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GLOBAL IMPACT OF A SLOWDOWN IN CHINA

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## ABSTRACT

Given its systemic importance, a sharp and sustained economic slowdown in China affects the world economy, not only on account of its share of global GDP, but also because of its links with other economies through trade, the commodities markets and, on a more incipient level, the global financial system. Developments in China also have indirect effects on global uncertainty and confidence. This article presents various simulations of the negative impact that a sharper slowdown in the Chinese economy than expected by the main analysts would have on the global economy and, especially, on the euro area. Specifically, a further slowdown in annual growth of 1 pp in China would give rise to a decline in global growth of 0.4 pp in a year, with particularly marked effects on commodities producers and on the Asian economies.

**Keywords:** China, economic rebalancing, spillovers, commodities.

**JEL classification:** F01, F40, E50, E60.

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### Introduction

In the first decade of the century, growth in China – over 10% in average annual terms – was underpinned by an investment and external sector based model. The signs of exhaustion of this model, which in recent years was increasingly dependent on credit and economic policy stimulus measures, prompted the authorities to introduce an economic rebalancing process, seeking to favour private consumption over investment, internal over external demand and services over industry, and sacrificing some short-term growth in order to achieve more sustainable growth in the long term. To manage this transformation, a structural reform programme is needed to boost the role of the private sector in economic decision-making,<sup>1</sup> given the framework in which the Chinese economy and its institutions operate, in which numerous centralised planning aspects still prevail.

The policies put in place and the resultant economic dynamic have given rise to a certain degree of economic rebalancing in China and this, together with the adverse external environment, has resulted in a significant slowdown in activity. Thus, GDP growth has gradually declined, from close on 10% in 2010 to 6.6% in 2018. The deceleration was more pronounced in the last two years owing to the introduction of credit constraints, targeting shadow banking<sup>2</sup> in particular, with the ultimate aim of reducing the high level of corporate and local government debt.<sup>3</sup> Since 2018, the US-China trade disputes have been an additional source of weakening for the economy, which grew by 6% in 2019 Q3.<sup>4</sup> In the face of a sharper than expected deterioration in activity, the Chinese authorities have responded with expansionary policies, but the room for manoeuvre is shrinking (IMF, 2019a).

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- 1 Decisions in numerous areas, including in particular tax, social insurance (health and pensions), management of state-owned enterprises, financial development, control of indebtedness, technological innovation and environmental protection (Dorrucci et al. (2013) and Mano and Zhang (2018)).
  - 2 Institutions, infrastructure and practices subject to limited regulatory and supervisory oversight.
  - 3 A result, in turn, of the stimulus policy measures taken post-crisis, focused on investment and financed via credit.
  - 4 See Banco de España (2019a).

Given the importance of China for the global economy, an abrupt slowdown in its growth could have significant global repercussions. This article examines the effects that a further and permanent weakening of Chinese economic growth could have on the rest of the world.<sup>5</sup> The analysis includes various channels: direct channels, mainly through international trade and demand for commodities; and indirect channels, essentially relating to heightened uncertainty and the deterioration in global confidence and their effects on international financial markets.

## The importance of China for the global economy

China's share of and interconnectedness with the global economy have both grown at a considerable pace in recent decades and, therefore, Chinese economic development has increasingly significant global repercussions. In terms of purchasing power parity, the Chinese economy has achieved a share of almost one-fifth of global GDP, compared with 8% in 2001, and since 2014 has had a larger share than the United States. In addition, its contribution to global GDP growth has exceeded 1 pp, in annual average terms, since 2001 (see Chart 1.1), a period in which global GDP has grown by 3.8% in annual average terms.

As a result of its rapid economic growth and its trade liberalisation strategy, China has become one of the main players in world trade. Since it joined the World Trade Organization in 2001, its share of global imports has risen from 3% to 10% in 2018 (see Chart 1.2), and the global value added that depends on Chinese final demand has also increased. This is particularly significant for many Asian economies and for commodities exporters (see Chart 1.3). China also plays a key role in global production chains, where it has progressed from assembly work to the contribution of higher value-added inputs. This has also given rise to growing spillovers in global production (Kee and Tang, 2016).

At the same time China has become a major commodities consumer, with fluctuations in the Chinese economy thus becoming a key determinant in commodities prices. China is the leading global customer for and importer of many commodities: it consumes around 50% of global copper, aluminium and steel production and 14% of oil production. It is also a key producer of many of these products (around 50% of aluminium and 40% of copper and iron), although in general domestic production is insufficient to meet its demand (see Chart 1.4).

