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# COVID-19: A Double Whammy of Financial and Economic Sudden Stops for Emerging Economies

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# COVID-19: A Double Whammy of Financial and Economic Sudden Stops for Emerging Economies[1]

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*While it is too early to say how the disruptions caused by the COVID-19 pandemic will ultimately affect emerging market economies (EMs), experience with previous financial crises suggests they can lead to prolonged stagnation. The pandemic adds a layer of formidable challenges that will prolong the recovery further. EMs responded to the pandemic by allowing their currencies to depreciate and easing monetary policy, as they did during the Global Financial Crisis (GFC). Some EM central banks went further, starting new long-term asset purchase programs. Going forward, responding to COVID will require a very large and sustained fiscal expansion. While international coordination and cooperation coalesce to strengthen the international financial safety net permanently, EMs with well-anchored inflation expectations should continue to expand their policy toolkit by embracing the use of the unconventional monetary policies enacted in advanced economies since the GFC. EMs have been left to fend for themselves as capital flew from their markets, and the pandemic infected their economies. They should not fight this new crisis with only old tools.*

**COVID-19 is a global shock that spread across the world in a staggered manner**

The COVID-19 pandemic is a global shock, posing formidable policy challenges to all countries of the world with its singular mix of negative effects on aggregate supply and demand, as well as risk of disruptions to domestic and international financial intermediation. In sharp contrast to early expectations about V-shaped recoveries from COVID, with some delays, in EMs, it is reasonable to expect the same wave of bankruptcies, corporate defaults, and massive unemployment that currently afflict advanced economies to different degrees. Debt overhang and hysteresis are the very likely outcomes (Cerra, Fatás, and Saxena, 2020), with deflation risk being a much bigger than inflation risk in both sets of countries.

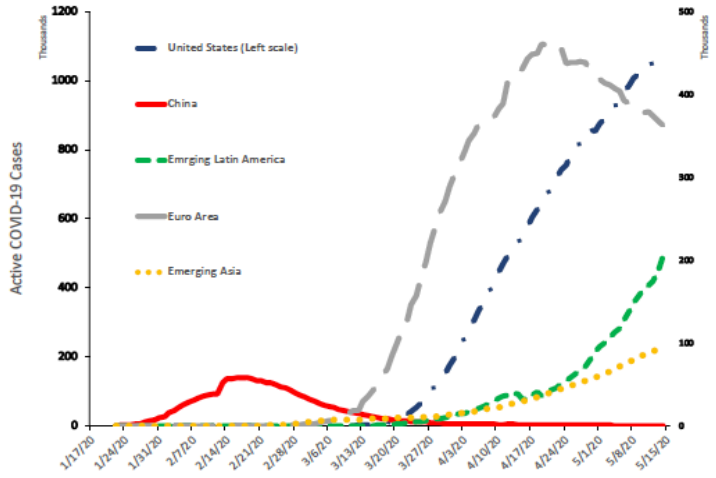
The pandemic, however, did not hit all countries at the same time (Figure 1). With the exception of South Korea and Hong Kong, which account for the bulk of the recorded cases in Emerging Asia in March, EMs were neither the epicenter nor were they the first on the line of fire of the pandemic. In spite of the delayed contagion, Emerging Asia and Latin America have saw a sharp acceleration in the number of infections since the beginning of April.[2]

As the virus spread from China to Europe, financial conditions in the United States and globally tightened dramatically in early March, with volatility reaching levels comparable

[1] The views expressed are solely those of the authors and do not necessarily reflect the views of the Federal Reserve Banks of New York, San Francisco, or St. Louis, or the Federal Reserve System.
[2] Evidence from completed epidemic curves in China shows that COVID-19 takes about a month to surface and at least another month to reach its peak under strict mandated social distancing policies (Chudik, Pesaran, and Rebucci, 2020).

