within this framework, reserve and capital requirements, asset admissibility rules, rate oversight, and supervisory intervention operate as the primary mechanisms. While insurer profitability and market competitiveness enter the objective indirectly (primarily to avoid inefficient exit or contraction of supply) they are typically subordinated to solvency concerns.

Regulatory priorities are inferred from observed market structure, patterns of firm entry and exit, and the evolution of capitalization and asset allocation across firms and states. State-level variation in concentration, firm presence, and stability, together with balance-sheet information in New York, is interpreted as revealed evidence of the regulatory environment shaping insurer behavior over time.

4 Data

This paper draws on newly digitized firm-level data on state-level premiums, losses paid, insurance written, and investments from two primary sources. The first is *The Insurance Yearbook* published by The Spectator Company. In the late 19th and early 20th centuries, this expansive annual reference book presented detailed statistics, financial data, and industry overviews for American and foreign insurance companies. It served as a comprehensive resource for industry professionals, offering information on company assets, liabilities, premiums, claims, policy types, and organizational structure. In this paper, I focus on the annual data on firm-level premiums and losses paid in each state from 1883 to 1940.[4]

[4]Data for 1884-85, 1909, and 1937-38 are missing.

The second source is the *Annual Report* of the Superintendent of Insurance of the State of New York, which detailed the financial condition of insurance companies that wrote at least one policy in the prior year in New York. The report includes these audited financial statements of both life and non-life insurers and it served as an important tool for transparency and oversight, providing policymakers and the public with authoritative data on the insurance industry's solvency within the nation's largest insurance market. I have digitized the tables contained within this report for every year between 1880 and 1940.

Summary statistics are presented in Table I. In total, the firm by state dataset in Panel A comprises over 146 thousand firm-state observations, encompassing all 48 contiguous U.S. states and the District of Columbia and 991 unique firms.[5] Naturally, not all firms are present in every cross-section, reflecting entry and exit over time; the median firm is observed for 40 years. Likewise, not every state is listed in every cross-section– states such as Arizona, Idaho, Montana, New Mexico, North Dakota, Oklahoma, South Dakota, Utah, Washington, and Wyoming achieved statehood after 1883. The median firm collected roughly 1.35 million dollars (deflated to 2024) in premium across states it operated in. Table I further reveals notable regional disparities in both where life insurance was sold and where the firms were headquartered: 79 percent of the firm-state observations, across the entire period, are attributed to firms incorporated in either the East or Midwest but over 53 percent of the observations come from firms doing business in the South and West.

Panel B reports detailed balance-sheet and income-statement information for the subset of firms operating in New York. These firms are large and heterogeneous in scale, with the median firm holding roughly $0.69 billion in assets (2024 dollars), while the upper quartile exceeding $2.8 billion. On the asset side, firm portfolios are diversified across stocks and bonds (41 percent), mortgages (33 percent), and policy loans (9 percent), with relatively small shares held as cash or real estate. Liabilities are dominated by statutory reserves, which account for over 95 percent of total liabilities for the median firm. Premiums account for roughly three-quarters of total income and investment income for another fifth. On the expenditure side, losses represent about 40 percent of outlays, while commissions, salaries, and dividends together account for most remaining expenses.

[5]Observations from Hawaii, Alaska, Puerto Rico, as well as Canada are available but were dropped for the purposes of this paper.

Table I: Summary Statistics, 1880 - 1940

Panel A. Firm x Year x State Premiums and Losses

	N	Mean	SD	Median	25 pct	75 pct
Premiums (2024 mil)	146,538	9.87	47.15	1.35	0.24	5.64
Losses Paid (2024 mil)	146,538	3.45	15.90	0.37	0.04	1.83
Business: I(East State)	146,546	0.16	0.36	0.00	0.00	0.00
Business: I(Midwest State)	146,546	0.31	0.46	0.00	0.00	1.00
Business: I(South State)	146,546	0.35	0.48	0.00	0.00	1.00
Business: I(West State)	146,546	0.18	0.38	0.00	0.00	0.00
Incorporated: I(East State)	146,546	0.48	0.50	0.00	0.00	1.00
Incorporated: I(Midwest State)	146,546	0.31	0.46	0.00	0.00	1.00
Incorporated: I(South State)	146,546	0.14	0.35	0.00	0.00	0.00
Incorporated: I(West State)	146,546	0.05	0.21	0.00	0.00	0.00
Incorporated: I(Foreign)	146,546	0.02	0.13	0.00	0.00	0.00
Number of years in panel	146,546	37.24	16.27	40.00	24.00	53.00
Firms	991					

Panel B. New York Firm x Year Accounting Data

	N	Mean	SD	Median	25 pct	75 pct
Total Assets (2024 bil)	2,352	3.93	10.09	0.69	0.17	2.80
Stocks and bonds share	2,352	0.41	0.21	0.38	0.27	0.53
Mortgages share	2,352	0.33	0.19	0.32	0.19	0.45
Policy loans share	2,352	0.09	0.08	0.08	0.01	0.15
Real estate share	2,352	0.07	0.08	0.04	0.01	0.10
Cash share	2,352	0.04	0.05	0.02	0.01	0.04
Reserve share of liabilities	2,263	0.92	0.10	0.95	0.89	0.98
Surplus/assets	2,263	0.14	0.17	0.08	0.05	0.15
Total revenue (2024 bil)	2,351	0.87	2.27	0.16	0.05	0.63
Premium share	2,351	0.73	0.13	0.74	0.69	0.80
Investment income share	2,351	0.19	0.08	0.20	0.15	0.24
Non-life premium share	2,351	0.01	0.02	0.00	0.00	0.01
Total expenditure (2024 bil)	2,351	0.62	1.69	0.11	0.04	0.43
Losses share	2,351	0.40	0.13	0.41	0.33	0.47
Dividends share	2,351	0.10	0.08	0.10	0.03	0.16
Lapsed policy share	2,351	0.13	0.08	0.13	0.08	0.18
Salary share	2,351	0.10	0.09	0.07	0.05	0.12
Commissions share	2,351	0.12	0.08	0.11	0.07	0.15
Firms	103					

Note: This table present the summary statistics for the annual data from the *Insurance Yearbook* and the Report of the Superintendent of Insurance of New York. In Panel A, the region identifiers are as follows: Northeast - CT, ME, MA, NH, NJ, NU, PA, RI, VT, Midwest - IL, IN, IA, KS, MI, MN, MO, NE, ND, OH, SD, WI, South -AL, AR, DC, DE, FL, GA, KY, LA, MD, MS, NC, OK, SC, TN, TX, VA, WV, and West - AZ, CA, CO, ID, MT, NV, NM, OR, UT, WA, WY. "Firms" denotes the total number of unique firms that appeared in the data throughout 1880 - 1940.

5 Firms

I begin the empirical analysis by characterizing the aggregate scale, regional diversification, and the time-series evolution of balance sheets of U.S. life insurance firms between 1880 and 1940.

Guided by the conceptual framework in Section 3, firms are viewed as long-horizon intermediaries that prioritize solvency and continuity under binding reserve and capital constraints, operating in a heterogeneous regulatory environment. The figures in this section show how these incentives manifest in entry patterns, geographic expansion, risk pooling, and balance-sheet adjustment over the business cycle.

5.1 Scale, Entry, and Survival

Table II documents steadily rapid expansion of the New York life insurance sector across assets, liabilities, and revenues, with remarkably little sensitivity to business-cycle conditions. Average annual asset and revenue growth rates (in real terms) remained at above 5 percent per year in both recessionary and non-recessionary years, slowing down noticeably only during the worst years of the Great Depression (1932–33), when assets grew 3 percent and revenue declined.[6] By contrast, growth in the number of policies outstanding was more sensitive to aggregate conditions. Policy counts expanded steadily prior to 1930, but slowed sharply during the Depression and declined outright in 1932–33, making this episode the only sustained contraction in policy growth over the study period.

Table II: Average Annual Growth of the NY Insurance Market

	1880 - 1940	No Recession	Recession	1929 - 33	1932 - 33
Δ Asset	6.74%	5.70%	7.37%	11.47%	3.73%
Δ Liabilities	7.15%	6.85%	9.03%	-1.36%	3.74%
Δ Revenue	6.74%	5.81%	7.98 %	8.25%	-1.64%
Δ Policies	5.15%	5.33%	6.14 %	1.54%	-1.54%

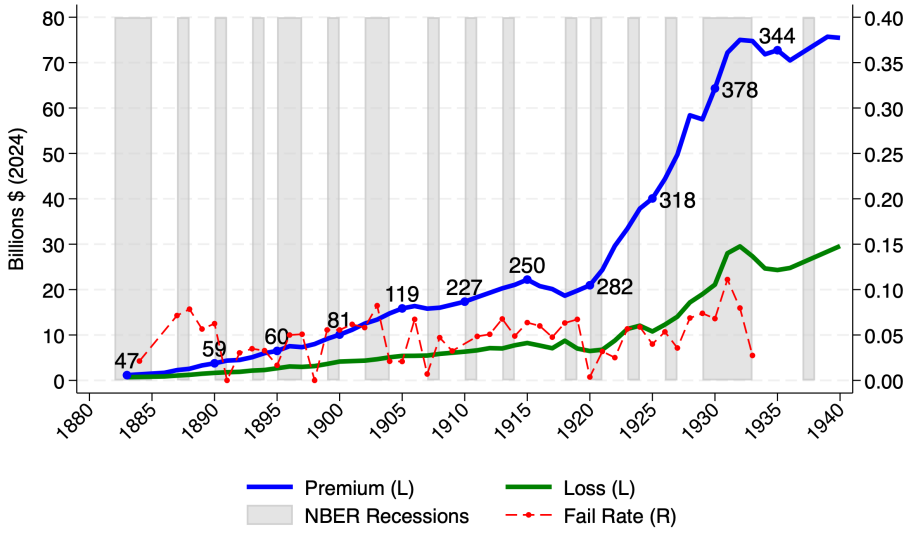
Note: This table reports the average annual percent change in the real value of aggregate assets, liabilities, revenue, and number of whole life policies outstanding in the state of New York for the years specified in the column header. Annual data come from the Report of the Superintendent of Insurance of New York. Recession column denotes the average in years with at least two quarters of peak to trough decline according the NBER Business Cycle Dating Committee: 1882-84, 1887, 1893, 1896, 1900, 1903-04, 1907, 1910-11, 1913-14, 1918, 1920, 1923-24, 1927, 1937, with the Great Depression peak to trough years reported separately.