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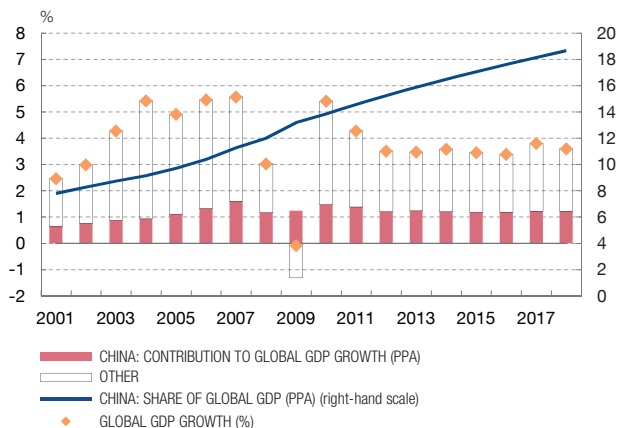
<sup>5</sup> The long-term effects are not analysed, owing to the uncertainty as to the implications of the structural changes in the Chinese economy and the associated changes in the global economy, and the difficulty of incorporating them into the modelling tools used here.

Chart 1

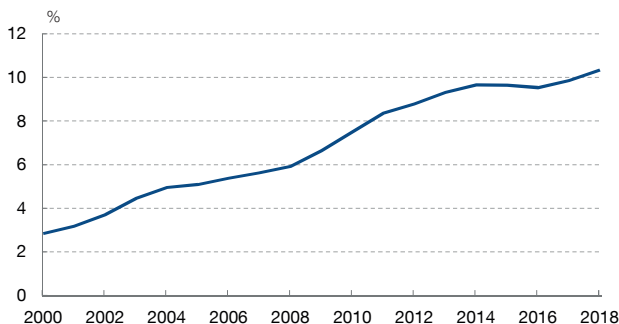
## THE GLOBAL ROLE OF THE CHINESE ECONOMY

China's economic activity has increasingly pronounced global repercussions, on account of its size and contribution to global GDP growth and its growing interconnectedness with the rest of the world.

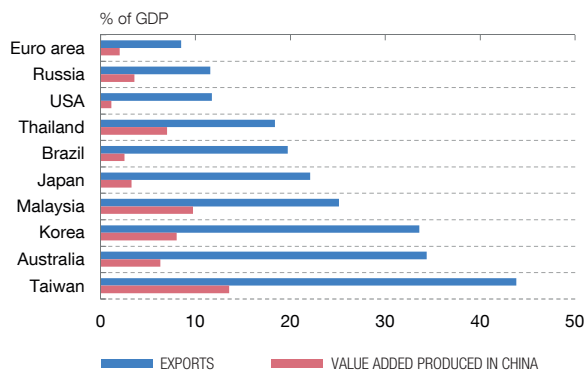
1 CHINA: SHARE OF AND CONTRIBUTION TO GLOBAL GDP (PPP) (a)



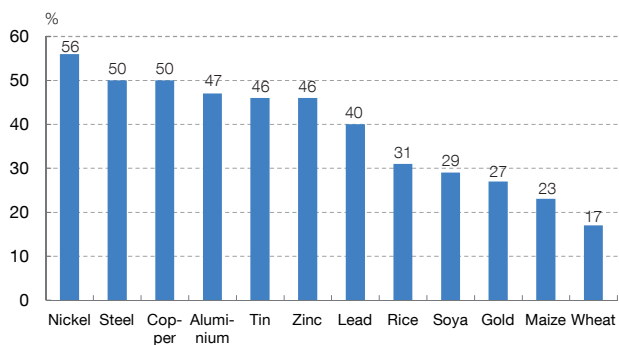
2 CHINA: SHARE OF GLOBAL IMPORTS



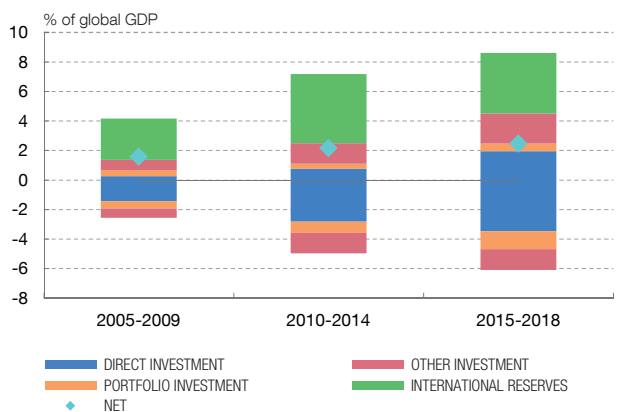
3 TRADE EXPOSURE TO CHINA (b)



