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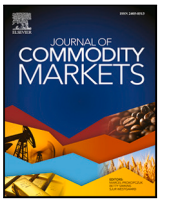

Regular article

Currency crises in emerging countries: The commodity factor

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ABSTRACT

In this paper, we explore whether falls in commodity prices can explain the simultaneous occurrence of currency crises in emerging and developing countries. For our empirical analysis, we use a panel of 104 emerging and developing countries, covering the period 1970–2018. Our empirical investigation starts with an event study analysis, which reveals that currency crises in commodity dependent countries are preceded by commodity price growth 2 to 4 percentage points below normal. A second analysis, inspired by the literature on early warning systems, confirms this findings by showing that commodity price fluctuations are a key predictor of currency crises in commodity dependent countries. In addition, using Poisson regression analysis, we find that a 10% decrease in global commodity price indices leads to a rise of about 7% in the number of currency crises hitting commodity exporting countries.

1. Introduction

There is widespread evidence that currency crises occur simultaneously in several countries. For instance, during the 1997–1998 Asian financial crisis, the devaluation of the Thai baht in July 1997 was followed by currency crises in Malaysia and Indonesia within a month and in Korea a few months later. A large literature provides explanations to this simultaneous occurrence of currency crises in several countries, a phenomenon that is usually referred to as contagion in the literature. Pesenti and Tille (2000) provides a nice survey of what can explain this contagion phenomena. A first explanation argues that this simultaneous occurrence of currency crises comes from the fact that countries are affected at the same time by a common shock. A second explanation focuses on the role of trade and financial linkages in the transmission of currency crises across countries. According to a third explanation, currency crises contagion may also be due to information asymmetries in financial markets, that may lead for instance to herding behavior by investors.

In this paper, we explore further the role of common shocks by investigating whether sharp falls of commodity prices may also be a key common factor behind the simultaneous occurrence of currency crises in several countries. We indeed noticed in a previous paper, Bodart and Carpantier (2020), that currency crises are more frequent and stronger in low-income and emerging countries where commodities account for a large share of the exports, that is, the so-called commodity dependent countries.

If we refer to the theoretical literature on currency crisis, there are several reasons why a commodity exporting country may experience a currency crisis when commodity prices fall. First, as suggested by the first generation models of currency crisis (see for instance Krugman, 1979), declines in commodity prices may put a commodity exporting country in a situation where it is no longer able to generate sufficient export earnings to pay off its external debt. To reassure investors about the sustainability of its

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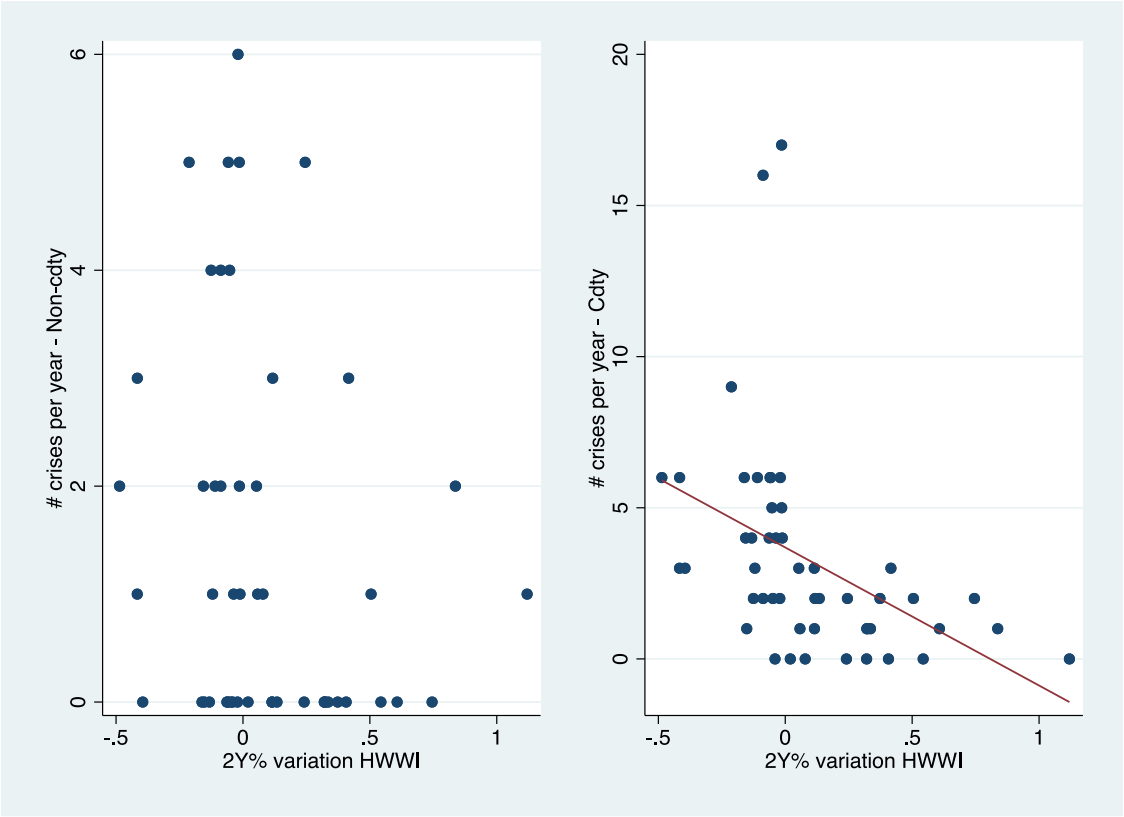