Figure III shows persistently low failure rates, typically below 10 percent and equal to zero in several years, rising above 10 percent only twice during the period: in the late 1880s and during

[6] An important caveat to note is that, typically, stocks and bonds were valued at their market price on December 31st of the reporting year, but not during the Depression, when state regulators allowed the firms to use five-year average prices for all of their marketable securities. Mortgages, real estate, and policy loans were carried at book value. These assets values in the early 1930s, thus, do not reflect the full extent of the market drop during those years.

the Great Depression. Over the same period, aggregate real premiums increase steadily from less than $10 billion in the late nineteenth century to roughly $20 billion by the 1910s, followed by a sharp acceleration in the 1920s, reaching over $70 billion by 1930. By contrast, the number of firms rises sharply between 1900 and 1910, without a commensurate increase in aggregate premiums or losses. This divergence indicates that entry during the first decade of the twentieth century was concentrated among small firms, as I show directly in the next section.

Figure III: Aggregate Life Insurance Industry



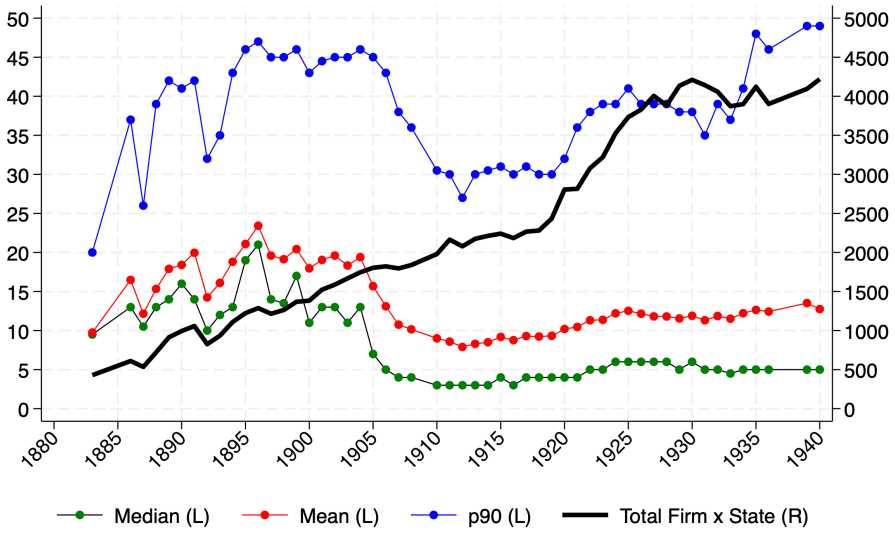
Note: Shaded years denote recessions from the NBER Business Cycle Dating Committee. Total number of firms every five years shown. Fail rate is computed as the number of failed firms divided by previous year's total number of firms. Failure data comes from the *Insurance Yearbook* (right y-axis). Aggregate premiums (blue) and losses (green) are deflated using the CPI (left y-axis).

5.2 Geographic Scope and Market Reach

Geographic expansion in the life insurance industry occurred primarily through entry of narrowly scoped regional firms in the Midwest and South in the first decade of the 20th century, followed by gradual multi-state scaling among surviving incumbents until the Great Depression. Figures IV and V document these shifts. I plot the median, mean, and 90th percentile of the number of states operated in by each life insurer as well as the total number of firm-state markets in Figure IV. The median firm operated between 10 and 15 states before the 1900s and around 5 states thereafter. This sharp decline across all three measures does not reflect retrenchment by incumbent insurers. Instead, a steady increase in total firm x state connections indicates entry by

small, regional firms operating in few states. After 1910, geographic scope expands again as firms grow and enter additional markets, consistent with gradual scaling conditional on survival.

Figure IV: Firm Expansion Across States

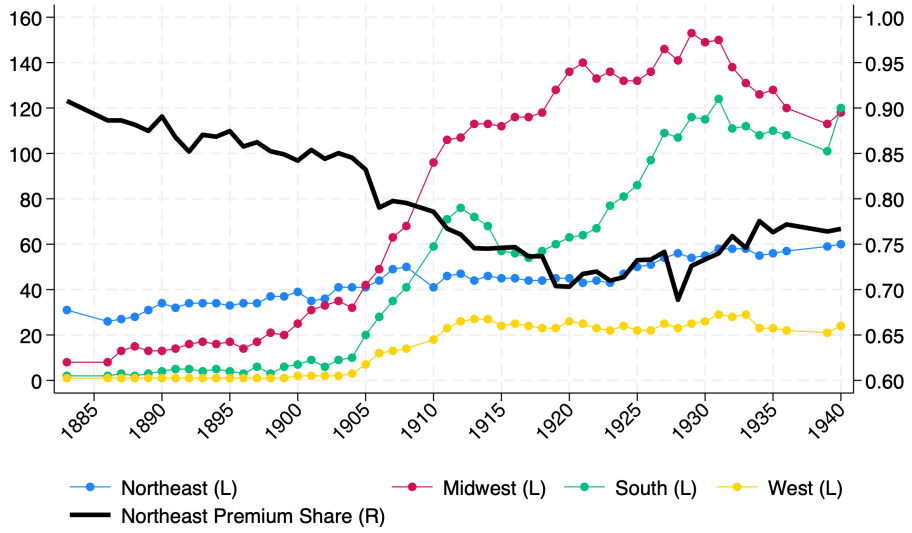


Note: This figure shows the evolution of firms' geographic scope over time, measured by the number of states of operation of the median, (unweighted) mean, and the 90th percentile of firms (left y-axis). The drop starting around 1905 occurs due to entry of small, regional firms. The black line denotes the total number of firm by state observations in the *Insurance Yearbook* (right y-axis).

Figure V attempts to show where these new firms were located. I plot the total number of firms by region of incorporation and show that this expansion in the early 1900s is accompanied by a pronounced shift in corporate domicile. Between 1905 and 1913, the number of firms incorporated in the Midwest and South rises sharply - the number of Midwest firms triples from approximately 40 to 120 and the number of South firms roughly quadruples from 20 to 80. Interestingly, this shift towards the Midwest and South resulted in the premium-weighted share of Northeast-domiciled firms falling from roughly 90 percent in 1890 to only about 76 percent by 1940.[7]

[7]Despite this decline, Northeastern firms still continued to dominate the market by 1940, underscoring the concerns of many politicians in the South about cash flows going to the money centers in the Northeast.

Figure V: Firm Domicile Across Regions



Note: This figure shows the evolution of life insurance corporate domicile over time, measured by the number of firms incorporated in each region over time (left y-axis). The black line denotes the share of aggregate premium collected by firms incorporated in the Northeast (right y-axis). See caption of Table I for list of states in each region.

Why did this geographic shift occur? These patterns align with the conceptual framework's emphasis on regulatory heterogeneity, with two likely hypotheses: a push factor away from New York and the Northeast and a pull factor towards the Midwest and South. The first hypothesis is the Armstrong reforms in 1906 sharply increased the cost of operating and incorporating in New York via tighter reserve valuation, restrictions on investments, caps on commissions, and limits on policy design. These changes plausibly raised fixed compliance costs and reduced profitability for new entrants in New York and similar Northeastern jurisdictions, as surrounding states typically modeled their regulations after New York's. Entrepreneurs may have responded by incorporating in states with looser capital requirements or more permissive investment rules, many of which were in the Midwest and South.[8]

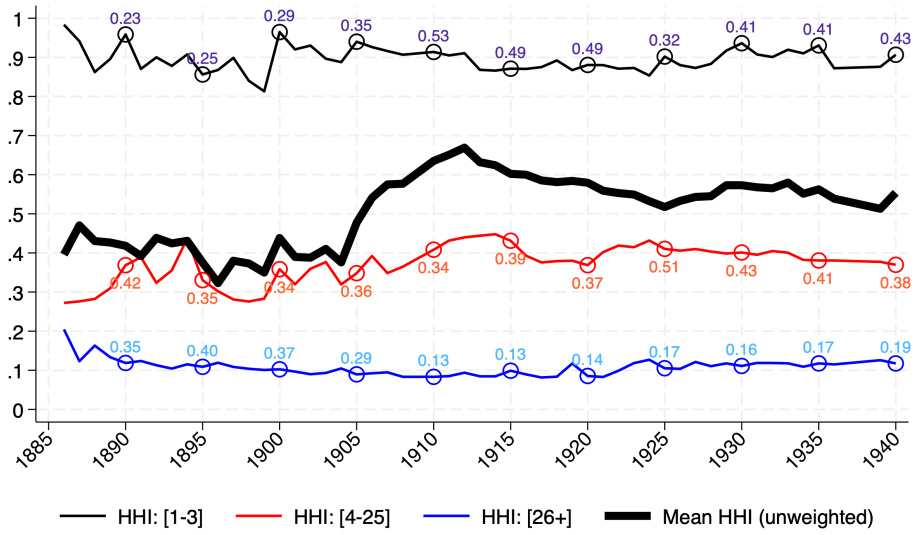
The second hypothesis is that Midwestern and Southern states actively encouraged domestic insurers through lower initial capital requirements and favorable tax treatment. Coupled with population growth, urbanization, rising agricultural incomes and the need to mortgage financing, local firms possessed informational and trust advantages in these markets, especially where the national firms were slower to expand or where their agent networks were thin.

[8]This mechanism aligns closely with the timing of the shift and with evidence from Zanjani (2007) that organizational form and entry location were highly sensitive to regulatory differences.

5.3 Diversification and Risk Pooling

Conditional on geographic reach, firms' state-level premium concentration remained essentially constant over time, indicating that insurers selected a diversification regime early and did not rebalance toward core states as they expanded or as market conditions changed. Figure VI examines within-firm geographic diversification using firm-level HHIs of premium concentration across states. Concretely, I compute HHI using the share of premium collected in each state a firm operated in, for each firm and year. I plot the average HHI for three roughly equally sized bins: those operating in 1 to 3 states (blue), those in 4 to 25 states (red), and those in more than 25 states (black). I also plot the unweighted mean HHI for all firms in the sample using the solid black line.

Figure VI: Average Firm-level HHI Across States of Operation by Geographic Scope



Note: This figure plots the average firm-level concentration of premium collection across states of operation, as measured by the Herfindahl–Hirschman index. The blue line shows it for firms that collected premium in at least 26 states, the red shows it for those with 4 to 25 states, and the black shows it for those in 1 to 3 states. The numbers every five years next to each line denote the portion of firms in each category. The black line shows the unweighted mean HHI across all firms.