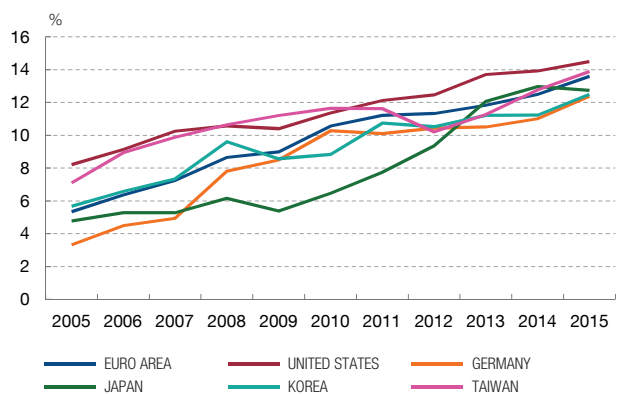
4 CHINA: SHARE OF GLOBAL COMMODITY CONSUMPTION



5 CHINA: INTERNATIONAL INVESTMENT POSITION



6 TECHNOLOGICAL PRODUCTS: VALUE ADDED PRODUCED IN CHINA AS A PROPORTION OF ITS TRADE PARTNERS' FINAL DEMAND



SOURCES: World Bank, *BP Energy Outlook*, *IMF WEO* (October 2019), International Financial Statistics, UN, OECD TiVA database, *The Wall Street Journal* and World Gold Council.

a PPA: purchasing power parity.

b Data at 2015 (latest data available). The chart shows the weight of exports of goods and services to China for the ten largest exporters to China. The value added bar denotes the value added for each country that is absorbed by Chinese final demand.

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The Chinese economy is, however, less financially integrated than its size warrants, given the restrictions on its capital account. Including the Hong Kong financial centre, China accounted for some 7% of global asset and liability positions (gross) in 2017, well short of its share of global trade and global GDP. In addition, its international investment position structure, based essentially on long-term assets and liabilities and international reserves, helps contain potential financial spillovers (see Chart 1.5). Looking ahead, the authorities are advocating greater liberalisation of the capital account, which will result in greater financial integration (IMF, 2019a).

## Transmission channels and calibration of simulations

The effect of a hypothetical adverse macroeconomic shock in China would be transmitted to the rest of the world through several direct and indirect channels. As may be inferred from the previous section, the main direct channels would be international trade and demand for commodities. A third direct channel – financial exposures – is still less significant owing to the restrictions on the capital account in China. The indirect channels, which include a possible increase in uncertainty and potential deterioration in global confidence, would affect agents' consumption and investment spending decisions (Gil et al., 2017) and could give rise to an episode of risk aversion in the international financial markets, causing stock markets to fall and risk premiums to rise.<sup>6</sup>

To assess the impact of a potential further slowdown in the Chinese economy on the rest of the world, a simulation has been performed using the NiGEM global econometric model.<sup>7</sup> The scenario considered includes a series of permanent adverse shocks, associated with a 1 pp drop in the growth rate of China, which are transmitted through the channels described above, with a simultaneous impact on the global economy.<sup>8</sup>

The trade spillovers stemming from the permanent drop in Chinese growth are reflected in the trade channel. The shock considered entails a fall of 1 pp in China's potential growth and a fall of the same magnitude in its domestic demand, 80% of which is attributable to investment.<sup>9</sup> This sharper decline in the contribution of

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6 The events of summer 2015 to spring 2016 illustrated China's potential to affect the international financial markets: sharp falls in domestic stock markets, together with changes in the exchange rate regime and capital outflows, prompted an increase in global risk aversion.

7 A National Institute of Economic and Social Research (NIESR) model.

8 The simulation includes various assumptions: specifically, that expectations are adaptive, that nominal exchange rates remain constant, that monetary policy in most countries follows a Taylor rule and that budgetary policy acts as an automatic stabiliser (simultaneously maintaining a medium-term budgetary target).

9 This shock has been calibrated drawing on Asian Development Bank (2016).

investment growth than in the contribution of private consumption, which is significant owing to their different import intensity, permits inclusion of the ongoing economic rebalancing policies. Moreover, so as to avoid a mechanical response from the monetary and fiscal policies in the model, the technical assumption of no change in the output gap is introduced, so final demand falls in the same proportion as potential growth.

