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Exchange-rate and news: Evidence from the COVID pandemic

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We estimate daily linear regressions and panel VAR to study the effect of Covid-19 news on exchange rates. We find that adverse pandemic news at the country level cause an immediate, statistically significant, depreciation of the domestic currency vis-à-vis a basket of trade-weighted currencies. This effect is more pronounced for free-floating economies.

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1. Introduction

Using a daily panel VAR, we find that COVID news cause an immediate and significant depreciation. Depreciations of free-floating currencies (FFC) are about 4 times as large as for our average economy.

The COVID pandemic provides the context to study how news – particularly news of global phenomena – impact exchange rates. At high frequency, pandemic news are exogenous to economic conditions. Moreover, at least during the initial phase of the pandemic, COVID represented the dominant source of news (Michele and Primiceri, 2020), limiting the scope for confounding effects.

Under the efficient market hypothesis, news refer to unexpected changes in the fundamental variables relevant for asset price determination (see Taylor (1995)). Dornbusch (1980) and Frenkel (1981) argue that exchange rates respond to unanticipated changes in the fundamentals (unobservable shocks and policy surprises). Dornbusch (1976) shows that exchange rates depend upon expectations about the future path of economic fundamentals and tend to overshoot. The news literature has found weak support in the data (Edwards, 1982; Hoffman and Schlagenhaufer, 1985). More recently, there has been supporting evidence for the news model (see Du and Pentecost (2021), Narayan et al. (2021)). Our work contributes to this literature. We examine the responses of exchange rates using a large set of countries under floating and non-floating exchange rate regimes and adopt a daily panel VAR to identify surprises in new cases.1

If COVID-related news are global we should not see any variations in exchange rates. The fact that the evolution of the pandemic has not been the same across countries suggests that may not be the case. Glocker and Piribauer (2021) show that cross-country output losses caused by the pandemic depended upon adverse initial conditions and voluntary (and mandated) social distancing. A similar argument can be made for exchange rates.

The main challenge is to find a proxy for COVID news that is recorded systematically for a wide set of countries. We opted for (the number of) new cases, which is readily available at daily frequency, as our main proxy for COVID-related news. A drawback is that the same number of new cases conveyed different news in early 2020 than it did later in the year or does now. Despite severe underestimation of new cases in the early days of the pandemic, reports of new cases featured prominently in...
the news and were unprecedented. The impact of these reports has definitely been reduced from the second wave of infections onwards. Therefore, we focus on the first wave.2

Our main econometric specification is a daily panel VAR comprising 57 countries. We choose the panel VAR specification given recent developments in the epi-macro literature (see Eichenbaum et al. (2020) amongst many others). We test if domestic pandemic developments adversely affect fundamentals in the local economy relative to the rest of the world. Our identification assumption is that new cases do not respond, within a day, to variations in the exchange rates or any other economic variable.

In response to a one-standard deviation shock to new cases, we observe a significant and immediate depreciation. Using the exchange-rate regime classification proposed by Ilzetzki et al. (2019) we can establish that these responses are particularly pronounced for FFC. This is interesting because, at a time when policy rates are at their lower bound in most advanced economies (Yilmazkuday, 2021; Corsetti et al., 2021), a depreciation can potentially impart additional stimulus to the domestic economy and help insulate the economy from foreign shocks.

2. Regression analysis

We begin with a simple panel regression in which daily changes in the trade-weighted nominal exchange rate for country \( c \) (\( \Delta \text{EER}_c \)) is regressed onto the number of new cases (per 1000 residents), a set of controls \( (\theta_{ct}) \) as well as country and daily fixed effects \( (\gamma_c \text{ and } \gamma_t) \): \( \Delta \text{EER}_c = \beta_0 + \beta_1 \text{New Cases}_{ct} + \theta_{ct} + \gamma_c + \gamma_t + \epsilon_{ct} \). (1)

Estimated over the period January 1 2020–July 31 2020, the coefficient \( \beta_1 \) gives us a sense of the conditional correlation between new COVID cases in a country and the depreciation of the domestic currency.

Table 1 shows that an increase in new cases associates to a depreciation of that country’s currency. These findings are robust to the inclusion of both country and time fixed-effects as well as policy stringency measures and country-specific controls such as the level of GDP before the pandemic and the share of elderly in the population. This is true for our full sample, columns (1) to (3), for non-FFC (NFFC), columns (4) to (6), and for FFC, columns (7) to (9). Interestingly, this correlation is stronger for FFC, with the coefficient of interest doubling in magnitude.

3. VAR analysis

To study the causal effects of COVID news on the exchange rate we estimate a panel VAR: \( y_{ct} = A(L) y_{ct} + \gamma_c + \epsilon_{ct} \). (2)

where \( y_{ct} = [ \Delta \text{New Cases}_{ct} \Delta \text{Support}_{ct} \Delta \text{Stringency}_{ct} \Delta \text{EER}_{ct} ] \) – we refer the reader to the Appendix for a discussion of lag selection and stationarity of the series. Our COVID-news shock is identified by imposing that the matrix \( C \), defined as \( u_{ct} = C \epsilon_{ct} \), is lower triangular. This amounts to assuming that new cases do not respond contemporaneously (within the same day) to any of the other variables. The shock is just the unpredictable component of new cases given the controls in the VAR, and in particular the new cases in the previous day.