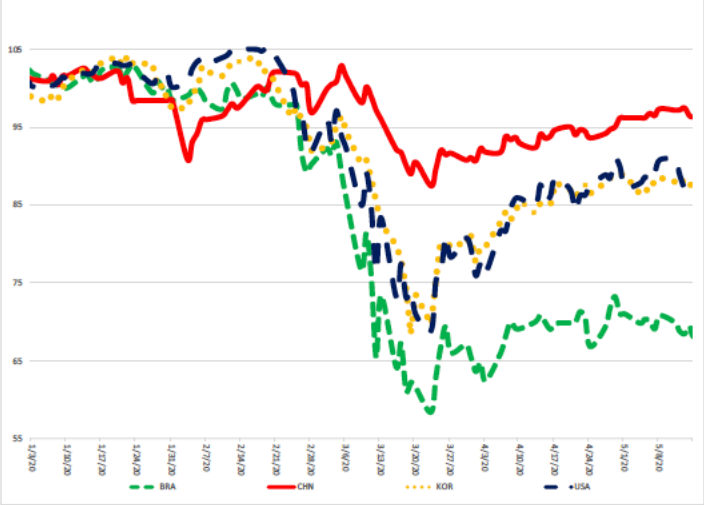
to those observed during the Global Financial Crisis (GFC) and world equity markets in synchronized steep decline (Figure 2). In particular, between March 11 and March 23, EMs were hit by a large sudden stop in capital flows even before being visibly contaminated by COVID. Corporate credit spreads rose almost 300 basis points, while a broad index of emerging market currencies depreciated by almost 10 percent in real terms (Figure 3).

**Figure 1. COVID-19 pandemic staggered contagion**



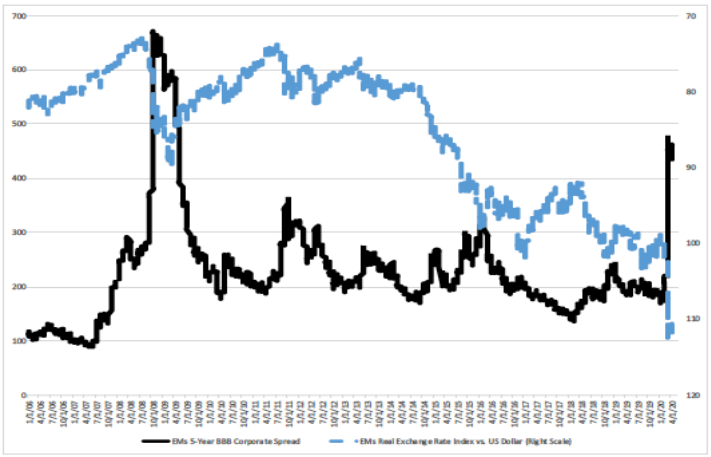

The figure plots daily active COVID-19 cases, calculated as confirmed cases, minus recoveries and deaths in China, the United States, the Euro Area, and selected Emerging Economies in Asia and Latin America. Emerging Asia comprises Hong Kong, India, Indonesia, South Korea, Malaysia, the Philippines, Singapore, and Thailand. Emerging Latin America incudes Brazil, Chile, Colombia, Mexico, Paraguay, Peru, and Uruguay. Source: Johns Hopkins University Coronavirus Resource Center. Sample: January 22-May 15, 2020.

**Figure 2: Selected country equity markets indexes**



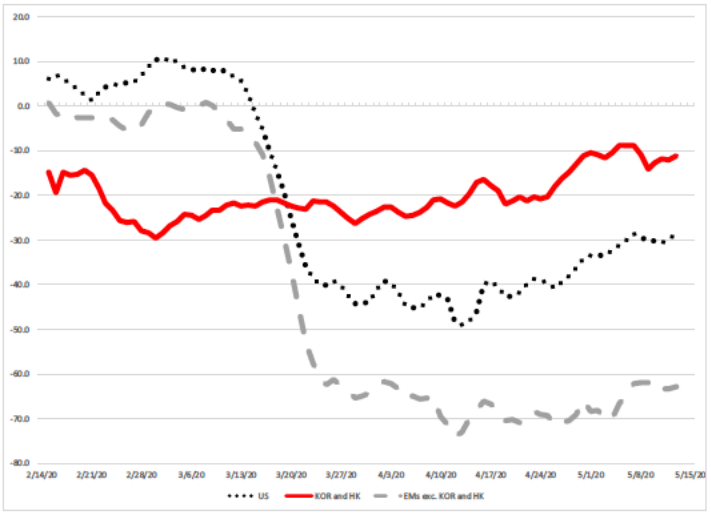

Source: MSCI Index in local currency, daily observations. January 1, 2020=100. Sample: January 22-May 15, 2020. Countries are Brazil (BRA), China (CHN), South Korea (KOR) and the United States (USA).