Conditional on operating in a given number of states, firms display remarkably stable concentration profiles over time. Large, multi-state firms remain well diversified with HHI close to 0.10; small firms remain extremely geographically concentrated with HHI around 0.90. By construction, we would expect time-series deviation in these averages only when these types of firms changed their business strategies *within* the scope of their operations, e.g. very large firms choosing to focus on a few key states while running small operations in all other states. This was not the case - I find

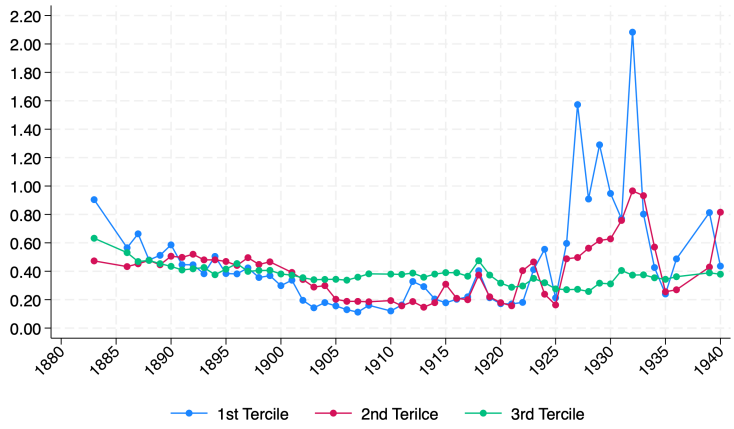
no evidence that firms systematically reallocated premium collection toward a few core states while maintaining peripheral presence elsewhere. The reason why the unweighted average HHI rises after 1905 is due to the higher weight (0.35 to 0.53) of the small firms.

5.4 Loss Ratio and Volatility

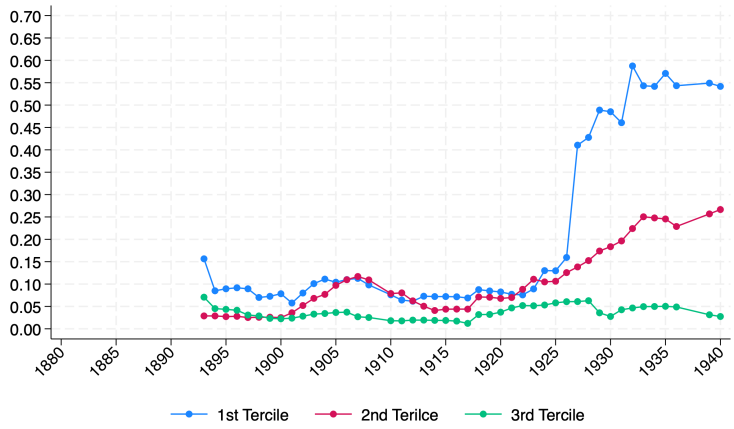
Large insurers achieved significantly lower loss volatility than small firms by pooling mortality risk across states and cohorts, allowing them to sustain stable underwriting even during the Depression despite only modest differences in average loss ratios. Figure VII highlights stark differences in risk exposure by firm size.

Figure VII: Loss Ratio and Volatility by Firm Size

Panel A. Aggregate losses/premium by tercile of premium



Panel B. 10-year rolling standard deviation of losses/premium



Note: This figure plots the aggregate loss to premium ratio by the tercile of total premium collected (Panel A) and the 10-year backwards looking standard deviation of the loss to premium ratio (Panel B).

In Panel A, I plot the average loss to premium ratio for small (1st tercile of premium collected), medium (2nd tercile), and large (3rd tercile) firms. In Panel B, I plot the rolling backwards-looking 10-year standard deviation of the ratios in Panel A. Large firms exhibit extremely stable loss ratios over time (standard deviation of 0.03 on average loss ratios of 0.40), while small firms face highly volatile loss experience (standard deviation of 0.10 in normal times and 0.5 during the Depression). Although large firms have slightly higher average loss ratios, their volatility is dramatically lower, especially in the late 1920s and continuing throughout the Depression. The conceptual framework predicts that large firms benefit from spatial and temporal risk pooling, as diversification increases with scale. Small firms, by contrast, are more prone to idiosyncratic mortality shocks, which translate directly into their loss ratio volatility.

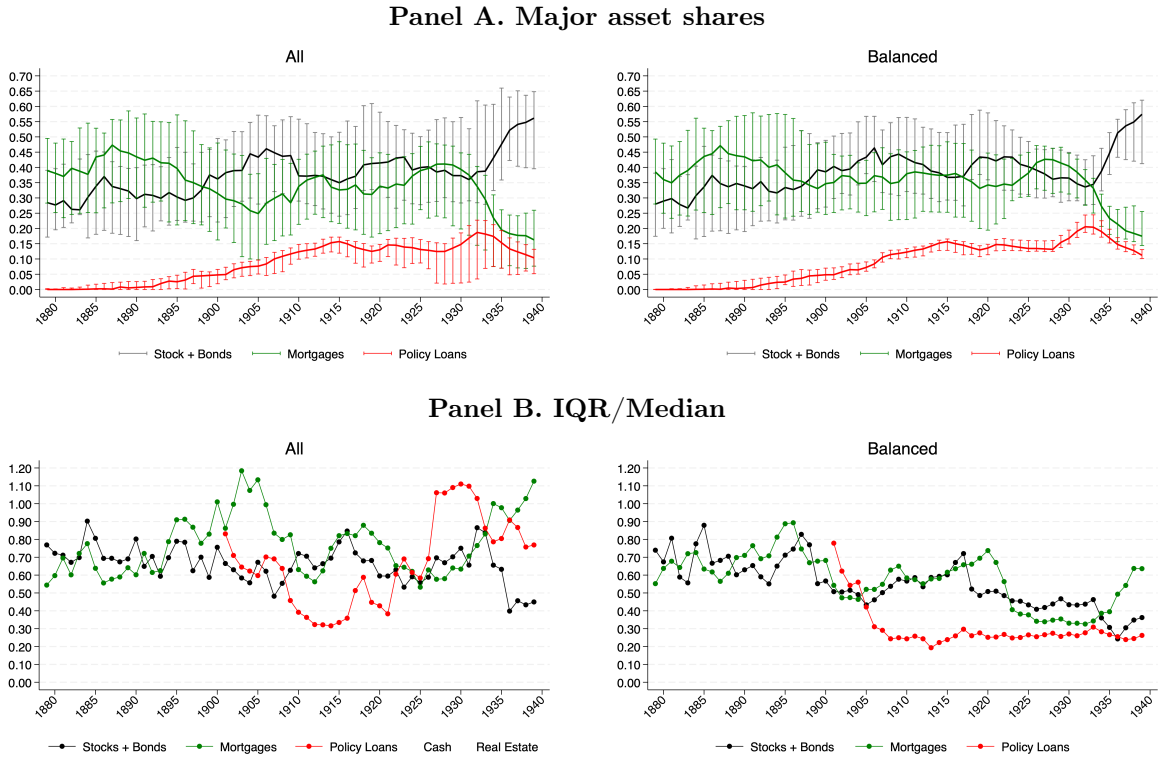
5.5 Asset Allocation and Balance Sheet Adjustments

I now turn to the audited financial reports from the insurance superintendent of New York. Among incumbent firms operating in New York, I find some evidence of convergence in asset allocation from 1880 to 1930, with notable divergence in the share of assets in mortgages after 1935. Revenue sources were historically concentrated on premium collection, with little time-series or cross-sectional variation. Expense shares also exhibited some convergence, especially the amount attributed to lapsed policies (e.g., paying the surrender value of policies not renewed) and the share of policy dividends. Figures VIII through XI document the level of (Panel A) and variation in (Panel B) the shares of assets, revenue, expenses, and surplus for all firms (left graphs) and those firms that appear in the data throughout the sample period (right graphs).[9]

Before 1935, stock and bond investments and mortgages each amounted to roughly 30 to 40 percent of total assets. Remarkably, the time evolution of the median firm did not change significantly over these 55 years. By 1935, however, the mortgage share declined as foreclosures converted these loans into real estate holdings (not shown). I also observe an acute increase in the policy loan share during the Depression, consistent with heightened household liquidity demand from households.

[9] I exclude from the plots minor line items such as cash, miscellaneous expenses, real estate, and various deferred assets that constitute less than 3 percent of the total for clarity and exposition.

Figure VIII: Distribution of Asset Shares of Firms Operating in New York



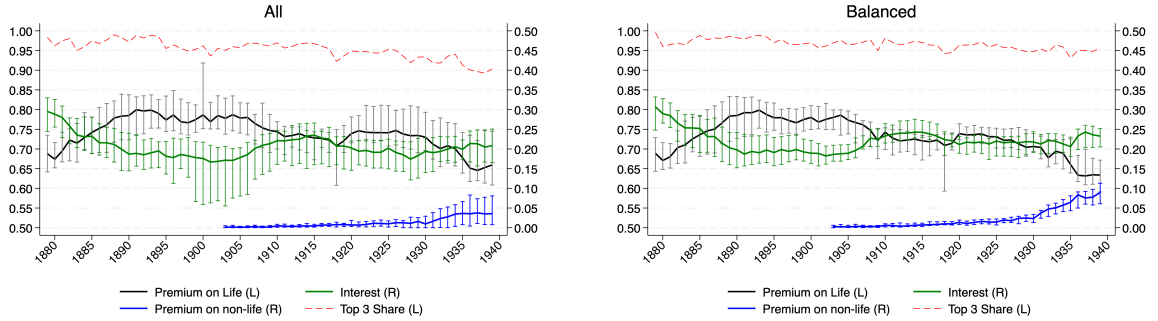
Note: This figure plots the median, 25th, and 75th percentile of the share of major firm asset classes of all firms operating in New York as well as the interquartile range divided by the median in Panel B. Right column shows the plots using only the balanced panel of 24 firms appearing in all years.

Even in the balanced sample of established and large firms, the cross-sectional variation in asset allocation is noteworthy. The inter-quartile range for stock and bond investment share roughly averages to 0.25 thoughout the period, with the 25th percentile allocating 30 percent and the 75th percentile allocation 55 percent. Why would firms of (roughly) equal size vary their asset allocation this much? One hypothesis is that their liabilities were heterogeneous in terms of maturity structure and contract types (surrender options and dividend payments), with firms specializing in longer-duration liabilities investing in longer-term bonds.

