As new-jobless claims sky-rocket In the mortgage crisis that precipitated the Great Recession,. The first criterion was satisfied house prices had declined significantly since the peak in 2006 and because of the generous underwriting and mortgage terms, many borrowers were deeply underwater. However, the fraction of underwater borrowers that would ultimately go into foreclosure was unclear. Early evidence, including that by one of the authors of this paper (**?**) found indirect evidence that underwater borrowers would continue to make payments on their mortgage unless they suffered an income shock like losing a job. In other words, default required a double trigger of price declines and an income shock. If this was in fact true, the ultimate wave of foreclosures might be manageable compared to one in which borrowers with negative equity engaged in ruthless default. The determinants of default also informed the appropriate policy intervention. The HAMP program, for example, largely focused on reducing monthly payments by lowering the rate and extending the terms. Other advocated for principal reduction to give borrowers an incentive to stay current. However the double-trigger hypothesis would suggest that some type of unemployment insurance or simply directing subsidies to employment stabilization would have been more efficacious.

The problem was that existing empirical tests for the double trigger hypothesis were quite limited. The central challenge is that shocks to income via changes in employment or wages tend to be capitalized into house prices. Thus, a community experience the second trigger, a negative income shock typically also experience a drop in house prices and thus an increase in negative equity making it difficult to isolate the respective triggers. Also, homebuyers may be forward looking. So a positive employment shock may have been anticipated causing houses to rise before the income shock. We exploit the somewhat unique employment and income shock arising from the hydraulic fracking boom in Pennsylvania to isolate the second trigger from the first. Fracking involves injecting large amounts of water, sand and potentially toxic chemicals underground at great pressure to break shale geological formation and release the trapped natural gas. This process requires drillers to pierce underwater aquifers, and to manage and treat large quantities of contaminated water on the surface and the creation of drilling pads, pump jacks, containment ponds, storage tanks. There is some evidence that these real or perceived dis-amenities lowered the value of homes near shale gas wells. At the same time, the shale boom generated a large increased demand for middle and low skilled workers. It also generated considerable royalty payments. Thus, fracking appears ameliorates the second trigger of default, but not the first.

We examine the payment history of mortgage originated in the boom before fracking was known to be viable in Pennsylvania allow us to treat the resulting shale boom as an experiment where household incomes were sustained or even increased even as the housing prices declined. Using the underlying geological formation to predict the location of drilling activity, we find that fracking activity significantly raises total household income, from both wages and royalties while reducing unemployment insurance claims in the IRS statistics of income data series. However, while fracking does not appear to raise house prices it does significantly reduces the probability that a mortgage becomes seriously delinquent. Also, the effect is concentrated among borrowers that appear to be underwater on their mortgage (the first trigger) and thus validates the double trigger hypothesis.

One of key mechanism by which the house market collapse propagated a financial crisis is that many traders in 2008 through 2010 is that many market participants expected borrowers to behave far more ruthlessly than the they ultimately did. This drove massive declines in financial products tied to the mark-to-markets mortgage back securities like CDOs and CDO$^2 sevenasMBSsecuritiesthemselvesperformedadequatelyasborrowersabletopaytheirmortgagelarge$