The impact through the commodities channel is particularly significant. Chinese demand for commodities has become a key determinant of commodities prices and, therefore, of producer countries' revenue. Slower growth in China would drive down not only oil and industrial metal prices,<sup>10</sup> but also final demand in commodity-producing countries. These effects are captured very sparsely by the NiGEM model, which is why it must be expanded in several dimensions. First, drawing on the work of Ghoshray and Pundit (2016), their estimate as to how commodities prices would respond to a fall in Chinese industrial production is used to calculate that a permanent decline of 1 pp in growth would be associated with a fall of almost 7% in oil prices and of approximately 8% in industrial metal prices<sup>11</sup> one year on. Second, the estimates available in the economic literature on the elasticity of supply of different commodities are used to calculate the drop in production value associated with the fall in prices. For oil, the price elasticity of supply estimated by Caldara et al. (2016) and the total oil production value supplied by the World Bank<sup>12</sup> are incorporated, to determine the initial reduction in GDP in each producer country. Similarly, for industrial metal production, Stuermer (2017) provides the price elasticities of supply for aluminium, copper, lead, tin and zinc, and the International Council of Mining and Metals (ICMM) the production value of industrial metals.

The deterioration in confidence and the increase in uncertainty arising from the adverse shock in the Chinese economy are included in the model through the financial channel. This shock has various effects on the financial markets, similar to those registered between summer 2015 and early 2016, the previous slowdown episode in China. These effects are a stock market correction of 10% in the Chinese, European, Japanese and US markets,<sup>13</sup> and an increase of 50 bp in the equity risk premium<sup>14</sup> and of 60 bp in long-term interest rates in emerging market economies.<sup>15</sup>

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10 Calibrated drawing on Ghoshray and Pundit (2016).

11 Using the Bloomberg Commodity Index weightings on changes in individual prices.

12 For the producer countries considered in the NiGEM: Argentina, Brazil, Chile, China, Indonesia, India, Mexico, Russia and Vietnam.

13 In the July 2015 to February 2016 episode, the Chinese, European and Japanese stock markets fell by around 20% and the UK and US stock markets by almost 10%.

14 As proposed by Metelli and Natoli (2017).

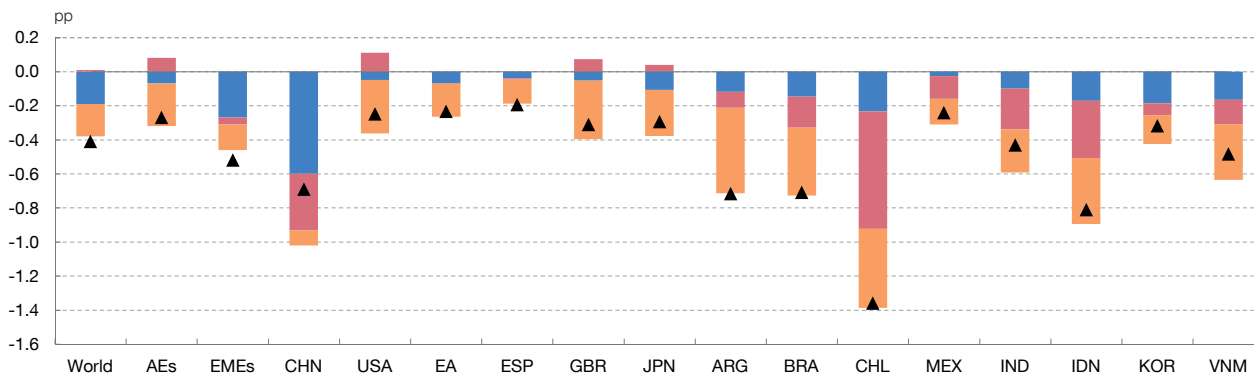
15 Equivalent to the increase recorded by the Emerging Markets Bonds Index (EMBI) during the market turbulence in early 2016.