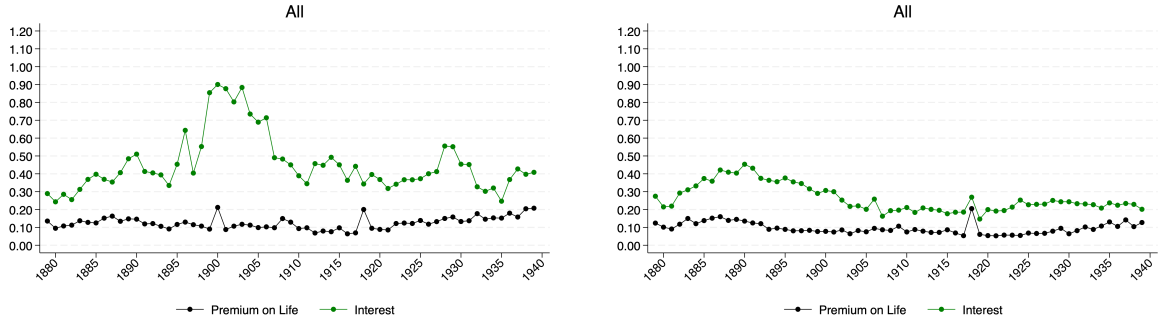
On the income side, revenue composition is exceptionally stable after 1905: premiums and investment income account for over 90 percent of revenues, with very little cross-firm dispersion. On the expense side, convergence is also pronounced, though lapsed-policy expenses rise sharply during the Depression as firms pay surrender values.

Figure IX: Distribution of Revenue Shares of Firms Operating in New York

Panel A. Revenue shares



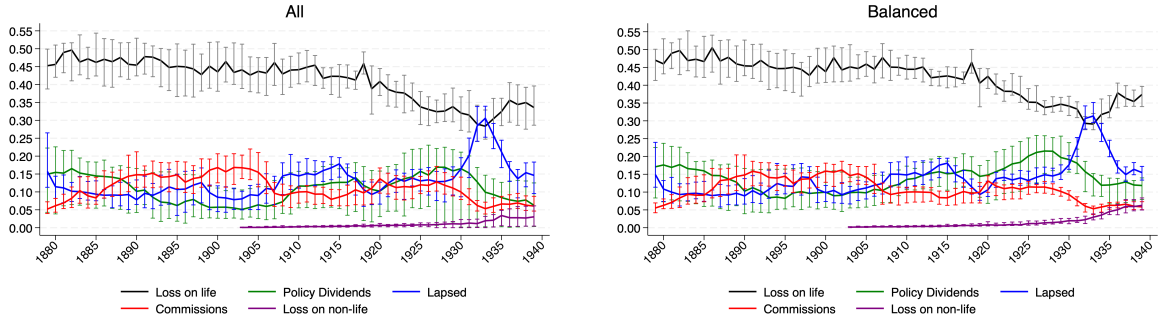
Panel B. IQR/Median



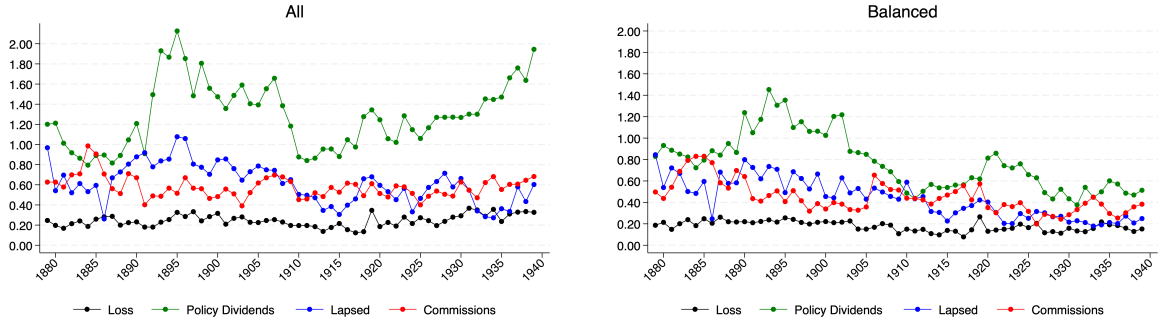
Note: This figure plots the median, 25th, and 75th percentile of the share of income (Panel A) and expense (Panel B) items for all firms operating in New York. Right column shows the plots using only the balanced panel of 24 firms appearing in all years.

Figure X: Distribution of Expense Shares of Firms Operating in New York

Panel A. Expense shares



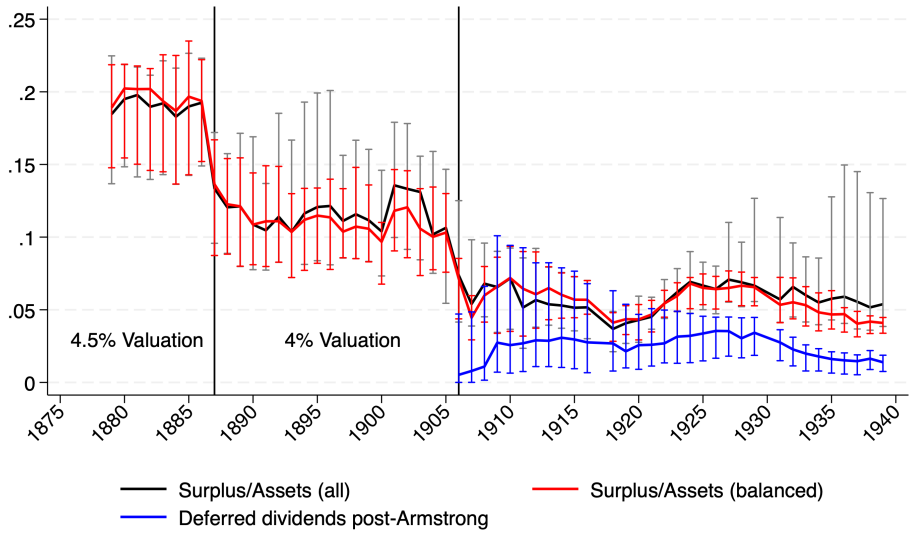
Panel B. IQR/Median



Note: This figure plots the median, 25th, and 75th percentile of the share of expenses(Panel A) and expense (Panel B) items for all firms operating in New York. Right column shows the plots using only the balanced panel of 24 firms appearing in all years.

Interpreting the time-series behavior of surplus and liabilities is complicated by institutional and accounting changes throughout the period. Figure XI plots the median and inter-quartile range of the surplus to asset ratio, and delineates three different regimes: Before 1888, firms discounted their future expected liabilities using a 4.5 percent discount rate and reported surpluses of roughly 20 percent. Between 1888 and 1906, they were required to value them at a 4 percent discount rate, leading to a mechanical increase in reserve and decrease in surplus to 10 percent. After the Armstrong investigation, which required even stricter surplus and clearer deferred policyholder dividend accounting (blue line), the reported surpluses discontinuously and mechanically decreased again to an average of 5 percent.

Figure XI: Distribution of Surplus to Asset Ratio



Note: This figure plots the median, 25th, and 75th percentile of the surplus to asset and deferred dividends to asset (after 1906) ratios for all firms operating in New York. Reforms in 1888 (change in valuation of required reserves) and 1906 (Armstrong investigation) cause the discontinuous downward jumps around those dates (see text).

6 Households

This section characterizes household demand for life insurance and its evolution over time, interpreting observed premiums, policy counts, and contract composition as revealed-preference outcomes of forward-looking household choices under uncertainty. To what extent did households trade off current consumption against insurance protection, savings accumulation, liquidity, and expected returns?

6.1 Relative pricing

I begin this section by describing the various contractual features that households chose from. Ordinary whole life policies differ along three primary dimensions: participation status, premium-payment structure, and maturity. Participating whole life policies entitle policyholders to dividends (the same “policy dividends" as on the expense side of the firm income statement described in the previous section) that reflect favorable mortality, investment, and expense experience. These dividends effectively share the insurer surplus with policyholders and make realized returns of participating policies sensitive to asset performance. Nonparticipating policies, by contrast, offer fully guaranteed benefits and premiums, with all residual risk and upside retained by the firm. Regarding

the payment structure, household had a few options: continuous-payment whole life spreads premiums over the insured's lifetime, whereas limited-payment variants (such as 10-, 15-, or 20-payment policies) compress premiums into a fixed number of early years while preserving a lifetime death benefit, increasing annual premiums but accelerating reserve accumulation and reducing lapse risk once the policy becomes paid-up. Endowment policies differ more fundamentally by combining insurance and savings: they paid the face amount either at death or at a fixed maturity (e.g., 10 or 15 years), resulting in very high premiums, rapid cash-value growth, and substantially less exposure to long-run mortality risk. Together, these contract features determine the timing of cash flows, the allocation of risk between insurers and policyholders, and the sensitivity of premiums and reserves to age, interest rates, and insurer performance.[10]

Table III shows that ordinary life insurance became substantially more affordable over time. Using available information about rates from one insurer (Aetna), I show the breakdown of the typical premium paid by contract type. Relative to manufacturing wages, the number of hours required to purchase a standard whole life policy fell by nearly half between 1893 and 1929, from 296 working hours to 153 working hours per one thousand real dollars. This decline reflects both rising real incomes and improvements in pricing, plausibly driven by scale and improvement to actuarial science. From the household perspective, this reduction in the relative price of insurance lowered the effective cost of precautionary saving and bequest provision, expanding the feasible set of insurance choices for working- and middle-class households.

[10]Recall the acute jump in the share of expenses attributed to lapsed policies during the Depression. For continuous-payment whole life policies, these surrender values equal the accumulated reserve net of surrender charges at the surrender date and remain low early in the contract because the reserve is calculated conditional on the payment of future premiums.