## Figure 3: EMs corporate spreads and real exchange rates




The figure plots an average EMs 5-Year BBB corporate bond spread and a real exchange rate index vs. the U.S. Dollar. The country sample is the same as in Figure 1, from January 2006 to April 9, 2020.

## Figure 4. Mobility indicators in the United States, South Korea, Hong Kong and EMs




The figure plots Google Mobility Data for the retail and recreation sectors. The data measure percent change in visits to establishments in these sectors relative to the first five weeks of 2020. US is the United States; KOR and HK is the average percent change for South Korea and Hong Kong; EMs is the average percent change across the following countries: Singapore, India, Malaysia, Brazil, Chile, Colombia, Mexico, Peru, and Uruguay. Sample period 2/15/2020-5/15/2020. Source https://www.google.com/covid19/mobility/.

Indeed, the contraction in economic activity started in mid-March for most EMs, at the same time as the US, even though it fell more and continued to deepen after the US stabilized (Figure 4). In contrast, mobility in South Korea and Hong Kong fell earlier with their lockdowns in mid-February but rebounded more quickly than elsewhere in the emerging world. This dynamic is consistent with the notion that financial frictions triggered by the sudden stop in capital flows initially disrupted EMs and amplified direct economic disruption related to COIVD-19.[3]

As Figure 3 illustrates, a similar shock in financial markets buffeted EMs during the GFC. Focusing first on the sudden stop component of the COVID-19 double whammy for EMs thus provides a useful reference point to assess the likely impact of the ongoing crisis, any prospect for a speedy recovery, and to discuss policy options to fight the pandemic and its economic consequences. So, we now turn to our previous research on estimating models of financial crises of varying durations.

**A new framework to evaluate sudden stops in capital flows**

In Benigno, Foerster, Otrok and Rebucci (2020), we estimate a new model of business cycles and financial crises driven by occasionally binding financial frictions. In the paper, we focus on one particular type of crisis, the so-called sudden stop in international capital flows, captured by a binding constraint on the private sector's ability to borrow from abroad, and we estimate it using data for Mexico since 1981. The framework, however, has general applicability and is a useful laboratory to evaluate crisis dynamics. Occasionally binding borrowing constraints, in particular, are mechanisms that create amplification of regular business cycle shocks. For example, in the case of the COVID-19, which did not originate in the financial sector, as we documented above that in EMs, but also in the United States, suddenly binding financial frictions in capital markets powerfully amplified the initial impulse.[4]

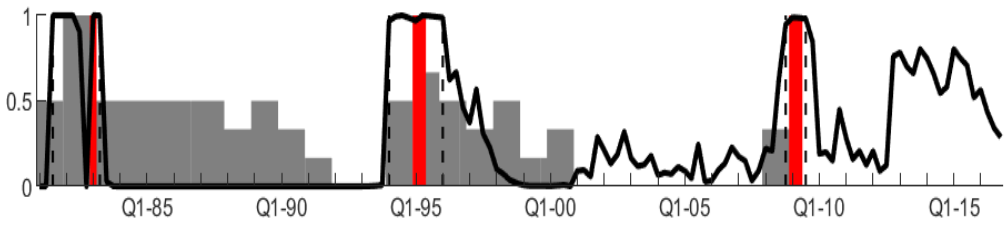
Most importantly, our model identifies crisis episodes of varying duration and intensity. This finding, which has previously proven difficult to capture in models with occasionally binding constraints, is consistent with empirical evidence of large economic dislocation during financial crises and the long-lasting build-up and sluggish recovery phases surrounding them (Cerra and Saxena2008; Reinhart and Rogoff, 2009). The model estimation yields a time-varying probability of facing the binding borrowing constraint. In this framework, therefore, crises episodes are identified as consecutive periods in which

[3] One concern here is the differences in job tele-workability and health care capacity across countries. For example, Dingel and Neiman (2020) estimate that about 40% of US jobs can be performed from home, while this share is less than 25% in Mexico. They also plot a relationship between income and ability to work from home by country showing that poorer countries are less able to work from home. The evidence in Figure 4 therefore is also consistent with a larger economic impact of voluntary and mandatory social distancing than in the US. While identifying these two separate factors is beyond the scope of this chapter, our model prediction below is that the larger the size of the initial shock the longer the recovery takes.

[4] See Akinci, Benigno, and Queralto (2020) on the spillback onto the United States of the sudden stop in capital flows to EMs.

the probability that households and firms are borrowing constrained remains above a certain threshold (in our application to Mexico, 90%).

