Box 1.2

IMPACT ON THE EMERGING ECONOMIES RELEVANT TO THE SPANISH BANKING SYSTEM OF TIGHTER GLOBAL FINANCING CONDITIONS AND RISING COMMODITY PRICES

This box analyses the potential impact of the materialisation of a scenario of tighter global financing conditions and further rises in commodity prices on growth, capital flows and credit in the emerging economies most relevant to the Spanish banking system. The probability that this scenario will materialize has increased as a result of the war in Ukraine.

The analysis mainly covers the two largest Latin American economies (Brazil and Mexico) and Turkey, three countries to which the Spanish banking system has significant exposure (see Chart 2.6 in Chapter 2). A tighter monetary policy in the United States than currently anticipated by markets, triggered by a greater rebound in inflation, would affect these economies through several channels. First, their external demand would decrease as a result of the adverse impact of such a policy on global economic activity. Second, interest rate hikes in the United States would give rise to a tightening of global financial conditions,[1] the effects of which will be stronger than at other times, since they will stem from inflation surprises, as evidenced by the empirical literature.[2]

Vector autoregressive (VAR) models are used to approximate the effects of a tighter US monetary policy. First, a sign-restricted structural VAR model is used to disentangle historical monetary policy surprises in the United States into two categories: those accompanied by an increase in demand and those in which inflation rises and monetary policy is tightened.[3] Then, individual VAR models are estimated for the Brazilian, Mexican and Turkish economies in order to derive the average historical impact of unexpected changes in US monetary policy. Finally, using the set of models estimated in these two steps, a 100 basis point (bp) rise in the US policy interest rate is simulated assuming that this increase is due to an inflation shock.[4]

A monetary policy tightening as a result of an inflation shock would reduce expected growth in Brazil, Mexico and Turkey and would increase the probability of negative tail results as compared with the baseline scenario[5] (see Chart 1). Higher US interest rates would also lead to a hike in domestic interest rates, a widening of sovereign spreads in the three countries and a depreciation of their currencies. In Brazil and Mexico, these effects could be partially offset by an improvement in the terms of trade as a result of rising commodity prices which would, however, have a very negative impact on Turkey. Nevertheless, the countries most affected overall would be Brazil and Mexico, since their median growth in this sensitivity analysis sees a larger decline (see Chart 1).

In any event, the extent of the negative effects of the tightening of global financial conditions will depend on these economies' vulnerabilities. For example, a comparison of certain current vulnerability indicators with those observed in the months leading up to the May 2013 episode (the so-called taper tantrum[6]), which was interpreted as a further unexpected monetary policy tightening by the Federal Reserve, shows that the vulnerabilities related to external imbalances have decreased, while agents' debt is much higher. Specifically, current account balances are now more balanced (see Chart 2), international reserves exceed those recorded in 2013 and there are no signs of exchange rate overvaluation. By contrast, debt – both private and public (see Chart 3) and both domestic and external – has increased substantially.

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1 See, for example, H. Rey (2015), "Dilemma not Trilemma: the global financial cycle and monetary policy independence", *Working Paper* 21162, NBER.

2 These effects would be less adverse if the further tightening by the Federal Reserve were prompted by domestic demand pressures in the US economy. The main reason is that, in this case, the stronger initial surge in US domestic demand would boost exports from emerging countries despite the subsequent constraining effect of monetary policy. See, for example, S. Ahmed, O. Akinci and A. Queralto (2021), "U.S. monetary policy spillovers to emerging markets: both shocks and vulnerabilities matter" and J. Hoek, S. B. Kamin, and E. Yoldas (2020), "When is bad news good news? US monetary policy, macroeconomic news, and financial conditions in emerging markets".

3 This breakdown is standard in the literature. For more details, see R. Fry and A. Pagan (2011), "Sign Restrictions in Structural Vector Autoregressions", *Journal of Economic Literature,* Vol. 49, No 4, pp. 938-960.

