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‘The vagaries of the sea: Evidence on the real effects of money from maritime disasters in the Spanish Empire’

The Columbian voyage of 1492 marked the beginning of three centuries in which vast amounts of monetary silver were shipped from America to Spain. During that time, Spain’s money supply was subjected to the vagaries of the sea: maritime disasters that resulted in the loss of silver-laden ships gave rise to random contractions in Spain’s money supply. We exploit this repeated natural experiment to obtain well-identified estimates of the causal effects of money supply shocks on the economy. To conduct the empirical analysis, we compile a novel dataset of maritime disasters in the Spanish Empire (1531-1810). For each maritime disaster we collect data on the quantity of silver lost, the cause of the disaster, and the quantity of silver that was salvaged in the aftermath of the event. Most maritime disasters were caused by bad weather, especially hurricanes. When expressed as a fraction of the Spanish money supply, silver losses constituted shocks to the money growth rate. We find that a 1 percentage point reduction in the money growth rate led to a drop in real output of around 1% that persisted for several years. A transmission channel analysis reveals that this non-neutrality result was associated with a slow adjustment of nominal variables and a tightening of credit markets: Prices fell by 1%, but only with a lag, and lending rates temporarily increased by up to 1.4 percentage points, suggesting that nominal rigidities and credit frictions were important monetary transmission channels. We show that other channels of monetary transmission, such as the Crown’s finances and changes in the silver content of the unit of account, showed few signs of activity. Also, maritime disasters in which no monetary metals were lost left no mark on Spanish economic outcomes. This finding discounts concerns that the loss of silver shipments exerted its effect in non-monetary ways, such as through an adverse effect on sentiment or the non-monetary wealth losses implied by the loss of ships and lives.

We assess the effect of money on the real economy by using our money shock measure to estimate impulse response functions (IRFs). Clean identification requires that the money shock is not correlated with other shocks – neither contemporaneously nor across time. We present evidence in support of this assumption using several robustness checks and diagnostic statistics, including pre-event analyses and placebo tests.

To assess quantitatively how much of the short-run non-neutrality result can be explained by nominal rigidities and credit frictions – the two channels flagged by our empirical analysis – we estimate a model of the early modern Spanish economy. We then use the structural underpinnings of the model IRFs to decompose the short-run response of real output into the contributions of nominal rigidities and credit frictions.

The structural analysis confirms that nominal rigidities and credit frictions were sufficiently powerful to account for most of the non-neutrality result. We find that each of these two channels explains about half of the initial output response, with credit frictions accounting for much of its persistence.