Fig. 1. Explaining the number of FX crises by past commodity price variation.

external accounts, the country may then be forced to devaluate its currency (or to allow a depreciation of its exchange rate if its exchange rate is not fixed). Furthermore, if taxes on export earnings are a main source of revenue for the government, what is often the case for many commodity exporting countries (see IMF, 2012), the fall in commodity prices may also increase the fiscal deficit of the country. As shown among others by Krugman (1979), a currency crisis will then occur if the fiscal deficit is covered by money printed by the central bank. In the event of collapsing commodity prices, a currency crisis may also arise because of a severe weakening of the balance sheet of one or several key sectors. The corporate sector may for instance be directly affected because of a collapse in export earnings. Similarly, collapse in tax revenues can weaken the balance sheet of the government sector. If this happens, this will prompt a reassessment of these sectors's sustainability and thus a reevaluation of the market value on their debt and other assets. The weakening of the corporate and/or the government balance sheets may also spill over to the banking sector, if these sectors are unable to meet their liabilities towards the banking sector. In the end, the risk that the country be unable to meet its external obligations may lead to a surge of capital outflows and/or a stop of capital inflows and, in these circumstances, a currency crisis can surge.

Illustrative evidence about the potential role played by commodity price shocks in causing currency crises is provided on Fig. 1. On each graph, the number of currency crises per year.[3] is plotted on the vertical axis, while the percentage variation of commodity prices over the two years preceding a currency crisis[4] is given on the horizontal axis. Graphs are reported separately for commodity dependent countries (on the right-hand side) and for non commodity-dependent countries (on the left hand side). As explained later in details, data reported on both graphs covers the period 1970 – 2018 for 104 emerging and developing countries. We can observe that commodity dependent countries have experienced a higher number of currency crises per year than non-commodity dependent countries. It also appears that the number of currency crises in commodity dependent countries is clearly negatively related to variations in commodity prices, while this is not the case for the group of countries that are not commodity dependent.

In what follows, we employ three complementary approaches to explore whether shocks to commodity prices are associated with currency crises. These approaches are implemented on a set of annual data covering the period 1970–2018 for a panel of 104 emerging countries similar, for comparability purposes, to the one used by Gupta et al. (2007) and Bussiere et al. (2012).

[3] Our empirical measure of a currency crisis is provided in Section 2.

[4] The commodity price index is the $HWWI$ US dollars all commodities price index, deflated by the IMF's unit value index for manufactured exports (MUV index).

First of all, following Bodart and Carpantier (2020), we start with an event study analysis, which looks at the behavior of commodity prices around episodes of currency crises. Here, we documented that currency crises in emerging and developing countries were preceded by slower growth in commodity prices, this relationship being mostly observed in countries that are commodity dependent.

The second approach is inspired by the vast literature on early warning systems (EWS). We here estimate a panel logit model of currency crises where commodity price fluctuations are considered as a key determinant of currency crises. We here follow the methodology that is used by Eberhardt and Presbitero (2021) to investigate the role of commodity prices in driving systemic banking crises in low-income countries. So, as in Eberhardt and Presbitero (2021), we estimate a random effects logit model with country-specific means of all covariates. We find, as revealed before by the event study analysis, that the commodity price growth is a key predictor of currency crises for commodity dependent countries. Eberhardt and Presbitero (2021) find that commodity price volatility plays a key role in driving banking crises. We do not find such evidence for currency crises.