4 The autoregressive models for each country include the inflation shock identified for the United States as an exogenous variable, and each country's GDP growth, underlying inflation, interest rate, exchange rate variation and sovereign spread as endogenous variables. The model is estimated using Bayesian techniques drawing on quarterly data from 2000 Q1 to 2019 Q4, which is prior to the outbreak of the COVID-19 pandemic. In the case of Turkey, the estimation period starts in 2003 Q2 owing to the lack of consistent data. The 100 bp rise in the US interest rate implies an inflation shock of 2.2 standard deviations. The predictive density of annual GDP growth is derived by imposing this condition on the country-specific models.

5 This scenario draws on Consensus Forecasts estimates for February 2022.

6 The change in expectations as to the Federal Reserve's policy stance gave rise to a sharp shift in sovereign spreads, CDSs and exchange rates in most emerging economies, but particularly affected those with the greatest vulnerabilities, especially external or fiscal, which were known at the time as the "fragile five" (Brazil, Turkey, India, Indonesia and South Africa).

Furthermore, some of the usual sustainability indicators, such as the proportion of short-term external debt in relation to reserves, have deteriorated considerably and many Latin American economies' credit ratings are lower than in 2013. Lastly, in 2022 public sector financing needs in most of the economies relevant to the Spanish banking system are sizeable (see Chart 4).

A more uncertain international environment and the tightening of US monetary policy could also lead to a reduction in capital flows to the emerging economies. Higher interest rates in the United States and greater global risk aversion, coupled with a possible appreciation of the dollar, would curb capital flows to the emerging economies. In the current situation, the Ukraine war could give rise to a substantial increase in commodity prices, with a favourable effect on capital flows to commodity-exporting economies.[7] Were all these events to occur at the same time (an unexpected 100 bp rise in US policy interest rates, greater global risk aversion, an appreciation of the US dollar and an increase in commodity prices), portfolio capital outflows could

Chart 1
IMPACT OF A RISE IN US INTEREST RATES ON GDP GROWTH (a)

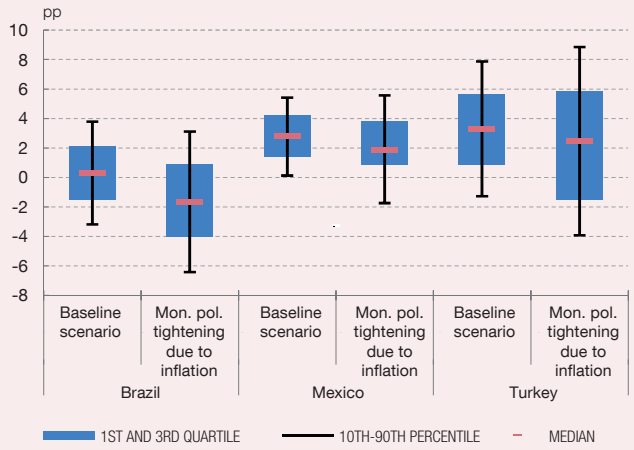


Chart 2
CURRENT ACCOUNT BALANCE (% OF GDP)

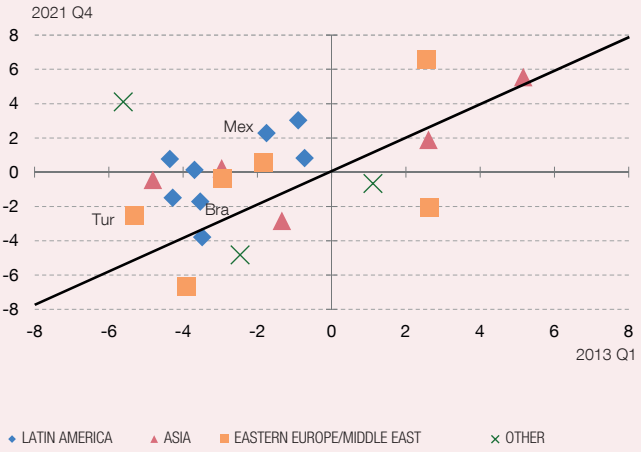


Chart 3
GOVERNMENT DEBT (% OF GDP)