Table III: Premium rates for Aetna policies at age 50 in 1893 and 1929

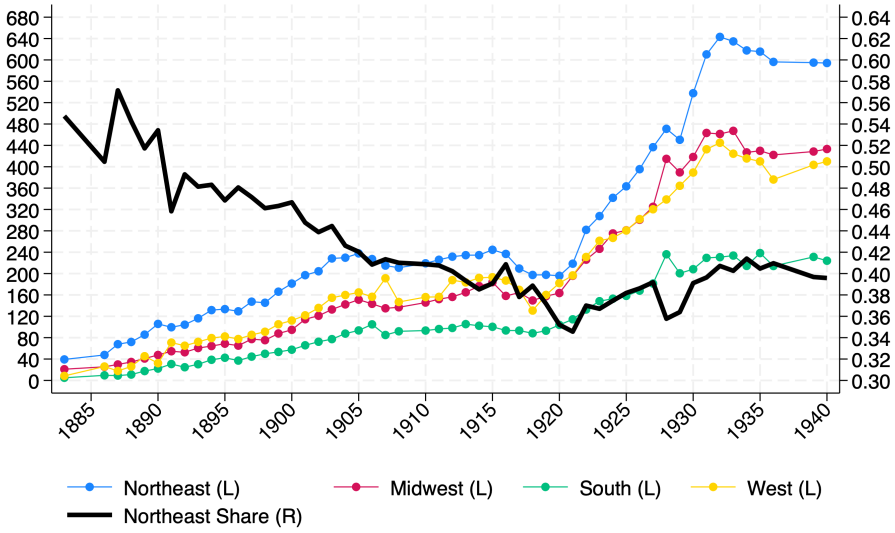
	1893	1929
Insurance quantity (1893$ equivalent)	$1,000	$1,964
Continuous whole life	$44.70	$43.73
Ten payment whole life	$70.05	$75.47
Twenty payment whole life	$49.37	$52.05
Endowment - 10 years	$101.72	$106.96
Endowment - 20 years	$56.15	$57.88
Surrender value after 3 years	$75.00	$85.00
Surrender value after 10 years	$328.00	$359.00
Avg. manufacturing hourly wage	$0.15	$0.56
Hours to pay premium per 1k 1893$	296	153

Sources: Aetna Premium rates are per nomimal 1,000 dollars and come from the *Spectator Yearbook*. CPI comes from Williamson (Measuring Worth). Manufacturing wages come from the NBER macrohistory database and denote the U.S. average hourly money earnings in payroll manufacturing industries.

6.2 Regional Demand

Life insurance demand exhibited persistent regional heterogeneity, with consistently higher per-capita premiums collected in the Northeast and incomplete convergence elsewhere, possibly reflecting differences in income, urbanization, and access to other financial institutions. Figure XII shows the evolution of per-capita premiums for each region as well as the share of all premia in the Northeast. Per-capita premiums are (always) highest in the Northeast, reaching their high point of 640 dollars in 1930, with the Midwest and West converging almost fully with the Northeast by 1930 and then stagnating thereafter. The South, on the other hand, consistently lagged behind - it did not reach even half the level of the Northeast at any point in the study period - in contrast with the large number of new entrants documented in the previous section. Although the Northeast's share of national premiums declines from roughly 56 percent in 1890 to a trough of 36 percent in the early 1920s, it rebounds to about 40 percent by 1940. This rebound of the Northeast's premium share after 1920 mirrors the re-concentration observed on the firm domicile patterns (Figure V). The divergence between the Northeast and the rest of the country in 1930 - 1933 suggests that the large firms headquartered there disproportionately captured most of the expansion during the the first years of the Depression, possibly due to the failure of small regional firms in the Midwest and South.

Figure XII: 2024$ premium per capita by region and total NE share

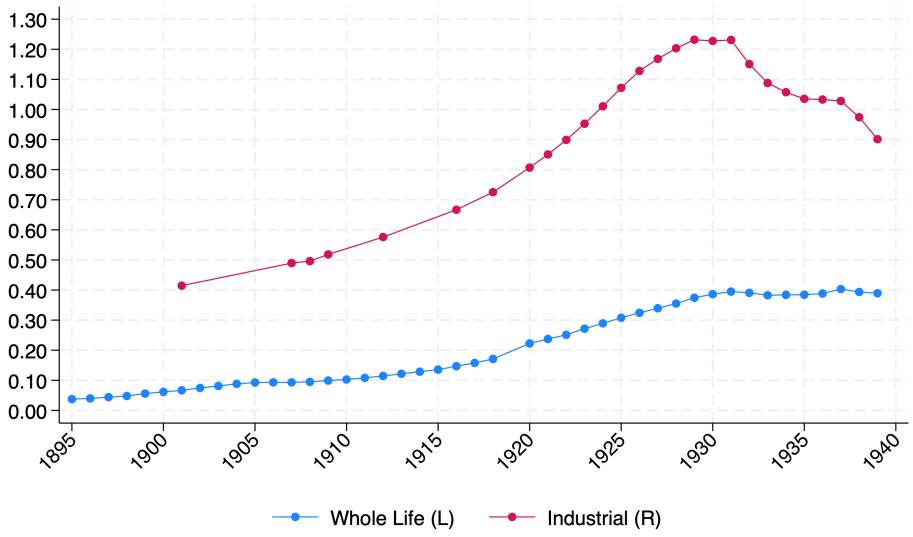


Note: This figure plots the average per-capita premium collected in each region across time deflated to 2024 dollars. The solid black line plots the share of all premium collected in Northeast states.

6.3 Contract Composition

Household insurance holdings in New York, as shown in Figure XIII, grew from less than 0.05 whole life contracts per capita in 1895 to over 0.40 contract per capita, but policy counts stagnated during the Great Depression, indicating that households relied on existing contracts for liquidity (see the lapsed policy expense in Figure X and policy loans in Figure VIII). Likewise, industrial insurance more than tripled in coverage in this time period, reaching more than one contract per capita by 1927. Industrial insurance policies were typically small-denomination contracts sold door-to-door and often held simultaneously by the same household or individual. Coverage exceeding one policy per capita therefore reflects the practice of holding multiple industrial policies, frequently taken out at different times or to insure different family members, rather than universal coverage of the population. Because these policies were inexpensive, short-duration, and easily divisible, policy counts overstate the breadth of household participation relative to ordinary whole life insurance.

Figure XIII: Per capita number of policies outstanding in New York



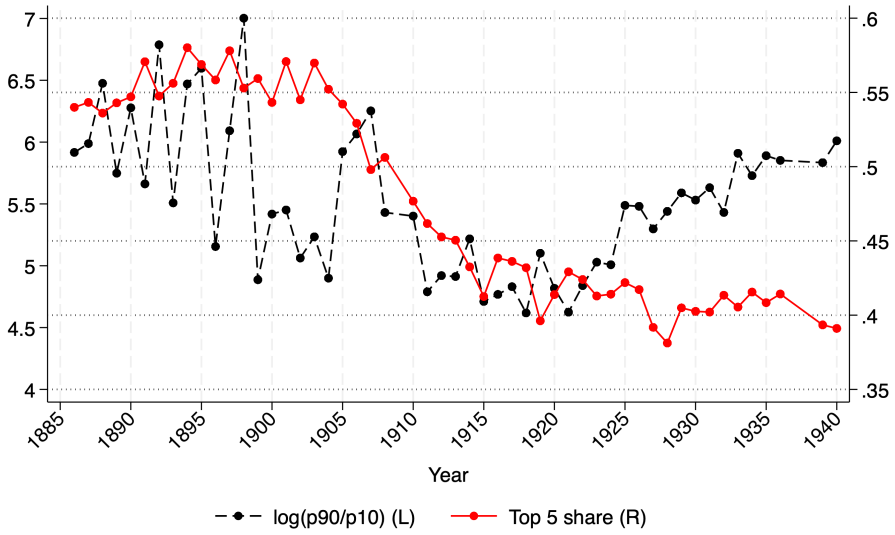
Note: This figure plots the per-capita number of ordinary life and industrial policies outstanding in New York across time.

7 Regulators

Finally, I examine the evolution of the market from a state regulator perspective. Namely, this section seeks highlight the changes in market structure, competition, and the spatial allocation of insurance activity across and within states. Regulators are interpreted as prioritizing solvency and policyholder protection over short-run competitiveness, using reserve requirements, asset admissibility rules, and entry oversight as primary tools, as described in the conceptual framework. The figures show that these objectives were largely achieved up to 1920: the insurance market become more competitive over time at both the state and national level, even as large firms retained structural advantages and regional asymmetries persisted. I find some evidence that, post 1920, new large national firms, not the dominant players in the 19th century, emerged.

7.1 Market Concentration and Competition

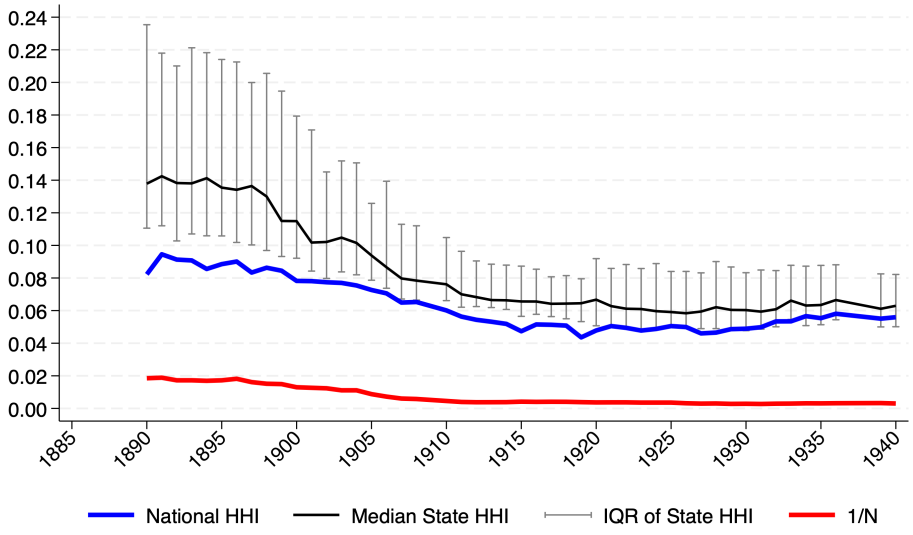
Figure XIV: Concentration of premium collection



Note: This figure plots the logarithm of the 90th /10th percentile ratio of firm-level total premium collected and the share of premium collected by the historically recognized "top 5" firms (New York Life, Mutual, Metropolitan, Equitable, and Northwestern Mutual).

Figure XIV tracks national concentration in premium collection using two measures: the ratio of the logarithm of the 90th and 10th percentile of total premium collected across all states per firm, and the share of total premium collected by the five largest firms (New York Life (NY), Mutual (NY), Metropolitan (NY), Equitable (NY) and Northwestern Mutual (WI)). Between 1890 and 1915, industry concentration declined across both measures, coinciding with increased firm entry and greater market dispersion documented in the previous sections.. The log 90/10 ratio declined from 6.7 in 1890s to roughly 4.6 in the early 1920s while the share of the top firms declined from 57 percent to 40 percent. However, after 1920, a steady rise in premium disparity re-emerged, suggesting that while firm entry initially increased competition and reduced concentration from 1905 to 1920, structural forces (possibly tied to economies of scale, branding, regulatory changes, or Depression-era consolidation later on in the 1930s) may have enabled larger firms to regain their relative advantage.

