

How Do Economic Networks Contribute to the Spread and Mitigation of Health Shocks?



Small firm owners facing idiosyncratic shocks adjust production by cutting spending and reducing their demand for external workers. These shocks propagate to other local households with whom shocked firms trade inputs and labor through local supply-chain and labor market networks, leading to declines in transactions, income, and consumption.



The total indirect effects are larger than the direct effects: a US\$1 decline in a shocked household's business spending reduces aggregate consumption by US\$1.7.



Both the direct and indirect effects are mitigated by incoming transfers to shocked households with access to risk-sharing networks.



Therefore, having access to health insurance protects both directly affected households as well as those who conduct transactions with them.

CONTEXT

The project analyzes the direct and indirect responses to health shocks affecting small firm owners in rural and peri-urban areas in Thailand. These entrepreneurs operate agricultural and nonagricultural businesses that trade material inputs and output with other businesses in their localities; they also hire external workers. Because entrepreneurs live in households with multiple members, some members operate businesses, while others work for wages. Consequently, households are engaged in supply-chain and labor market networks. Entrepreneurs are exposed to multiple sources of uncertainty and engage in informal arrangements to diversify risk across households. Thus, these firms are also embedded in a local risk-sharing network.

PROJECT

The project utilizes monthly panel data from Thailand to estimate the direct and indirect impacts of health shocks. Specifically, the researchers use unexpected changes in health status linked to high levels of health spending to identify shocks that are exogenous, idiosyncratic, and financially meaningful. They then estimate the direct effects on shocked households and the indirect effects on other households and firms connected to the shocked household through supply-chain and labor networks. The authors also analyze how the aggregate effects of these idiosyncratic shocks vary with network structure. Finally, the researchers study the role of labor and insurance markets in mitigating the direct and indirect effects of the shocks.

RESULTS

1. Health shocks disrupt family businesses. Households adjust their business decisions to cope with health shocks. On average, shocked households reduced overall business spending and their demand for hired workers by 23 percent and 79 percent, respectively ([Figure 1](#)).
2. The health shocks propagate through local economic networks. The effects of health shocks ripple out to other households, based on their location in the local networks. Firms that directly transacted with shocked households experience a decline in income, which in turn reduces their consumption. These adjustments further affect firms that transacted with the indirectly exposed firms, which in turn experience declines in income. We can see these ripple effects in the fact that those who are indirectly connected—at a distance of two or more links from the shocked household—also experience negative effects from the shock (see [Figure 2](#)). These indirect effects persist for two years, suggesting that networks are both fragile and rigid. Overall, the total indirect effects are larger than the direct effects: a US\$1 decline in a shocked household's business spending reduces aggregate consumption by US\$1.7.
3. The indirect effects are more severe when shocks propagate through the labor-market network, are larger in localities where economic networks, as compared to the market for goods, are denser and when the shocked household plays a central role in the networks.
4. Finally, insurance markets mitigate the direct effects of the shocks and, consequently, minimize their propagation.

Key concept



SUPPLY CHAINS

The network of organizations, people, activities, information, and resources involved in delivering a product or service to a consumer.

POLICY IMPLICATIONS

Investing in preventative health to reduce the severity of shocks benefits not only the household whose health improves but also others in the local network. In addition, improved safety nets may help prevent shocks to a single household or firm from propagating via the incomplete insurance channel. Given that the ability to buffer idiosyncratic shocks increases with the number of households participating in the insurance network, limited local networks alone may be unable to diversify severe idiosyncratic risk. Formal commercial insurance contracts or social insurance could enable better risk coping and thus reduce propagation. Electronic payment platforms that identify key players in local markets (those with a more central position in the network) could allow insurers to better target recipients who are key nodes in networks. Finally, because fully insuring against all idiosyncratic shocks is infeasible, policy interventions should also strive to improve the functioning of local labor markets and to make production networks less rigid and more diversified. Interventions to improve contract enforcement or to broaden the extent of product and factor markets beyond local markets may reduce the rigidity and sparsity of supply-chain and labor-market networks and hence mitigate propagation and its persistent adverse impact.

Key Concept



RISK SHARING

A risk management strategy that involves a firm, person or household transferring risk to a third party.

Figure 1. Households Cut Back on Business Spending as a Response to Severe Health Shocks

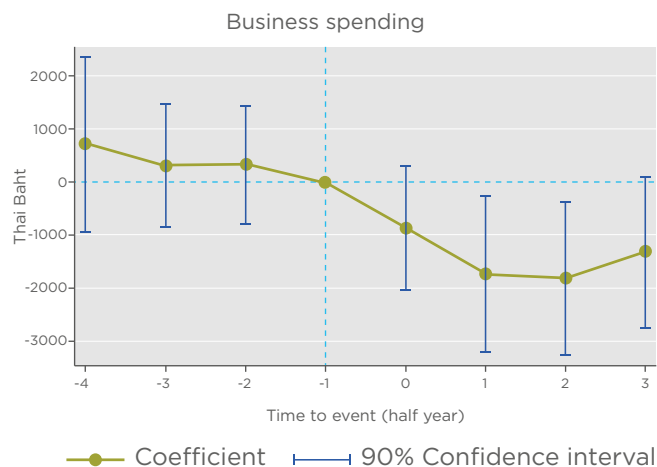
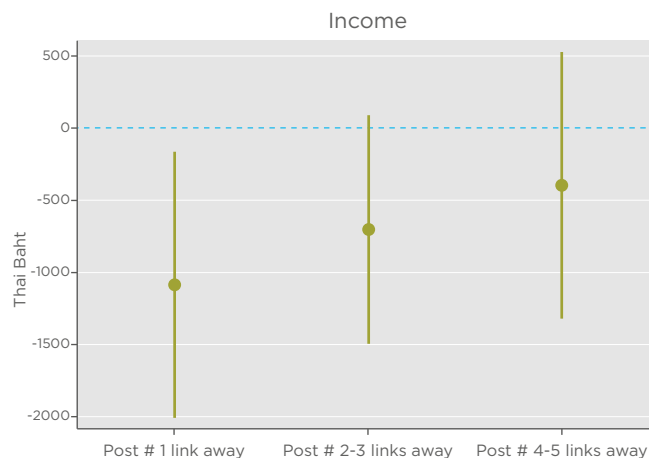


Figure 2. Indirect Effects of Shocks on Income, by distance to shocked households



Note: Households that were closer to shocked households through local economic networks experience declines in income.



FULL STUDY

Kinnan, C., K. Samphantharak, R. Townsend, and D. Vera-Cossio. 2019. "Propagation and Insurance in Village Networks."

DEPARTMENT OF RESEARCH AND CHIEF ECONOMIST

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