**Figure 5. Mexico's Model-identified Crisis Episodes**



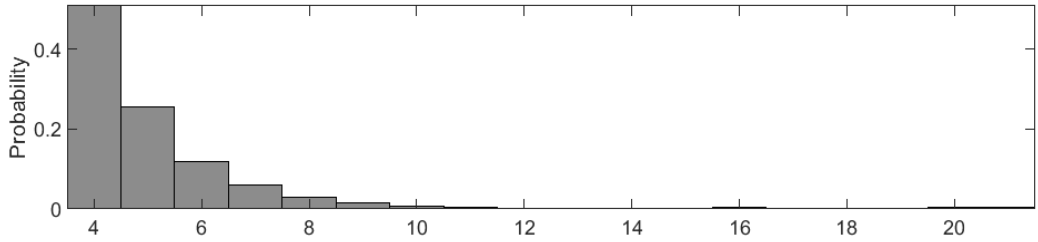

Notes: The black solid line is the estimated model implied probability of being in a crisis. The gray bars correspond to the tally index. The red bars indicate model-identified crisis peaks. The vertical dash lines mark the beginning and the end of the estimated crisis episodes. Source: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3472296

Figure 5 plots this probability for Mexico (solid black line), together with the peaks of the crisis episodes previously identified in the literature (red bars), corresponding with the troughs in output and capital flows in the data for Mexico. To illustrate the model's ability to characterize other type of crises, we also report a purely empirical notion of crisis (grey bars). This indicator is the *crisis tally* index of Reinhart and Rogoff (2009, RR).[5]

This estimated probability of sudden stop in capital flows identifies three episodes in the recent economic history of Mexico. The first is the Debt Crisis, lasting eight quarters, during 1981:Q3-1983:Q2, with the peak in 1983:Q1 (start and end-quarters marked by vertical dashed lines). The second is the so-called Tequila Crisis, lasting 9 quarters from 1994:Q1 to 1996:Q1, with its peak in 1995:Q1-Q2. The last one is the Global Financial Crisis that, according to the model, produced a crisis in Mexico from 2008:Q4 to 2009:Q3, for four quarters, with a peak in 2009:Q1-Q2. The model does particularly well at tracking the consequences of the GFC for Mexico. Interestingly, the crisis episodes that our model identifies are as persistent as RR tally index in the case of the Tequila crisis and the GFC, consistent with the idea that our framework can characterize well the economic dislocations brought about by financial crises. Importantly, in Benigno et al. (2020), we also show that the estimated model does not mistake ordinary recessions for crisis episodes.

[5] The RR tally index ranges from 0 to 6, depending on whether a country-year observation is deemed to be in one or more of the following 6 varieties of crisis, assigning the value of one if a variety is present: Currency, Inflation, Stock Market, Sovereign Domestic or External Debt, and Banking Crisis. In Figure 5, the index is normalized to range between 0 and 1.

**Figure 6. Model-simulated Crisis Episodes Duration**




The Figure reports a histogram of the model-implied conditional crisis duration. Source: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3576703

From this framework we can also simulate sudden stop episodes of varying duration. Figure 6 reports the frequency of episodes lasting longer than four quarters, like the shortest of the three estimated crises in Mexican data, the GFC. The model generates substantial heterogeneity in crisis duration. The average conditional crisis duration is 5 consecutive quarters, but some episodes can last more than 20 quarters, comparable to the RR tally index during the Debt crisis, even though they are rare events making up less than a half-percent of all cases.

**COVID-19 Lessons from Mexico's Crisis History**

To draw lessons from Mexico's crisis history, we now look at model-simulated crisis episodes of specific duration. It is difficult to anticipate how the COVID-19 shock will propagate domestically in EMs. However, like in Europe and the US, EM governments have imposed lockdowns of varying stringency and duration. So we evaluate a scenario in which the COVID-19 crisis will result in at least 8 quarters of constrained financing, as represented by the binding borrowing constraint in our model, consistent with the estimated duration of the 1980s debt crisis, which saw internal and external debt defaults, or the 1995 Tequila crisis that saw a major banking crisis.