Chart 2

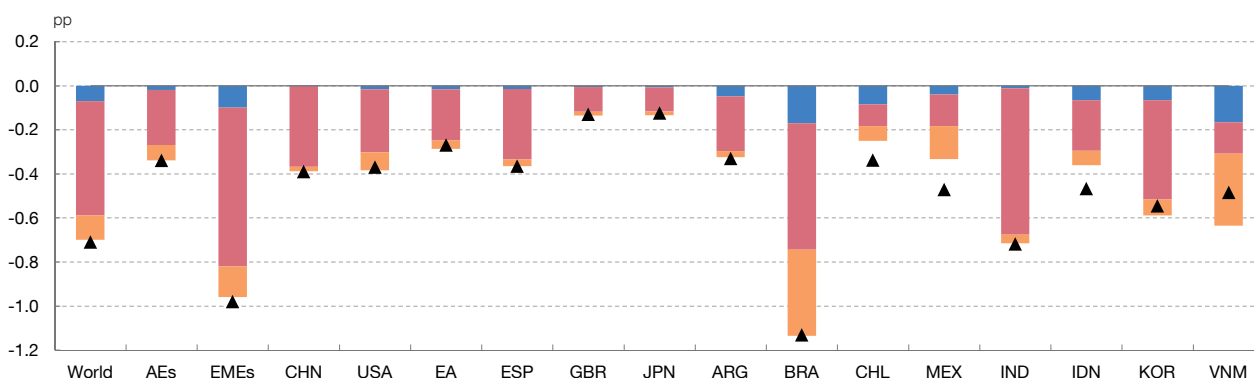
### IMPACT OF A HYPOTHETICAL ECONOMIC SLOWDOWN IN CHINA

A further economic slowdown in China would give rise to a significant decline in global growth. While in advanced economies the expansionary impact of lower commodities prices would limit the effect of the other shocks, among emerging market economies the contraction in activity would be most pronounced in commodity-producing countries and the Asian economies.

1 IMPACT ON REAL GDP GROWTH (%). YEAR 1



2 IMPACT ON ANNUAL INFLATION (%). YEAR 1



TRADE CHANNEL      COMMODITY PRICE CHANNEL      FINANCIAL CHANNEL      ▲ OVERALL SHOCK

SOURCE: Devised by authors.

NOTE: Simulations made using the NiGEM macroeconomic model. First impact of shocks in Q1 of Year 1. Trade channel: 1 pp decline in potential and rebalancing of final demand; commodity price channel: drop of 6.9% in the price of oil and of 7.8 % in the price of metals; and financial channel: 10% stock market fall, increase of 50 bp in equity risk premium and of 60 bp in long-term interest rates in emerging market economies.



## The global impact of a sharper slowdown in China

The scenario that includes all the shocks described in the previous section would give rise to a reduction in global growth of 0.4 pp one year on (see Chart 2.1). In advanced economies, the overall impact on GDP would be less than -0.3 pp, as the contractionary effect of the trade and financial shocks would be limited by the opposite effect of the fall in commodities prices, as advanced economies are particularly reliant on commodities. Conversely, the contraction in activity would be most pronounced in emerging market economies (-0.5 pp), and in particular in



commodity-producing countries and in certain Asian economies with strong interconnections with China (see Chart 2.1). This scenario would also generate disinflationary pressures that would be most pronounced in emerging market economies, and especially commodity-producing ones (see Chart 2.2).

By geographical area, the Latin American and Asian economies would be the most affected. Growth rates in Latin America<sup>16</sup> would be reduced by between 0.7 pp (Brazil and Argentina) and 1.4 pp (Chile), primarily through the financial and the commodities channels.<sup>17</sup> In Asia the impact would vary between -0.3 pp for South Korea and -0.8 pp for Indonesia, with all three channels being significant. Among the advanced economies, GDP growth in the United States, the euro area, the United Kingdom and Japan would decrease by between 0.2 pp and 0.3 pp, owing above all to the effects transmitted through the financial markets, while the contractionary effect of the trade channel and the expansionary effect of lower commodities prices would offset each other.<sup>18</sup>

There are certain factors not included in the simulation that could mitigate the global effects. The exercise performed considers neither a possible expansionary policy response in China nor a possible depreciation of the renminbi associated with slower long-term growth. Moreover, in advanced economies, if certain assets (such as government debt) were to become safe haven assets, this would tend to limit the scale of the effects produced through the financial channel. Also, the simulation may possibly not be taking sufficiently into account the transformation of China's production, trade and financial structures stemming from its convergence process and which has been reinforced by the economic rebalancing policies of recent years. For example, the changes in the economic structure towards a greater consumption share, to the detriment of investment, and the lower import content of China's exports as a result of its economic development are reducing its import intensity and, therefore, its spillover capacity.