Figure XV: State and National HHI



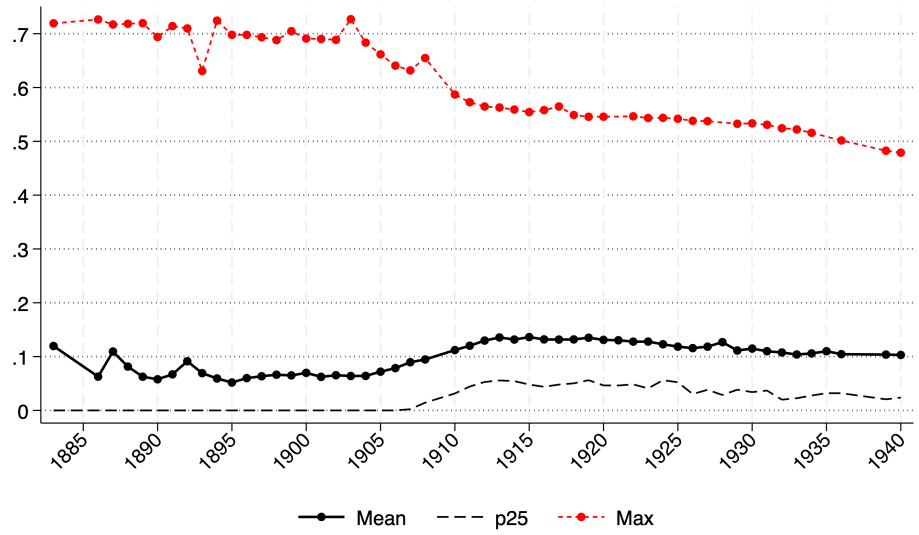
Note: This figure plots the median, 25th, and 75th percentile of the state-level HHI and the national HHI.

Figure XV reinforces this interpretation. From a national perspective, the market is competitive throughout the period, with the national Herfindahl–Hirschman Index (HHI) remaining below 0.10 even in the late nineteenth century. At the state level, competition varies widely in the late nineteenth century, with roughly a quarter of states exhibiting HHIs above 0.20. Beginning around 1900, both the median level of concentration and its dispersion decline steadily through about 1920, after which they stabilize. By the 1930s, the median state HHI is approximately 0.06 with little variation across states, indicating robust competition in most local markets.

7.2 In-State Firms and Local Market Participation

A key regulatory, and political, consideration is the amount of savings flowing into firms headquartered out-of-state. State regulatory efforts modestly increased the presence and premium share of locally headquartered insurers, but did not fundamentally alter states' reliance on out-of-state firm for the vast majority of state or the national hierarchy of insurance centers. Figures XVI and XVII examine to what extent state regulators succeeded in fostering locally headquartered insurers and retaining insurance activity within state borders.

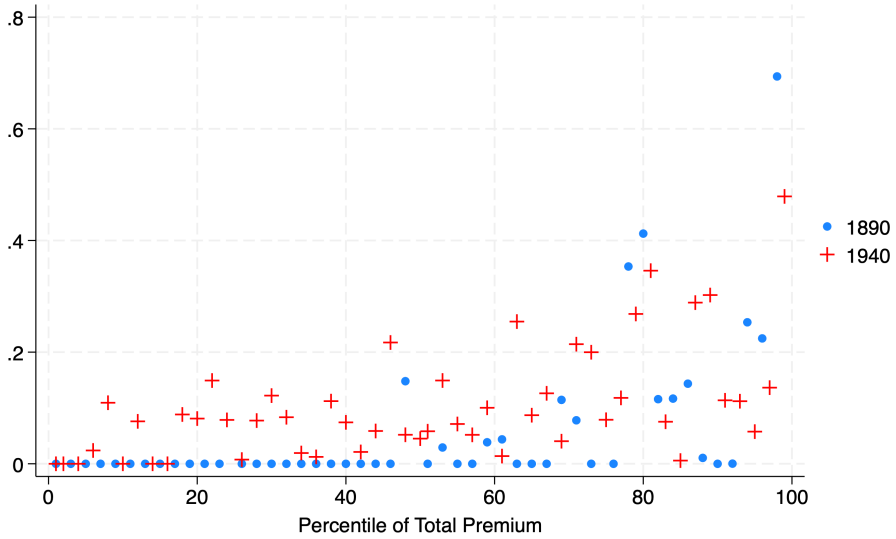
Figure XVI: Premium share of in-state firms



Note: This figure plots the mean, 25th percentile and maximum of firm shares of premium within each state collected by firms domiciled within that state ("in-state").

Figure XVI dissects premium collection by distinguishing between firms domiciled within the state ("in-state") and those domiciled in another state. I plot the average (solid black), 25th percentile (dashed black), and the maximum (red) share of premium collected by in-state firms across states. Throughout the entire period, the average state sees more than 85 percent of its ordinary life insurance premium go to out-of-state firms. However, the share of premiums collected by in-state firms rose steadily from 1890 to 1920, more than doubling from approximately 6 percent to 13 percent. This trend signifies a growing capacity for locally headquartered firms to compete for business within their own states. Yet, regional disparities persisted: in the lowest quartile of states, local firms collected no premiums at all until 1907, indicating that many markets remained entirely dependent on out-of-state providers. At the same time, the maximum in-state premium share, driven largely by firms headquartered in New York, declined over this period, indicating a compression in the state-level distribution of in-state premiums. The simultaneous rise in the lower quartile and decline in the maximum suggests a broadening of market participation but with persistent concentration in certain financial hubs.

Figure XVII: Premium share of in-state firms vs. total premium by state, 1890 and 1940



Note: This figure plots state-level premium shares of in-state firms in 1890 (blue dots) and 1940 (red pluses) by the percentile of total premium collected. See text for details.

Building on the previous figure, Figure XVII plots the distribution of in-state premium shares in 1890 and 1940 against the percentile of total premium collected across all states (going from left to right indicates larger insurance markets), highlighting further shifts in market competitiveness. In 1890, a significant number of states, even the large one such as Texas and Illinois, exhibited zero in-state premium collection, represented by a clustering of blue dots along $y = 0$. By 1940, many of these states had in-state firms, increasing the share of local firms in premium collection. Conversely, states that historically dominated premium collection saw a decline in their relative share, with the highest-percentile states, such as New York and New Jersey, experiencing a downward shift in in-state premium collection. These trends indicate a more competitive insurance market by 1940, with the dispersion of firms leading to reduced dominance by a few key states and greater participation from emerging markets.[11]

Taken together, the evidence indicates that state regulators oversaw an industry that was consistently competitive, exhibited low failure rates, and expanded geographically, while tolerating substantial firm-level inequality in scale. Efforts to promote local insurers modestly increased in-state participation but did not eliminate reliance on out-of-state firms. These outcomes are consistent with regulatory objectives focused on minimizing insolvency risk and ensuring reliable claim payments, even at the cost of persistent spatial asymmetries.

[11] I report state-level changes in in-state premium over this period for all states in the Appendix.

8 Net Cash Across States

While the preceding section documented the geographic expansion and structural rebalancing of the insurance industry, this section turns to the core economic question that animated many contemporary reformers and critics: where did the money go? In particular, I ask whether the expansion of local firms and broader market reach translated into more capital remaining in the regions where it was collected. To address this, I develop a new measure of inter-state capital transfers based on "net cash" as defined as premiums collected minus losses paid in each state-year and estimate the extent to which that cash was retained by in-state versus out-of-state firms.

In order to approximate net cash transfers across space and absent geocoded investment data, I make the assumption that 50 percent of net cash of firms operating outside their state of incorporation is set aside to pay costs and make investments in those states. That is, firms do not transfer the full net cash from one state into their state of incorporation, and, likewise, not all of the net cash generated by out-of-state firms is transferred outside the state. From each state's perspective, then, the net cash is all that is generated by in-state firms within its borders, plus 50 percent of the excess cash generated by its firm in other states, but minus 50 percent of excess cash generated within its borders by out-of-state firms:

$$\begin{aligned} transfer_{jt} = \sum_{\forall i \in j} NetCash_{it} \times I(instate = 1) + 0.5 \times \sum_{\forall i \notin j} NetCash_{it} \times I(instate = 1) \\ - 0.5 \times \sum_{\forall i \in j} NetCash_{it} \times I(instate = 0) \end{aligned} \tag{8.1}$$

where $i \in j$ denotes all firms i that operate in state j at time t, $i \notin j$ denotes firms that operate outside of state j, and *instate* is a binary that takes the value of 1 if firm i is domiciled in state j.

Figure XVIII: Example of net cash transfer computation

		Colorado			Illinois		
Firm Name	**Firm Headquarters**	**Premium**	**Loss**	**Net**	**Premium**	**Loss**	**Net**
National	Colorado	100	10	90	150	75	75
Prudential	Illinois	100	50	50	110	10	100
Metropolitan	New York	100	75	25	200	10	190

Transfer for Colorado = Net Cash of *National* in CO+ 0.5 Net Cash of *National* in IL - 0.5 Net Cash of *Prudential* and *Metropolitan* in CO

$= 90 + 0.5 \times 75 - 0.5 \times (50 + 25) = \mathbf{90}$

Transfer for Illinois = Net Cash of *Prudential* in IL + 0.5 Net Cash of *Prudential* in CO - 0.5 Net Cash of *National* and *Metropolitan* in IL

