[Note to ARIA committee: We have completed a full draft of this paper, but it is still undergoing revisions among co-authors and so is not ready to share externally. Here, we attach a research summary describing our results.]

Research summary

In this paper, we exploit a rich new data set on the effect of a major shock – Hurricane Sandy, which struck the New York area on October 29, 2012 – on the finances of a set of businesses in the affected area. Specifically, we are interested in how such a shock increased financing constraints and the degree to which firm age and size played a role. Age and size are proxies for differences in firms' organizational structures and capacities and substantially influence firm productivity after the shock. This paper provides insight on heterogeneity in firms' recovery from a severe event that is likely to have important implications for long-term market structure and growth.

Age and size distinctly influence firms' financial preparation, constraints and performance following the disaster.[1] Previous research has shown that younger firms tend to grow faster than established ones but also face much higher bankruptcy risk (e.g., Thornhill and Amit, 2003). Survival risks affect their financial preparedness: in our data, young firms do not tend to insure against low-probability, high-consequence events, likely because insuring these risks reduces the firm's resources available to address other more probable shocks. Survival risks also affect their external relationships: for example, young firms in our data are more likely to be credit constrained even in non-disaster conditions.

Previous research has also shown that size affects both disaster vulnerability and management. Smaller firms are more geographically concentrated and less likely to have employees dedicated specifically to addressing risk (Tierney, 1997; Webb et al., 2000).

[1] Age and size are related; almost all young firms are small (Hurst and Pugsley, 2011). As examples from recent research of what constitutes young and small, Foster et al. (2008) consider firms less than five years old young and Hurst and Pugsley (2011) consider firms with less than 20 employees small.

We find that Hurricane Sandy increased credit demand and reduced performance (e.g., profit and employment growth) of negatively affected firms. Younger firms and larger firms were both more likely to apply for credit following the event, but younger firms frequently faced borrowing constraints as Sandy exacerbated the credit market frictions already affecting them. The event especially hurt the performance of younger and smaller firms. The implications of these findings may be greatest for young firms because of bankruptcy risk.

These results contribute to a growing literature that has identified distinctions between firm age and size. That literature highlights the particular importance of young firms in spurring economic productivity and employment (e.g., Foster et al., 2008; Haltiwanger et al., 2013). These contributions by young firms, combined with our findings on their vulnerability, motivate revisiting the public role of disaster assistance in the United States. Current U.S. disaster assistance to firms is generally in the form of post-event lending through the Small Business Administration (SBA). We suggest that the public sector could better meet firms' needs by funding programs that facilitate preparedness and provide a broader set of financing mechanisms characterized by *ex ante* and *ex post* grants and loans.