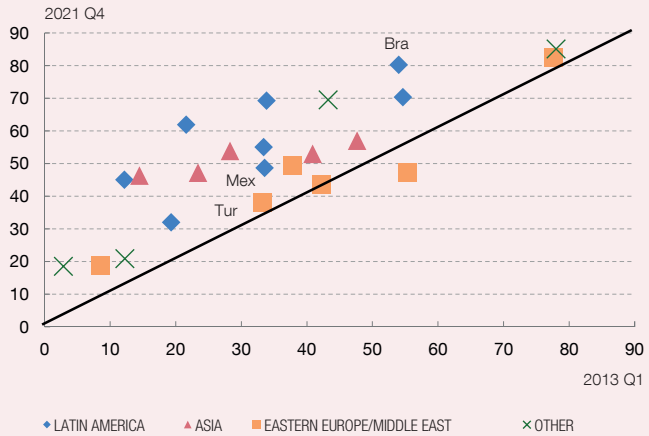
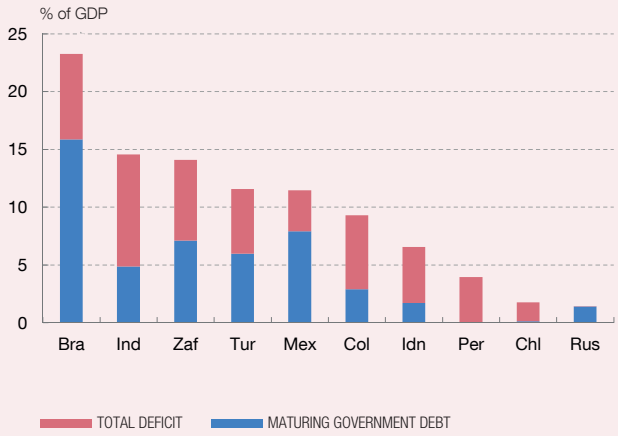


Chart 4
PUBLIC SECTOR FINANCING NEEDS (b)



SOURCES: Banco de España calculations, Felbermayr et al. (2021) and BIS (end-September 2021).

a Estimated impact of an increase in the US policy interest rate 100 bp above market expectations, based on vector autoregressive models.
b Sum of government deficit and government debt expected to mature in 2022.

7 Since the beginning of the war, the aggregate index for commodities rose by 17%, with oil increasing by 11% and wheat by 27%.

amount to around 0.2% of the combined GDP of the emerging countries included in the estimation (approximately $63 billion, or 20% of their portfolio inflows in 2019). However, the impact on Latin American countries could be slightly lower, as their status as commodity exporters means that commodity price increases lead to capital inflows into the region. By contrast, the adverse effect would be somewhat larger on energy-importing countries, such as Turkey, and on the most vulnerable economies (see Chart 5).[8] These amounts are similar to those seen during certain previous episodes of stress, such as the peak of the COVID-19 pandemic at the beginning of 2020 or China's stock market crash in 2015.

Lastly, the combination of tighter global financial conditions, lower GDP and foreign demand growth, and reduced capital flows could have an impact on credit to the private sector, which is of particular interest given Spanish banks' exposure to the three economies addressed in this box. The probability distribution for real credit would shift slightly to more negative values. Additionally, the estimated median in Brazil would stand below the growth figure for 2021, while in Turkey this rate would be lower with more than 90% probability (see Chart 6).[9] The relative stability of real credit stems from the offsetting of the expansionary effects of higher inflation by the contractionary pressure from lower real activity.