Our framework does not include explicit epidemiological dynamics. However, it is a medium-scale DSGE model with several structural shocks on both the demand and the supply side of the economy, as well as interest rate shocks. The contractionary supply side effects of COVID-19 appear in the model as negative productivity shocks. The model captures the sentiment and uncertainty impact of COVID-19 on the demand side of the economy through changes in agents' patience. Expenditure and terms of trade shocks capture developments in the oil market and the evolution of fiscal policy.

We also know that COVID-19 will destroy matches in the labor market and will bring about defaults and bankruptcies. While these features are not in our structural model, they are in the Mexican macroeconomic data on which the model was estimated. So, we will interpret our analysis as a lower bound on the likely negative effects that could materialize once EMs face the full effect of the COVID-19 disruption.

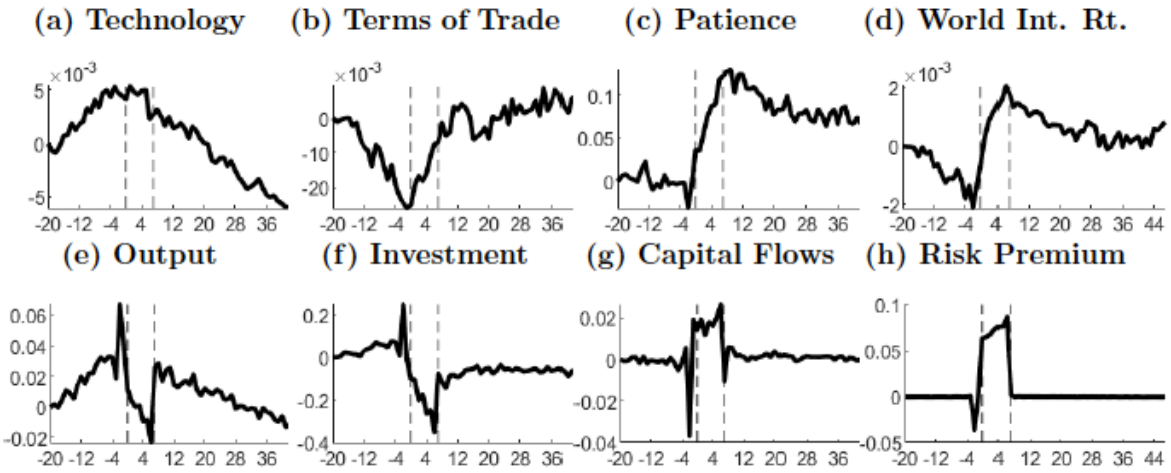
Figure 7 plots the simulated dynamics for selected shocks and endogenous variables, 5 years before and 10 years after the event. The figure illustrates the distinctive combinations of shocks that drive the economy before, during and after this typical crisis

episode. In general, crisis episodes of such persistence are preceded by a long-lasting "boom" phase, driven by improving technology and a favorable international environment, with a notable fall in borrowing costs and compressed country spreads. These forces drive the expansion gradually, with increasing output, consumption and investment, in a manner consistent with empirical characterizations of the boom phases in Boissay, Collard and Smets (2016).

The economy enters the crisis episode at t=0, after a final acceleration. The large crash is precipitated by a combination of adverse supply and demand shocks: a sudden drop in technology (e.g., a sudden shift to work at home in the case of COVID), an increase in patience (that can capture a drop in business and consumer confidence) and a sharp reversal in the cost of borrowing as we saw in global debt markets. *During* the crisis episode, borrowing costs and patience continue to increase, technology stagnates, and the country sovereign spread remains large. The constraint on borrowing limits consumption smoothing and curtails the output supply further through limiting working capital. This causes output, consumption (not reported), and investment to drop sharply.

The output drop from peak to through is eight percentage points, in line with what observed during the Tequila crisis in Mexico. As we noted earlier, this quantitative statement should be interpreted with caution, only as lower bound on the potential COVID-19 damage in EMs as our model does not account for the second lag of the double whammy, the economic sudden stop imposed by the lockdowns. Credit flows (measured by net capital flows as a share output in Figure 7) suddenly dry up, remaining at this contracted level throughout the crisis phase.