Lastly, US protectionist policies could alter the role that China currently plays in global trade, with an impact on third countries. Higher US-China tariffs may give rise to changes in the location of global manufacturing chains in which China plays a prominent part, with consequences that could be either positive or negative for activity in third countries, according to the extent to which it can complement or replace China's own production. As regards trade diversion effects, which also depend on the degree of import substitution, to date the evidence is scant, limited

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16 For more details of the effects of China in Latin America, see Timini and El-Dahrawy Sánchez-Albornoz (2019).

17 The commodities channel is especially significant in Chile, since metals production makes up some 14% of its GDP.

18 These effects are higher than those obtained by the ECB, where commodity channel effects predominate and the financial channel is absent (see Dieppe et al., 2018).

to a certain relative improvement in trade in other emerging Asian economies<sup>19</sup> and in certain commodity-producing countries,<sup>20</sup> with no significant impact apparent in the euro area. In this respect even a possible US-China trade deal, which would help reduce global uncertainty, could have a cost in terms of trade diversion if the two economies were to grant each other mutual preferential treatment. Indeed, the IMF (2019b) signals significant trade diversion effects in the medium term that will affect Korean and Japanese exports, and to a lesser extent EU exports, and that will also prompt changes in sectoral location. One last effect that has not been taken into account in this article is that associated with the US restrictions on technology exchange. This factor would have a potential impact on productivity in the medium and long term, as a result of the sector's large-scale global integration and of the growing role of China, as a generator of value added and as a final customer (see Chart 1.6).

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19 See Asian Development Bank, 2019.

20 See Banco de España (2019b).

## REFERENCES

- Asian Development Bank (2016). “Structural Change and Moderating Growth in the People’s Republic of China: Implications for Developing Asia and Beyond”, *Asian Development Outlook*.
- (2019), “Asian Development Outlook 2019. Update”, September.
- Banco de España (2019a). “Rising protectionism between the United States and China and its effects on the global economy”, Box 2 of the “Quarterly report on the Spanish economy”, *Economic Bulletin* 3/2019.
- (2019b), “The effects of global trade tensions on Latin America”, Box 1 of the “Report on the Latin American economy. Second half of 2019”, Analytical Articles, *Economic Bulletin* 4/2019.
- Caldara, D., M. Cavallo and M. Iacoviello (2016), *Oil Price Elasticities and Oil Price Fluctuations*, International Finance Discussion Papers No. 1173.
- Dieppe, A., R. Gilhooly, J. Han, I. Korhonen and D. Lodge (2018). “The transition of China to sustainable growth – Implications for the global economy and the euro area”, ECB Occasional Paper No. 206.
- Dorrucchi, E., G. Pula and D. Santabárbara, (2013). *China’s economic growth and rebalancing*, Banco de España Occasional Paper No. 1301.
- Ghoshray, A. and M. Pundit (2016). “The impact of a People’s Republic of China slowdown on commodity prices and detecting the asymmetric responses of economic activity in Asian countries to commodity price shocks”, ADB Economics Working Paper Series, No. 493.
- Gil, M., J. J. Pérez and A. Urtasun (2017). “Macroeconomic uncertainty: measurement and impact on the Spanish economy”, Analytical Articles, *Economic Bulletin* 1/2017, Banco de España.
- IMF (2019a). “People’s Republic of China: Staff Report for the 2019 Article IV Consultation”.
- (2019b). “The drivers of bilateral trade and the spillovers from tariffs”, Chapter 4, World Economic Outlook, April.
- International Council of Mining and Metals (2018), *The Role of Mining in National Economies. Mining Contribution Index 2018*, 4th edition.
- Jorra, M., A. Esser and U. Slopek (2018). “The import content of expenditure components and the size of international spillovers”, National Institute Economic Review 244, May.
- Kee, H. L. and H. Tang. (2016). “Domestic Value Added in Exports: Theory and Firm Evidence from China”, *American Economic Review*, 106 (6), pp. 1402-1436.
- Mano, R. and J. Zhang (2018). *China’s Rebalancing: Recent Progress, Prospects and Policies*, IMF Working Paper No. 18/243.
- Metelli, L. and F. Natoli (2017). “The effect of a Chinese slowdown on inflation in the euro area and the United States”, Vol. 62, pp. 16–22.
- Stuermer, M. (2017). *Industrialization and the Demand for Mineral Commodities*, Federal Reserve Bank of Dallas, Working Paper No. 1413.
- Timini, J. and A. El-Dahrawy Sánchez-Albornoz (2019). “The impact of China on Latin America: trade and foreign direct investment channels”, *Economic Bulletin* 2/2019, Banco de España.