

# Public Health Shocks and Product Pricing Behaviour: Evidence from Life Insurance during the Influenza Pandemic

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An extensive literature focuses on the impact of financial shocks on a firm's real activities. Despite the recent COVID-19 outbreak drawing renewed attention to the importance of disruptions for firm decisions, there is little research on how firms change their product pricing behavior after a systemic public health shock. Studying how health shocks propagate through firms and the general economy requires detailed, granular data on product prices and firm fundamentals. One potential explanation for this scarcity is a severe data limitation. Moreover, to the extent that the health crises are relatively rare in history, data scarcity becomes even more of a limitation.

In this paper, we resort to history and explore one of the most severe health shocks in recent decades, the Influenza Pandemic of 1918-19, to overcome these data limitations. We introduce hand-collected balance sheet data on the universe of U.S. life insurance companies. In gathering data between 1911 and 1922, we study both the short and long-term aspects of public health crises on a crucial pillar of the financial system. Analyzing life insurance companies is valuable and informative for at least two reasons. First, life insurers offer a relatively homogeneous product, allowing us to draw lessons for similar industries. Second, health shocks affect insurers through an increase in liabilities due to death benefits paid to consumers, coinciding with a decrease in future premium income; and the decreased value of the investment portfolios. This multifaceted exposure to systemic health shocks underscores our contribution to the literature on financial frictions, often limited to the asset side of (life) insurers' balance sheets.

Moreover, the influenza pandemic is an interesting historical episode within our framework because of the nature of the disease. That is, a large number of young adults passed away (Taubenberger and Morens, 2006). Since this cohort is generally of low risk for life insurers, this can significantly impact insurers' actuarial models, leading to a change in premiums. Moreover, unlike the COVID-19 crisis, the influenza outbreak was a public health shock that did not coincide with a recession (Velde, 2020). This conveniently deals with confounding effects of the economic downturn present in the COVID-19 crisis studies, providing a cleaner identification.

We document that insurers more affected by the abnormal mortality shock charge higher premiums *vis-à-vis* less-affected insurers. This suggests that health shocks are transmitted to consumers. During the pandemic young adults experience an increase in excess mortality, hence, impacting this cohort's longevity. Life insurers priced in this increase in mortality risk in newly-issued policies. This finding is in contrast to the current evidence from financial shocks. For instance, Koijen and Yogo (2015) find that insurers with a larger

balance sheet effect decrease prices significantly more during the financial crisis. Similarly, Ge (2020) finds that – to lure in new policyholders— insurers reduce prices on those policies that immediately translated into income.

Our evidence is robust to other, important market frictions. For instance, we document that financial constraints, estimated as *ex-ante* leverage, loss ratio, or an insurer’s capacity, do not play a significant role in explaining product pricing differences. We also find that confounding effects stemming from World War I, nor any unobserved characteristics of retired and new life insurers, drive our findings. More importantly, narrative evidence suggests that the increase in premiums is the result of a change in firm behavior rather than consumer preferences.

Critically, we uncover real consequences coinciding with this extraordinary pricing behavior. First, we document that more affected life insurers are more likely to exit an affected state. This, therefore, indirectly impacts the competitiveness of these insurers. We thus argue that systemic health shocks, indeed, play a role in such managerial decisions. Second, we show that insurers in financial distress were more likely to charge higher prices. This implies that the observed price differentials increase the industry’s fragility. As in COVID-19, the Influenza Pandemic has a strong impact on an insurer’s financial health, as suggested by the increase in the probability of distress (Kojien and Yogo, 2020).

## **References**

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