

Investors' risk attitudes in the pandemic and the stock market: new evidence based on internet searches – Online appendix

This online appendix provides further details on the econometric approach used in the Bulletin. The baseline model for each country i is given by:

$$\Delta(\log(Equity Price_{it})) = \alpha_i + \beta_i' \begin{pmatrix} \Delta(\log(Oil_t)) \\ \Delta(\log(Dollar_t)) \\ \Delta Cases_{i,t} \\ VIX_t \\ \Delta CRA_{i,t} \end{pmatrix} + \varepsilon_{i,t}$$

where the dependent variable is the log change of equity market prices at time t ($\Delta(\log(Equity Price_{it}))$). The explanatory variables include: (i) the change in the logarithm of oil prices ($\Delta(\log(Oil_t))$), which is measured as Brent crude oil prices; (ii) the change in the logarithm of the trade-weighted US dollar index ($\Delta(\log(Dollar_t))$); (iii) the change in the number of Covid-19 cases in each country; (iv) the market volatility index VIX, which measures the implied volatility of options on the Standard and Poor's 500 stock index; (v) the country-specific CRA index to reflect the attitude (or concern) of investors about withstanding the pandemic shock.

Regression results for the baseline model are reported in the first column of Table A1. We use a mean group estimator that allow us to synthesise the results of country-specific estimates. These baseline results are used to construct the right-hand panel of Graph 1 that reports the average estimated change in stock prices from a one standard deviation shock in the respective variables. The results for the impact of the CRA index on each domestic market are represented visually in Graph 2.

We checked the robustness of the results in a number of ways.

First, we included in the regressions the difference in global Covid-19 cases. The latter index could capture general fear not reflected by the number of cases in a country. However, the global Covid-19 index is strongly correlated with the country indicator for the number of cases, creating some collinearity problems. In the remaining case, the difference in global Covid-19 cases did not add to the explanatory power of the models, and the results remained qualitatively very similar. The results are also similar using $\Delta(VIX)$ instead of the level of the VIX.

Second, we considered a model that also includes dividend future prices as a proxy for growth expectations. Unfortunately, this variable is available only for 10 countries. Results are reported in column II. For these countries, the CRA index explains 10% of equity price variability.

Third, we included a Google measure of mobility in the main specification. This measure is available for 55 countries. In this case, the CRA index explains 6% of equity price variability, as in our baseline model (see column III). Similar results are obtained using the Apple mobility measure.

Fourth, we considered a model that also includes the change in the money market rate and a complete set of dummies that take the value of 1 if when a specific unconventional monetary policy (UMP) measure has been announced (test conducted for 48 of our 61 countries). The UMP measures include asset purchases and foreign exchange, lending and other operations. The CRA index explain 5% of equity price variability (see column IV).

Regression results

Table A1

Explanatory variables	Dependent variable: $\Delta\text{Log}(\text{Equity prices})$			
	Baseline regression	Controlling for dividend future prices	Controlling for Google mobility measures	Controlling for monetary policy measures
	(I)	(II)	(III)	(IV)
$\Delta\text{Log}(\text{Oil Price})^1$	0.045** (0.023)	0.032* (0.019)	0.047* (0.028)	0.045* (0.025)
$\Delta\text{Log}(\text{Trade-weighted US dollar index})^2$	-2.88*** (0.559)	-2.36*** (0.509)	-2.98*** (0.685)	-3.14*** (0.599)
$\Delta\text{Number Covid-19 infection cases}$	-0.0007 (0.0072)	-0.0002 (0.0004)	-0.0003 (0.0085)	-0.0009 (0.0046)
$\Delta\text{Covid-19 risk attitude index}$	-0.092** (0.041)	-0.128** (0.045)	-0.092** (0.051)	-0.095** (0.044)
VIX	-0.007 (0.017)	0.006 (0.019)	0.001 (0.030)	-0.003 (0.019)
$\Delta\text{Dividend future price}^3$		0.124 (0.171)		
$\Delta\text{Google mobility measure}^4$			0.054 (0.094)	
$\Delta\text{Monetary policy rate}$				-0.159 (5.534)
Unconventional monetary policy dummies ⁵	No	No	No	Yes
Number of countries	61	10	55	48
R ²	51%	67%	54%	57%
Covid-19 risk attitude: R ² contribution	6%	9%	6%	5%

Notes: Mean group estimator. Average coefficients across country specifications. ¹ Brent crude oil price. ² Trade-weighted US dollar index: broad, goods and services. ³ Price of the dividend future contract on the country major equity index. ⁴ The index is the simple average of percentage changes in visits to parks, retail and recreation, transit stations and workplaces over the period 15 Feb–30 Apr 2020. ⁵ Include a set of dummies that take the value of 1 if on a day a specific unconventional monetary policy (UMP) has been announced in a given country and zero elsewhere. The UMP measures include asset purchases and foreign exchange, interest rate, lending and other operations. Significance level: *p<0.1; ** p<0.05; *** p<0.01.