Chart 5
IMPACT ON PORTFOLIO CAPITAL FLOWS (c)

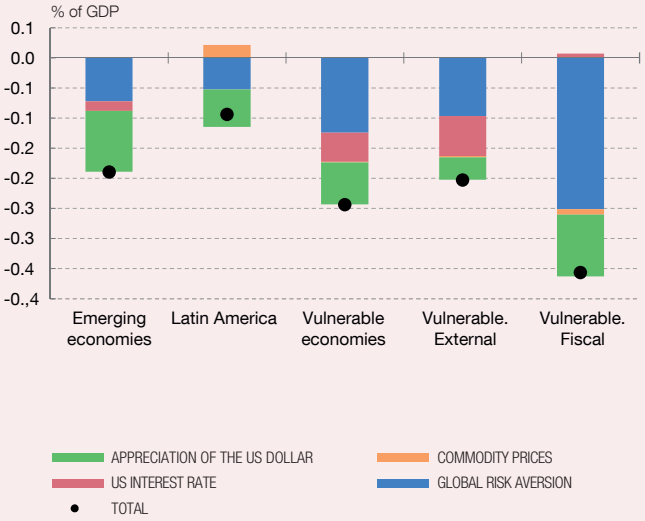
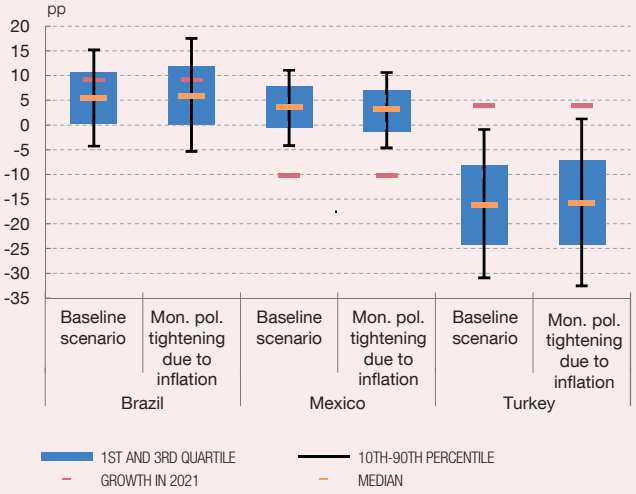


Chart 6
IMPACT ON REAL CREDIT GROWTH (d)



SOURCES: Banco de España calculations, Felbermayr et al. (2021) and BIS (end-September 2021).

c Result of estimating a quarterly panel model for 23 emerging economies since 1999 (see Molina and Viani, 2019) simulating the impact of a rise in US policy rates (100 bp) accompanied by an increase in global risk aversion (132 bp), an appreciation of the US dollar (4.1%) and an increase in commodity prices (15.2%), based on historical correlations between federal fund rates and the first two variables, and on the change in the commodity price index during the first week of the war.
d Estimated change in real credit under each of the GDP scenarios represented in Chart 1, based on vector autoregressive models.

8 These estimates are derived from the updated model presented in L. Molina and F. Viani (2019), "Capital flows to emerging economies: recent developments and drivers" for portfolio flows – based on quarterly data for a panel of 23 emerging economies for the period 1999-2021 – using the Federal Reserve interest rate instead of Federal rate expectations, and calculating with an auxiliary model the reaction of global risk aversion to a 100 bp increase in policy interest rates (it would rise by 132 bp) and the reaction of the dollar exchange rate should interest rates and global risk aversion rise at the same time (a 4% appreciation). The increase applied to commodity prices is that observed in the short-term futures for the global commodity price index from the start of the war to the peak recorded on 15 March 2022 (15.2%). The group of vulnerable economies includes those whose external (international reserves and current account balance) and fiscal (public debt and budget deficit) vulnerability indicators stand in the 90th percentile of the tail risk of the frequency distribution for the entire sample used in the estimation.

9 The paths are derived by applying the scenarios shown in Chart 1 of this box to a set of VAR models for credit growth. See Buesa and Molina (2022), "Credit to private sector forecasting in material countries for Spanish banks: a first approach using a BVAR model", forthcoming.