**Figure 7. Simulated Sudden Stop Dynamics**




The figure plots model-simulated dynamics during crisis episodes of eight quarters, five years (20 quarters) before the crisis, and 10 years after the crisis (40 quarters). The economy is in the constrained regime from period t=0 to period t=7 (vertical dashed lines). The plotted dynamics are medians across all crisis episodes identified, in log-levels, setting t-20=0. Source: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3576703

Importantly, the economy rebounds quickly from these episodes, but only partially, making up only half of the ground lost during the crisis episode, or about four percentage points in these simulations. After the initial bounce, a combination of persistently adverse circumstances produces a protracted output decline, as we can see in the Mexican data after the Debt crisis (not reported), and also in line with empirical evidence on the long-term consequences of financial crises in other emerging and advanced economies (Cerra and Saxena 2008; Reinhart and Rogoff, 2009; Cerra, Fatás, and Saxena, 2020). The international cost of borrowing remains elevated for an extended period of time, even though spreads reverts after the crisis. The productivity decline is sizable and very long lasting, with technology reaching a level that is below the one at the beginning of the boom.

During the post-crisis period, investment and to a lesser extent consumption also stagnate below their pre-crisis levels (Benigno and Fornaro, 2018). As a result, credit flows remain below pre-crisis levels long after the crisis has ended, although the economy is no longer financially constrained.

**EM's policy options to fight COVID-19**

Emerging markets responded to the shock with a combination of currency depreciation and intervention, consistent with the asymmetric nature of the sudden stop in capital flows. To stabilize domestic financial conditions and accompany shutdowns many countries lowered monetary policy rates and loosened fiscal policy. For the first time ever, several emerging central banks also successfully engaged in unconventional monetary policies in the form of large-scale government asset purchases, commonly referred to as quantitative easing (Hartley and Rebucci, 2020, Table 1).

Table 1. Central bank announcements of government asset purchases in March and April 2020

