Figure 1 Title: Flight to T-Bills/Cash

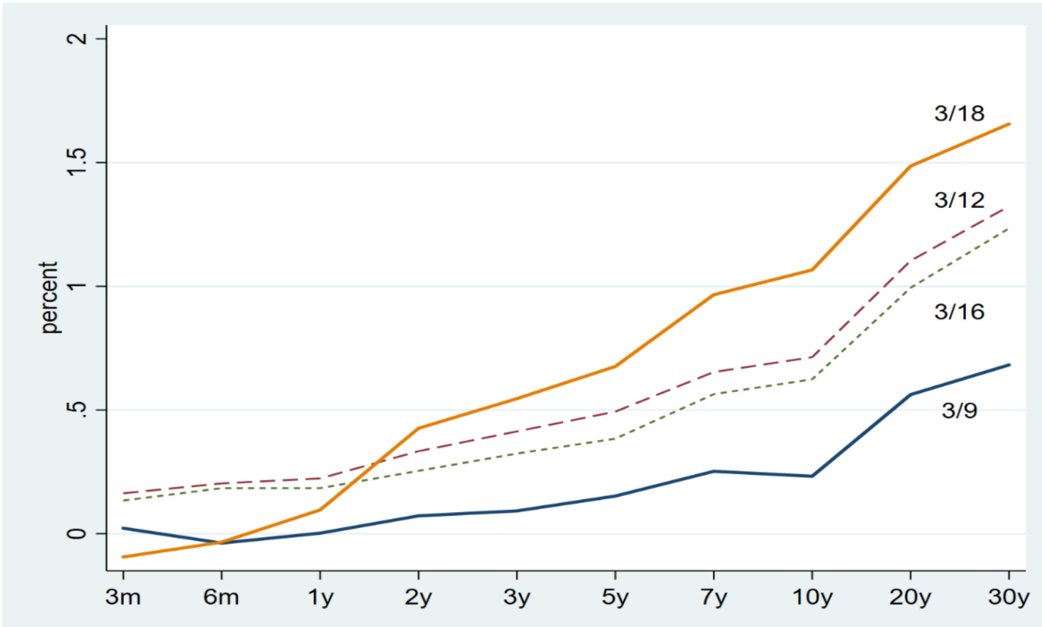

Figure 1 caption. **U.S. Treasury yield curve rates ranging from 3 month to 30 years**, minus the 3-month Overnight Interest Swap (OIS) which proxies the market expectation of federal funds rate in the next three months. We plot curves on four different days, Mar 9th, Mar 12th, Mar 16th, and Mar 18th, when the U.S. stock market experienced four market-wide trading halts due to circuit breaker rules.

Figure 2: Dollar is the King

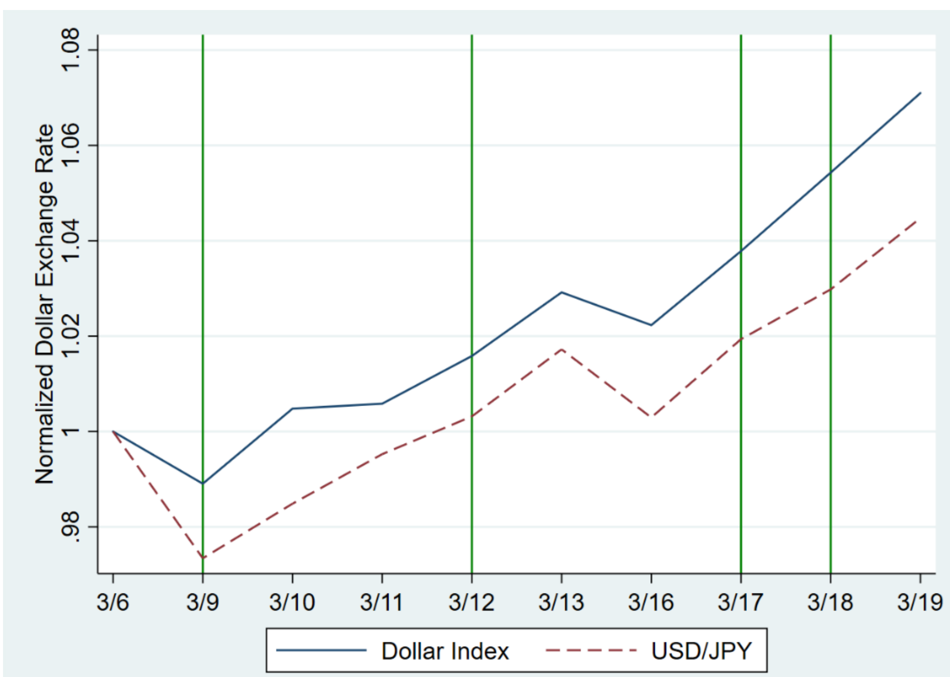

Figure 2 Caption: **U.S. Dollar index (DXY)** against a basket of major currencies, and **USD/JPY** exchange rate, over the period of Mar 6th to Mar 19th, 2020.

Main text

When the market is calm, the term structure of Treasury yield curve tends to be upward sloping, as investors expect to be paid more when lending in longer-term. But on Mar 9th when the first market-wide halt was triggered by the circuit breaker, the yield curve was greatly flattened as investors fly to safety---which is long-term government bonds---from stock market turmoil, pushing up (lowering) the price (yield) of long-term bonds. During the second and third market-wide halts on Mar 12th and Mar 16th, as the liquidity crisis was looming, investors started scrambling for cash, i.e., the government debt with the shortest maturity. As a result, short-term T-Bills that can be quickly converted to cash became highly favored by investors, raising their prices relative to long-term treasuries and bending the entire yield curve upward sloping again, as shown in Figure 1.[1] This flight to T-Bills also explains the recent striking fall of stocks, commodities, and long-term bonds in the same time.

The situation has worsened even more on Mar 18th when the stock market halted for the fourth time in this sequel, strengthening the upward slope of the yield curve. However, the upward slope in this dire situation is driven by the surging demand of U.S. currency from market participants---ranging from companies and financial institutions to even sovereigns---potentially to pay off their U.S. dollar denominated debts and other contractual obligations. This dramatic increase in demand for U.S. currency is reflected in Figure 2, which plots the soaring dollar index (DXY) against other major currencies. Note, USD/JPY has been rising too, even though Japan has been widely appraised for its success of containing the virus during this time. This is behind the recent Fed's aggressive expansion of its dollar swap lines with several major central banks.

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[1] We have taken the 3-month OIS spread out from the entire yield curve to eliminate any mechanical level shift caused by the (expected or realized) federal funds rate movement on that day. (Indeed, the federal funds rate was cut on Mar 15th.) And, the upward sloping yield curve is not due to rising expectation of inflation; during this period the breakeven inflation rate (a market-based measure of expected inflation, the spread between nominal bonds and inflation-linked bonds say TIPS) goes down slightly.