Fig. 1 reports the responses of the exchange rate to a surprise in the (change in) number of new cases. A one-standard deviation surprise in the number of new cases causes a statistically significant depreciation of between 1 and 2 basis points when we consider the entire set of countries (left-most pane). FFC are largely responsible for this movement as their exchange rates depreciate about four times as much. NFFC, on the other hand, display a significant but smaller depreciation of less than 1bp. The literature on news and exchange rates (e.g. Frenkel (1981)) focuses on bilateral floating exchange rates. Trade-weighted exchange rates will vary also for NFFC, e.g. Euro Area economies, due to them trading with countries with which no exchange rate arrangement is in place. However, NFFC are bound to experience smaller variations because part of their countries’ international trade is with partners with which the exchange rate is fixed or subject to the expectation that policy measures will be adopted to limit its variation. The difference in the responses of FFC and NFFC is large and consistent with the findings of Ehrmann and

Table 1 Exchange rates and pandemic outcomes.

| \( \Delta \text{EER}_c \) | All countries | Non-Floating | Free-Floating |
|------------------|---------------|--------------|--------------|
| (1)              | (2)           | (3)          | (4)          | (5)          | (6)          | (7)          | (8)          | (9)          |
| New Cases\(_{ct}\) | \(-0.631^{***}\) | \(-0.538^{***}\) | \(-0.601^{***}\) | \(-0.601^{***}\) | \(-0.503^{***}\) | \(-0.560^{***}\) | \(-0.792^{**}\) | \(-0.854^{**}\) | \(-1.102^{**}\) |
| \[0.193\]        | \[0.119\]     | \[0.125\]    | \[0.218\]    | \[0.145\]    | \[0.154\]    | \[0.303\]    | \[0.228\]    | \[0.413\]    |
| \( \Delta \text{Stringency}_{ct} \) | \(-0.002\) | \(0.003\) | \(-0.003\) | \(0.003\) | \(-0.002\) | \(-0.003\) | \(-0.002\) | \(-0.003^{*}\) | \(-0.002\) |
| \[0.003\] | \[0.007\] | \[0.009\] | \[0.002\] | \[0.007\] | \[0.002\] | \[0.002\] | \[0.007\] | \[0.003\] |
| \( \Delta \text{Support}_{ct} \) | 0.002 | 0.003 | 0.003 | 0.002 | 0.009 | 0.007 | 0.003 | 0.006 | 0.080^* |
| \[0.002\] | \[0.007\] | \[0.009\] | \[0.002\] | \[0.007\] | \[0.007\] | \[0.006\] | \[0.017\] | \[0.007\] |
| \( \log(\text{GDP}_{ct}) \) | 0.009 | 0.007 | 0.007 | 0.007 | 0.009 | 0.007 | 0.007 | 0.007 | 0.007 |
| \[0.007\] | \[0.017\] | \[0.007\] | \[0.007\] | \[0.007\] | \[0.007\] | \[0.007\] | \[0.007\] | \[0.007\] |
| \( \Delta \text{y}_{10\text{y}} \) | 0.002 | 0.003 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.003 |
| \[0.001\] | \[0.003\] | \[0.001\] | \[0.001\] | \[0.001\] | \[0.001\] | \[0.001\] | \[0.001\] |

Country FE Yes No Yes No Yes No Yes No Yes
Day FE Yes No No Yes No No Yes No No
Observations 5,378 5,378 5,044 4,434 4,434 4,186 551 551 551
\( R^2 \) 0.010 0.044 0.047 0.011 0.065 0.066 0.006 0.157 0.163

Standard errors in brackets.
* \( p < 0.10 \), ** \( p < 0.05 \), *** \( p < 0.01 \).

2 We use the positivity rate for robustness. This measure accounts for differences in testing standards across countries. However, it is available for a smaller set of countries and has not received a comparable level of media attention. Estimated responses (presented in the Appendix) are comparable, though confidence are a bit wider. Another pandemic-related statistic of note is COVID-related deaths. It is, however, not as good a proxy for pandemic news. The number of deaths lags that of new cases. The lag is subject to variation but measured in weeks, way too long to capture an effect that manifests on the day of the surprise in new cases.

3 See the Appendix for a detailed data description.
Fratzscher (2005). They suggest that bad news in times of heightened uncertainty are likely to generate larger responses, which, in our context, translates into large difference in the responses of FFC and NFFC.

It is noteworthy that pandemic news specific to a country cause a significant depreciation of the domestic currency, despite the fact that the pandemic shock is clearly correlated across countries. We are thus not measuring the overall negative effect of a COVID news shock onto the economic outlook of an economy, but the differential effect this shock has on the domestic economy relative to its trading partners — as we rely on a trade-weighted exchange rate index. The finding of a COVID-news induced depreciation is robust to different VAR specifications and to the use of the positivity rate as the measure of news, which we discuss in Appendix A.

4. Conclusions

COVID-news monopolized the world’s attention at least through the first half of 2020. We find that a surprise in the number of new cases causes a depreciation of the domestic currency vis-à-vis its trading partners. Despite representing a global phenomenon, COVID-news had a particular impact on the economic outlook for the home country. This confirms the idea that exchange rates respond significantly and very quickly to change in fundamentals, particularly for FFC. It is too early to examine the macroeconomic effects of these responses, but it is plausible that the larger depreciation may have mitigated the adverse economics effects of the pandemic in free-floating economies.

Declaration of competing interest

One or more of the authors of this paper have disclosed potential or pertinent conflicts of interest, which may include receipt of payment, either direct or indirect, institutional support, or association with an entity in the biomedical field which may be perceived to have potential conflict of interest with this work. For full disclosure statements refer to https://doi.org/10.1016/j.econlet.2022.110390.

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Appendix A. Supplementary data

Supplementary material related to this article can be found online at https://doi.org/10.1016/j.econlet.2022.110390.

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