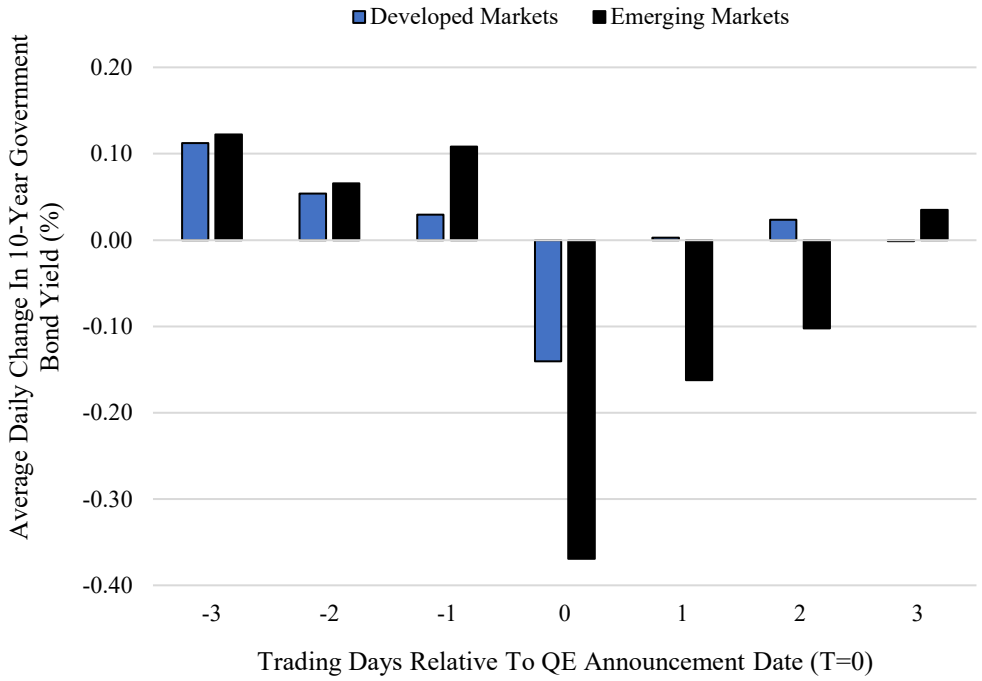
| | | | | | Cum. Chng. in 10-Yr Gov. Bond Yields | | |
|---|---|---|---|---|---|---|---|
| **Country** | **Central Bank** | **Date** | **Size** | **Type of Asset Purchase** | **1-Day (%)** | **2-Day (%)** | **3-Day (%)** |
| **Developed Markets** | | | | | | | |
| U.S. | Federal Reserve | 3/16/20 | 700 billion USD | Sovereign, MBS | -0.21 | 0.08 | 0.24 |
| U.S. | Federal Reserve | 3/23/20 | Unlimited | Sovereign, MBS, Corporate Bonds | -0.16 | -0.08 | -0.04 |
| U.K. | Bank of England | 3/19/20 | 200 billion GBP | Sovereign, Corporate Bonds | -0.17 | -0.23 | -0.37 |
| Europe | European Central Bank | 3/18/20 | 750 billion EUR | Sovereign | -0.01 | -0.10 | -0.15 |
| Japan | Bank of Japan | 4/26/20 | Unlimited JGBs, 20 trillion yen in corporates | Sovereign, Corporate Bonds | 0.01 | -0.02 | -0.03 |
| Canada | Bank of Canada | 3/27/20 | 3.5 billion CAD per week | Sovereign | -0.12 | -0.09 | -0.13 |
| Australia | Reserve Bank of Australia | 3/19/20 | Unlimited | Sovereign | -0.23 | -0.40 | -0.36 |
| New Zealand | Reserve Bank of New Zealand | 3/23/20 | 30 billion NZD | Sovereign | -0.52 | -0.47 | -0.36 |
| Sweden | Riksbank | 3/16/20 | 300 billion SEK | Sovereign | 0.14 | 0.07 | 0.17 |
| **Emerging Markets** | | | | **Developed Market Average** | **-0.14** | **-0.14** | **-0.11** |
| Israel | Bank of Israel | 3/23/20 | 50 billion ILS | Sovereign | -0.30 | -0.39 | -0.46 |
| Korea | Bank of Korea | 3/25/20 | Unlimited repos for 3 months | Repos | -0.04 | -0.20 | -0.17 |
| Colombia | Banco de la República | 3/24/20 | 12 trillion COP | Sovereign | -0.50 | -1.35 | -2.15 |
| South Africa | South Africa Reserve Bank | 3/25/20 | Unspecified amount | Sovereign | -0.66 | -0.90 | -0.73 |
| Poland | Narodowy Bank Polski | 3/17/20 | Unspecified amount | Sovereign | -0.45 | -0.28 | -0.08 |
| Poland | Narodowy Bank Polski | 4/8/20 | Unspecified amount | Sovereign, State-Guaranteed Bonds | -0.05 | -0.14 | -0.19 |
| Romania | Banca Națională a României | 3/20/20 | Unspecified amount | Repos, Local Government Bonds | -1.50 | -1.53 | -1.80 |
| Hungary | Magyar Nemzeti Bank | 3/24/20 | Considering resuming its mortgage bond asset purchases | Sovereign, MBS | -0.51 | -0.36 | -0.50 |
| Hungary | Magyar Nemzeti Bank | 4/28/20 | 1 trillion HUF in govt and 300 billion HUF in mortgage bonds | Sovereign, MBS | 0.01 | -0.41 | -0.59 |
| Croatia | Hrvatska narodna banka | 3/13/20 | Unspecified amount | Sovereign | 0.17 | 0.19 | 0.24 |
| Phillipines | Bangko Sentral ng Pilipinas | 3/23/20 | 300 billion PHP | Sovereign | -0.23 | -0.48 | -0.55 |
| | | | | **Emergin Market Average** | **-0.37** | **-0.53** | **-0.63** |

Notes: The table lists all sovereign bond long term asset purchase QE announcements during the COVID-19 pandemic. Source https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3607645

The EM QE announcements listed in Table 1, on average, had a -0.37% 1-day impact on the respective 10-year government bond yields, with no adverse bond market reaction in any of the countries considered. Interestingly, in EMs, the effects were much

larger and more persistent than in advanced economies, with 2-day and the 3-day impacts also statistically significant, and a -0.63% cumulative impact over three days (Figure 8). Even excluding QE announcements accompanied by cuts to benchmark rates in EMs, the average 1-day impact falls only to -0.26% from -0.37% (not reported), with a cumulative 3-day impact dropping only to -0.61% from -0.63%. This evidence suggests that QE interventions have not been met with adverse reactions in government bond markets and have complemented interest rate cuts.