$= 100 + 0.5 \times 50 - 0.5 \times (75 + 190) = \mathbf{-7.5}$

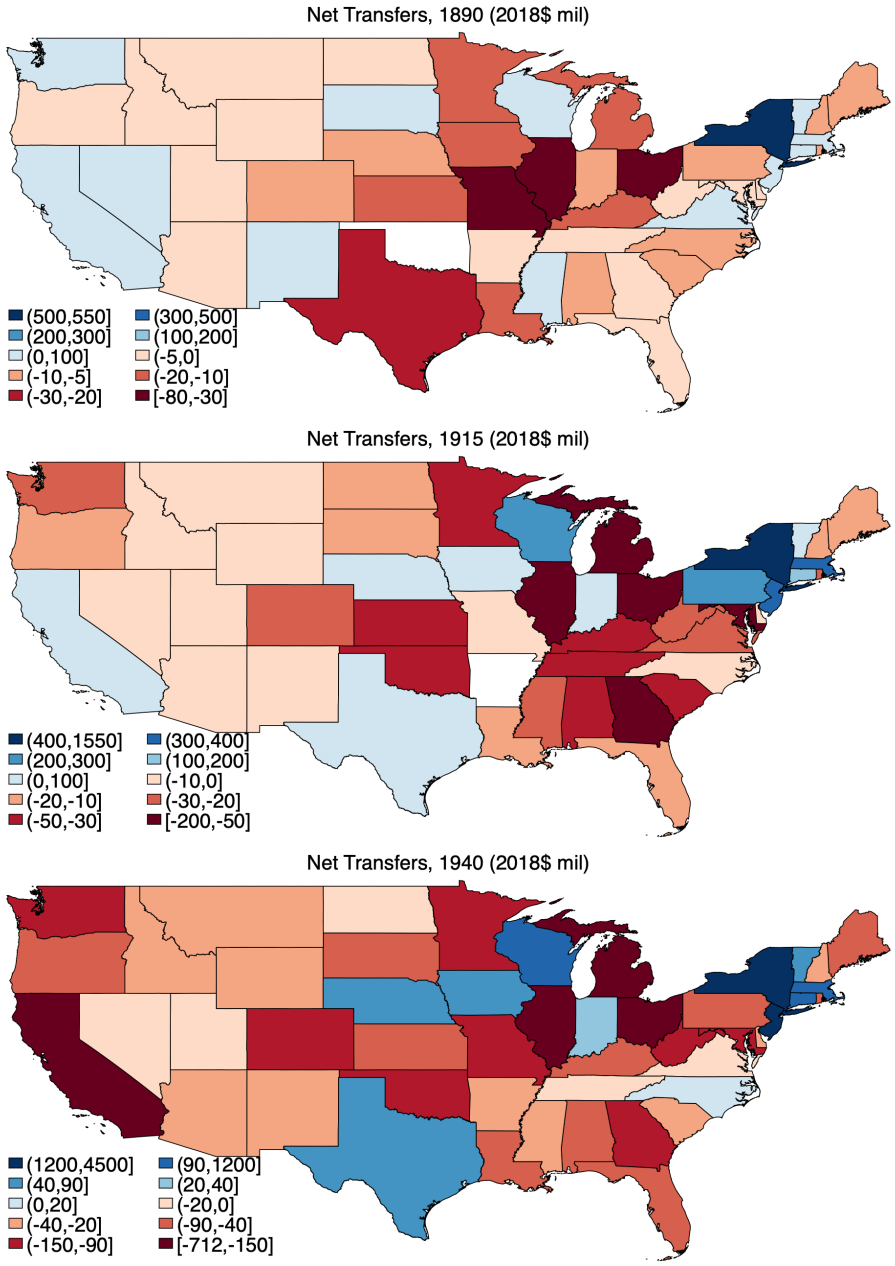
Transfer for New York = 0.5 Net Cash of *Metropolitan* in IL and CO

$= 0.5 \times (25 + 190) = \mathbf{107.5}$

Figure XVIII illustrates the straightforward net cash computation with three firms and two states. New York, in this example, is a large importer of insurance cash as it has no market of its own and its only firm (Metropolitan) generates positive net cash out-of-state. On the other hand, Illinois is net exporter of insurance cash, its one firm (the Prudential) brought in less net cash than the other two firms exported to their home states. To be clear, this measure of excess cash does not include investment returns nor operational costs, and should be interpreted as a rough proxy for life insurance excess surplus available for reinvestment over this time period.

Figures XIX and XX provide spatially disaggregated view of $transfer_{jt}$ for all contiguous states j at t = 1890 (initial period with roughly full state coverage), 1915 (the peak on in-state activity as described in the previous section), and 1940 (end of period) and show which states functioned as contributors to, or recipients of, the net excess insurance cash.

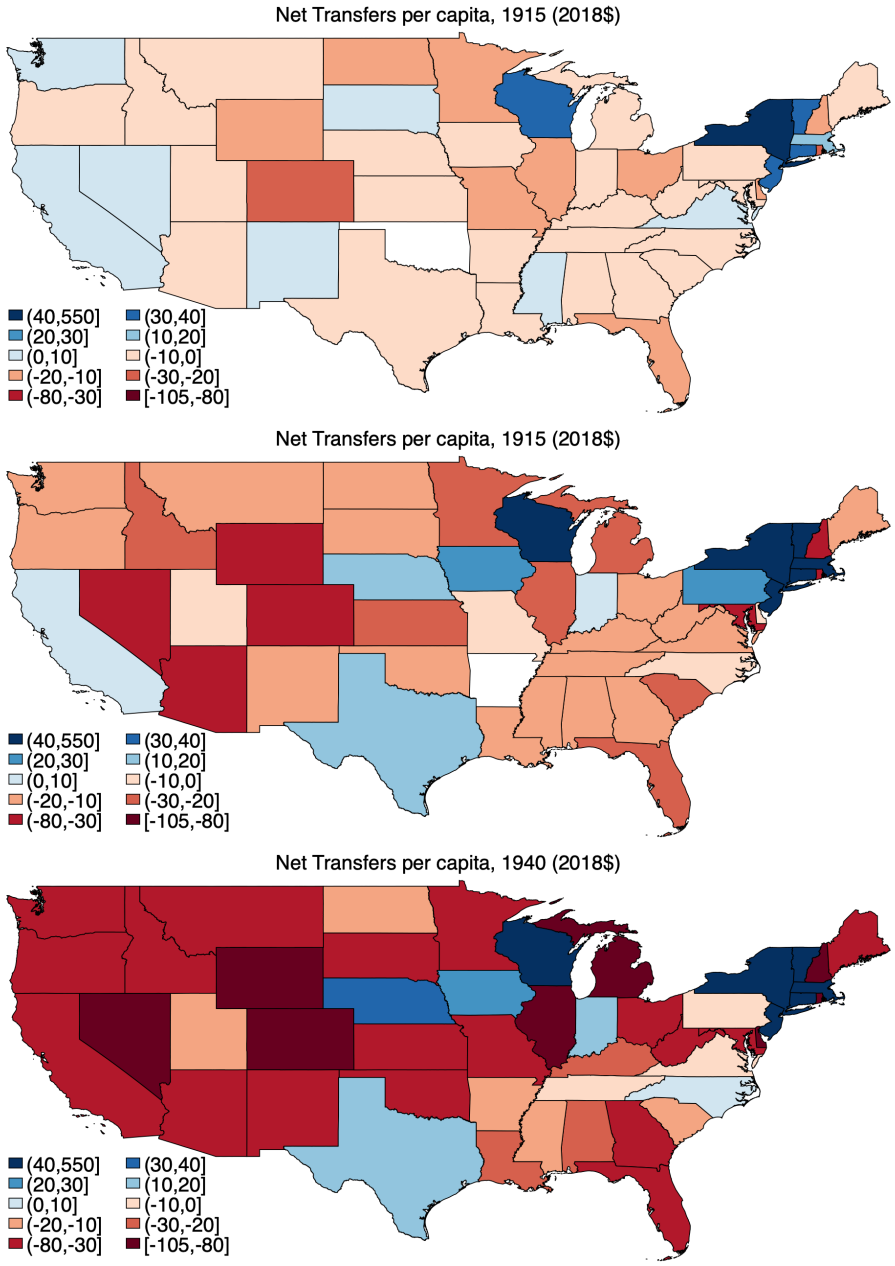
Figure XIX: State-level net excess cash transfers



Unsurprisingly, New York was by far the largest net-importer of capital in all three years, amassing $500 billion, $1.5 billion, and $4.5 billion respectively (in 2018 dollars). Connecticut, New Jersey, and Wisconsin were also large net recipients of excess cash, while many Southern and Midwestern states such as Texas, Illinois, Missouri, and Ohio were substantial net exporters. Most western states (with the exception of Colorado and Wyoming) in 1890, on the other hand, were neither large importers or exporters of excess cash, on total or per-capita basis. This pattern

reflects the highly centralized structure of the insurance industry in its early phase, dominated by large Northeastern firms (and one especially large firm in Wisconsin, Northwestern Mutual) collecting the majority of premiums nationwide with little competition from locally-based firms. Governor Culberson's complaint about Texas exporting savings in the 1890s appears validated (Zartman (1906)). By 1915, although the core-periphery divide persisted, a handful of states, such as Texas, Iowa, Indiana, and Pennsylvania, reversed their capital outflows and became modest net gainers, indicating a shift in the geography of insurance capital partly away from New England. However, by 1940, the spatial concentration in the Northeast re-appeared, with every western state becoming a net exporter of surplus cash. Texas, Nebraska, Iowa, and Indiana retained their place as the only capital importers outside of the Northeast during the interwar period.

Figure XX: State-level net excess cash transfers per capita



Taken together, the figures in this and preceding section reveal a dual narrative. On one hand, geographic diversification and institutional reform succeeded in increasing the local retention of capital. On the other, the persistence of large net transfers to a small number of financial centers underscores the enduring asymmetries in the geography of financial intermediation. In this sense, the legacy of the "money trust" as decried by early 20th-century reformers remained embedded in the structure of the U.S. insurance market well into the interwar period.

9 Concluding remarks

This paper documents how the U.S. life insurance industry reshaped the geography of American saving and investment between 1890 and 1940. Using newly digitized firm-level data, I show that life insurance expanded rapidly in scale and geographic reach, with entry spreading beyond traditional financial centers into the Midwest and South. Yet this dispersion was uneven: while the number of firms and states served increased substantially, underwriting volume and surplus generation remained concentrated among large incumbent insurers headquartered in a small set of financial centers in the Northeast.

My analysis highlights distinct adjustment margins across agents. Firms grew primarily along the intensive margin despite the massive growth in the number of insurers in the first decade of the 20th century, with large insurers benefiting from spatial and temporal risk pooling, stable loss experience, and static balance-sheet management under binding regulatory constraints. Households expanded insurance use as relative prices fell, but relied on existing contracts for liquidity during the Great Depression. State regulators succeeded in lowering concentration and fostering entry, modestly increasing in-state participation, but did not fundamentally alter states' reliance on out-of-state insurers.

Finally, I introduce a new measure of inter-state capital transfers based on net cash flows. While total inter-regional transfers increased markedly over time, the share generated through out-of-state operations declined after 1905 before rising again during the Depression. Despite partial rebalancing, major financial centers, especially New York, continued to attract disproportionate surplus, underscoring the persistence of spatial asymmetries in financial intermediation. Together, these findings challenge the view of life insurance as a static oligopoly and instead depict it as a dynamic intermediary whose expansion, regulation, and capital flows jointly shaped regional financial development in the pre–Social Security United States.