**Figure 8. Average Advanced and Emerging Markets Daily Change in 10-Year Government Bond Yields**




Notes: The figure reports QE announcements impacts on 10-year government bond yields in emerging markets and advanced economies. Each bar represents the average daily change in a country's 10-year government bond yield relative to its respective QE announcement date. This is calculated by taking the daily time series for each individual 10-year government bond yield and aligning it according to the QE event dates reported in Table 1. EMs included are: Israel, South Korea, Colombia, South Africa, Poland, Romania, Hungary, Croatia, the Philippines. Source: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3607645

Policy space to respond to the capital flow shock we documented was limited even before the COVID-1 contagion hit EMs. IMF resources are inadequate to support EMs meaningfully (García-Herrero and Ribakova, 2020). Most EMs are not equipped to use controls on capital outflows as a staying device (Rebucci and Ma, 2020). Capital controls can also disrupt relations with foreign investors, preventing to take full advantage of any recovery opportunity. Proposals for a debt moratorium, such as Bolton

et al. (2020) or the G20 debt service deferral for developing countries, are premised on the assumption that the shock is very large but temporary. Critically, they still require internationally coordination and cooperation, which thus far has been all but absent in addressing the pandemic.

Going forward, policy space will be even tighter as COVID-19 continues to spread or starts to recur. The pandemic requires large and sustained fiscal expansions to address both the medical emergency and cushion the inevitable economic side effects of the lockdowns. Unfortunately, many EMs will not be able to afford it, not least because of the procyclicality of fiscal policy (Kaminsky, Reinhart, and Vegh 2005). Moreover, even the most frugal EMs cannot enjoy the same fiscal space as advanced economies under the best of times.

So what are EMs to do? In light of the favorable market response to the first few QE interventions, EMs should push more aggressively toward the adoption of the unconventional monetary policies successfully adopted in advanced economies since the GFC. Experimenting cautiously with QE, and then progressively increasing the scale of interventions to remove binding financing constraints can help to contain sovereign and country leverage, lowering vulnerability to further likely tightening of financial conditions. Such interventions can also circuit break debt deflation spirals and asset fire sales as shown in Benigno, Chen, Otrok, and Rebucci (2020).

While foreign exchange risk is an important contributor to local markets' bond returns, and in the past has driven capital outflows, inflation expectations are well anchored in EMs (Ribakova, Benjamin and Markovic, 2019). As Ribakova et al (2019) show, large depreciations lead only to moderate and temporary bursts of inflation in EMs also because exchange rate pass-through is much diminished in EMs. Moreover, sovereign balance sheets are hedged, in some cases with more reserves than sovereign external debt. Foreign exchange balance sheet exposure is concentrated in the corporate sector, but yet again the biggest threats to corporates' liquidity and solvency are the shutdowns' impact on cash flows rather than large depreciations witnessed.

More generally, further QE in government bond markets is desirable in a deflationary environment. Although QE is not a long-term solution to COVID it might buy time while cooperation and coordination on debt restructuring and international aid packages are assembled, once the full extent of the pandemic damage become more visible.

**Conclusions**

Even prior to the contagion from the virus, EMs have been hit by a very large sudden stop in capital flows, similar to the one experienced during the Global Financial Crisis. They are now stricken by an economic sudden stop in economic activity, driven by the attempt to contain the domestic spreading of the virus, larger the one experienced by advanced economies due to the amplifying effects of tighter financial frictions and the lower tele-workability of jobs.

Based on a new estimated model of sudden stop crises, we show that crises propagated by financial frictions can be followed by an initial quick but partial rebound. Thereafter, economies can stagnate for a protracted period of time. Mexico's experience with default or banking crises illustrates that it may take up to ten years for the economy to recover. COVID-19 is different and is a major compounding factor, greatly increasing the chances that the recovery will be drawn out and anemic. Policy needs to be designed taking the likely persistence of the shock into account.

Policy space in EMs, traditionally tighter than in advanced economies, is even tighter than during the GFC because of the absence of international policy coordination and cooperation. In this bleak picture, it is encouraging to observe that some EM central banks were able to loosen monetary policy aggressively without adverse reactions in domestic government bond markets, including adopting quantitative easing programs.

QE can provide emerging markets with an opportunity to keep their economies from derailing without imposing capital controls or debt moratoria, persevering precious investor relations and containing leverage—a so-called breathing space--while the international financial community comes to terms with the reality that COVID-19 requires international cooperation and solidarity, with substantive financial aid and relief for developing and emerging economies.

COVID-19 is different than past EM crises and poses a singular set of formidable challenges to the best prepared economies and policy makers. EMs have been left to fight the COVID battle alone. They should not fight it with the guns of the previous wars for fear of inflation or fear of floating.

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