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A Appendix

Table A1: Entry and Exit Rates by State-Decade

		1890s			1900s			1910s			1920s			1930s		
		Entry	Exit	Net	Entry	Exit	Net	Entry	Exit	Net	Entry	Exit	Net	Entry	Exit	Net
Northeast	CT	4.2	2.3	1.9	2.5	2.2	0.2	2.9	2.1	0.7	10.2	6.5	3.7	6.1	5.4	0.7
	MA	4.5	3.7	0.8	3.2	3.7	-0.5	1.1	1.5	-0.4	10.9	5.1	5.8	5.6	4.9	0.7
	ME	4.3	1.8	2.5	2.7	1.2	1.5	2.5	1.3	1.1	9.4	5.1	4.3	6.7	4.6	2.1
	NH	3.1	2.3	0.8	1.7	2.2	-0.5	2.4	2.1	0.2	9.4	4.0	5.4	7.7	8.9	-1.2
	NJ	2.3	0.9	1.4	3.3	3.8	-0.5	2.0	2.3	-0.3	9.0	3.9	5.1	5.6	5.8	-0.2
	NY	3.8	1.8	2.0	3.0	4.2	-1.3	0.0	0.6	-0.6	10.6	9.0	1.6	7.7	6.3	1.4
	PA	5.3	3.0	2.3	4.9	2.9	2.0	2.6	2.0	0.6	5.7	11.3	-5.5	10.4	3.9	6.5
	RI	7.2	4.1	3.1	2.0	3.1	-1.1	1.1	1.9	-0.8	7.4	3.9	3.5	6.9	5.6	1.3
	VT	2.9	3.1	-0.2	5.3	4.6	0.7	1.3	2.2	-1.0	9.2	5.3	3.9	7.7	6.0	1.7
Midwest	IA	5.5	3.0	2.5	3.7	4.6	-0.9	6.3	1.4	4.9	6.1	2.9	3.2	3.9	4.2	-0.3
	IL	5.9	3.4	2.4	4.3	3.1	1.2	3.0	1.1	1.9	5.6	2.6	3.0	2.7	4.3	-1.5
	IN	23.4	9.0	14.4	6.7	4.4	2.4	3.6	1.4	2.3	6.7	3.1	3.6	3.5	2.8	0.7
	KS	8.7	9.6	-0.9	10.5	6.0	4.6	5.7	2.6	3.1	6.5	3.5	3.0	4.4	5.0	-0.6
	MI	4.7	2.4	2.3	4.8	2.8	2.1	4.4	1.5	2.9	5.9	2.4	3.5	1.9	2.6	-0.8
	MN	5.8	3.1	2.7	4.9	6.0	-1.2	6.8	0.8	6.1	8.9	3.7	5.2	4.1	4.7	-0.6
	MO	5.8	3.3	2.5	5.0	2.2	2.8	16.8	1.7	15.1	6.6	2.0	4.6	3.0	3.7	-0.7
	ND	10.9	12.8	-1.8	9.8	5.7	4.1	6.9	3.0	3.9	9.7	5.3	4.5	7.1	7.4	-0.3
	NE	6.2	4.3	2.0	7.8	4.3	3.5	5.2	2.9	2.4	6.2	3.0	3.3	3.6	3.3	0.3
	OH	6.8	4.9	1.9	2.6	1.7	0.9	3.5	2.2	1.3	7.6	2.4	5.2	4.1	3.8	0.3
	SD	26.8	14.1	12.7	11.6	6.2	5.5	6.6	3.0	3.6	7.2	4.6	2.6	7.5	8.1	-0.6
	WI	5.9	4.2	1.7	5.9	8.8	-2.9	15.0	25.2	-10.2	12.3	6.0	6.2	8.6	6.3	2.3
South	AL	26.3	10.2	16.2	11.2	4.4	6.8	3.9	2.9	1.0	7.5	3.3	4.2	6.2	7.1	-0.9
	AR	19.0	14.7	4.3	26.4	4.3	22.1	18.6	4.5	14.1	11.5	5.9	5.6	5.7	9.2	-3.5
	DC	33.5	10.6	22.9	9.9	12.7	-2.8	6.6	2.5	4.1	9.5	3.8	5.6	5.0	4.0	1.1
	DE	25.2	11.3	13.9	5.4	6.8	-1.4	4.0	1.8	2.1	9.6	4.9	4.7	5.2	3.6	1.6
	FL	27.2	49.1	-21.8	20.9	22.8	-1.9	9.0	6.2	2.8	14.5	7.3	7.2	7.1	7.9	-0.8
	GA	28.4	10.8	17.6	12.1	10.2	1.9	17.6	4.7	12.9	6.3	3.3	3.0	6.3	6.2	0.1
	KY	8.8	4.1	4.8	12.8	10.2	2.5	5.9	4.1	1.9	7.2	2.8	4.3	5.6	5.4	0.1
	LA	30.1	19.1	11.0	11.2	11.8	-0.6	8.0	3.7	4.3	12.8	5.1	7.7	9.0	9.4	-0.5
	MD	8.7	5.7	3.0	2.1	4.5	-2.5	3.5	3.1	0.4	7.5	2.1	5.4	5.4	6.2	-0.8
	MS	37.8	13.4	24.4	19.5	16.5	3.0	8.1	6.7	1.4	11.2	6.0	5.2	8.6	9.9	-1.3
	NC	17.0	12.2	4.8	8.6	7.3	1.2	4.8	2.4	2.3	7.6	3.1	4.5	4.5	4.8	-0.2
	OK				17.1	10.3	6.8	10.1	7.7	2.4	10.2	5.0	5.2	6.9	6.1	0.8
	SC	18.1	12.0	6.2	13.7	10.8	2.9	4.9	4.8	0.1	9.7	5.4	4.2	6.9	6.9	-0.1
	TN	17.7	45.6	-27.9	7.7	6.8	0.9	7.4	2.8	4.6	7.8	2.7	5.1	4.5	3.4	1.2
	TX	16.6	16.8	-0.2	13.2	8.1	5.1	7.3	8.0	-0.7	13.3	5.7	7.6	5.5	4.7	0.8
	VA	14.0	10.6	3.4	3.5	2.4	1.1	6.2	1.8	4.4	7.0	3.0	4.0	4.8	2.7	2.1
	WV	10.4	7.5	2.9	8.4	7.6	0.8	5.6	3.4	2.2	7.9	2.8	5.0	4.5	6.4	-1.9
West	AK										35.6	20.5	15.0	15.5	12.9	2.5
	AZ	27.4	9.9	17.4	26.4	24.5	1.8	13.9	17.2	-3.3	16.8	9.5	7.3	9.9	9.4	0.5
	CA	3.2	2.8	0.4	8.0	5.1	2.9	3.9	2.0	1.9	10.1	3.2	6.9	4.2	2.7	1.5
	CO	6.9	3.2	3.7	4.8	6.8	-2.1	5.3	1.8	3.5	10.0	4.2	5.8	4.6	6.0	-1.4
	HI				28.0	10.0	18.0	45.5	0.0	45.5	31.9	19.9	12.0	14.4	16.7	-2.2
	ID	31.9	11.3	20.6	19.3	12.5	6.8	9.7	6.3	3.4	10.8	6.8	4.0	8.8	8.6	0.1
	MT	19.1	23.6	-4.6	10.1	9.6	0.5	9.0	2.9	6.1	11.4	8.0	3.5	8.8	7.7	1.1
	NM	31.1	11.8	19.3	16.2	11.5	4.8	7.0	4.4	2.6	16.1	10.3	5.8	9.0	7.8	1.2
	NV	21.5	25.8	-4.3	15.1	6.8	8.4	6.2	3.8	2.3	16.4	9.9	6.5	9.0	8.2	0.8
	OR	29.4	10.2	19.2	8.4	4.9	3.6	4.1	2.3	1.8	9.1	3.0	6.0	5.7	5.4	0.3
	UT	26.8	13.2	13.6	13.2	9.8	3.4	7.8	5.5	2.3	8.5	5.8	2.7	8.0	7.6	0.4
	WA	28.8	11.7	17.1	11.1	4.7	6.4	16.5	3.1	13.4	8.1	4.0	4.2	7.7	6.8	0.9
	WY	30.1	23.3	6.8	13.7	7.5	6.2	9.2	4.4	4.7	16.9	11.9	4.9	9.7	9.9	-0.3

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Sources: *Insurance Yearbook*, various years (see text).

Figure A.1: Change in in-state premium share

	1890		1940		
	Premium (mil)	Instate Share	Premium (mil)	Instate Share	Delta Share
TX	2.0	0%	60.2	35%	35%
NC	0.7	0%	30.7	26%	26%
NE	0.7	0%	21.5	22%	22%
NJ	3.0	14%	103.0	31%	17%
UT	0.0	0%	8.1	15%	15%
KS	1.1	0%	23.9	15%	15%
IA	1.7	7%	42.0	22%	15%
VA	0.2	0%	30.5	13%	13%
MS	0.0	0%	11.8	12%	12%
IN	0.8	0%	53.2	12%	12%
ND	0.2	0%	5.0	12%	12%
AL	0.9	0%	18.2	12%	12%
OH	7.1	1%	149.0	12%	11%
TN	0.4	0%	26.6	10%	10%
WA	0.1	0%	29.7	9%	9%
DE	0.2	0%	8.3	8%	8%
SC	0.6	0%	13.1	8%	8%
MT	0.0	0%	7.5	8%	8%
MN	1.9	0%	49.0	8%	8%
CA	1.0	4%	141.0	12%	8%
OR	0.3	0%	18.9	8%	8%
AR	0.4	0%	11.0	8%	8%
SD	0.0	0%	5.7	8%	8%
IL	7.6	0%	171.0	7%	7%
MO	3.7	1%	66.8	8%	7%
FL	0.4	0%	22.5	6%	6%
LA	1.2	0%	21.7	5%	5%
CO	1.2	0%	22.2	5%	5%
MA	8.5	25%	103.0	29%	4%
NM	0.0	0%	3.9	2%	2%
WV	0.4	0%	18.9	2%	2%
GA	0.4	0%	29.1	1%	1%
RI	1.2	0%	15.9	1%	1%
NH	0.6	0%	9.8	1%	1%
AZ	0.0	0%	5.4	0%	0%
ID	0.0	0%	5.5	0%	0%
NV	0.0	0%	1.8	0%	0%
WY	0.1	0%	3.2	0%	0%
MD	2.4	6%	35.1	4%	-2%
ME	1.0	4%	13.5	2%	-2%
PA	15.6	18%	209.0	14%	-4%
KY	2.8	11%	24.3	5%	-6%
VT	0.6	15%	6.8	9%	-6%
MI	3.0	12%	85.1	1%	-11%
CT	2.5	32%	44.4	20%	-12%
WI	2.3	41%	56.9	27%	-15%
NY	22.9	69%	438.0	48%	-21%