The third approach is taken from Moreno and Trehan (2000) and differs substantially from the two previous ones. We here build up a time series variable counting, across countries, the total number of currency crises occurring per year, and we regress that variable on a set of common external factors, including commodity prices. Since the dependent variable can only take on values that are non-negative integers, we use a Poisson regression model for the estimation. This approach confirms our previous findings by showing that commodity price variations have a statistically and economically significant impact on the number of currency crises, even when controlling for the role of world interest rates.

The rest of the paper is structured as follows. In Section 2, we define what is a commodity-dependent country and we explain our measure of currency crisis. The event study approach is conducted in Section 3, followed by the panel logit analysis in Section 4, while the role of common factors in explaining the time variation in the total annual number of currency crises is explored in Section 5. Section 6 concludes.

2. On commodity-dependent countries and currency crises

In this section, we establish a list of commodity dependent countries and we define our measure of currency crises.

2.1. Commodity dependent countries

As in Bodart and Carpantier (2020), our dataset includes 104 emerging and developing countries.[5] Our analysis will focus on commodity-dependent countries and take commodity non dependent ones as a control group. We therefore need a measure of commodity dependence. Typical measures are the share of commodity export earnings in total exports (or in total merchandise exports) and the share of commodity exports (or production) in GDP. Alternatively, commodity dependence can be measured by the percentage of people employed in the production of commodities or by the share of government revenues due to commodity production and exports. As our analysis is concerned with the role of commodity prices in the outbreak of currency crashes, the measure that we believe to be the most relevant is the share of commodity exports in total exports. Therefore, as in Bodart and Carpantier (2020), we follow IMF (2015) and classify a country as being a commodity exporter when its primary commodity exports (categories SITC4 0, 1, 2, 3, 4 and 68 of the Standard International Trade Classification) account for at least 35 percent of the value of its total exports of goods and services on average over a given time window.[6] To control the robustness of our analysis, it will be checked whether our results are modified when the condition of dependence is strengthened, that is, when the threshold is higher than 35 percent. Our measure of commodity dependence is computed for the period 1995–2015.

The list of commodity-dependent and non dependent countries are reported in Table 1. Among our panel of 104 emerging and developing countries, 59 of them qualify as commodity-dependent — their average primary commodity exports to total exports ratio exceeds 35% - and 45 as non dependent. For all countries listed in Table 1, the (1995–2015 average) ratio of primary commodity exports to total exports is reported. We note that the degree of dependence exceeds 50% for 40 countries, 60% for 26 countries and 70% for 19 countries. The most commodity dependent countries of our sample are Algeria, Chad, Equatorial Guinea and Nigeria, all being large crude oil exporting countries.

In the rest of the paper, for ease of convenience, commodity-dependent countries will be referred to as $Cdty$ countries and non commodity-dependent countries as $Non-cdty$ countries.

2.2. Defining currency crises

Defining empirically what is a currency crisis poses various difficulties, the main reason being that the literature does not provide one single definition of what is a currency collapse or a large exchange rate depreciation. Many studies, as for instance Bussiere et al. (2012), address this problem by using several definitions of what is a currency collapse. We follow here a different strategy, by conducting our empirical investigation with one definition, adopted from earlier papers.

[5] The same sample is used by Gupta et al. (2007) and Bussiere et al. (2012). Roumania, Somalia, Taiwan and Yugoslavia were dropped from the sample due to lack of data.

[6] Data on commodity exports are from UNCOMTRADE while data on total exports are retrieved from the World Bank. For further details about the construction of our measure of commodity dependence and other complementary measures, see Gruss and Kebhaj (2019), UNCTAD (2019) and Carpantier (2020).

Table 1
Commodity dependence.

Commodity dependent countries			Commodity non dependent countries		
Country	Abbr.	Cdty ratio	Country	Abbr.	Cdty ratio
Algeria	DZA	94.3	Bangladesh	BGD	6.1
Argentina	ARG	55.9	Barbados	BRB	10.8
Belize	BLZ	41.2	Botswana	BWA	14.0
Benin	BEN	65.3	Cape Verde	CPV	3.3
Bhutan	BTN	39.3	China, P.R.: Mainland	CHN	9.9
Bolivia	BOL	75.4	Comoros	COM	14.9
Brazil	BRA	44.7	Costa Rica	CRI	29.8
Burkina Faso	BFA	50.6	Czech Republic	CZE	11.2
Burundi	BDI	50.6	Djibouti	DJI	10.4
Cameroon	CMR	61.0	Dominican Republic	DOM	15.8
Central African Republic	CAF	59.0	Egypt	EGY	23.9
Chad	TCD	95.0	El Salvador	SLV	29.2
Chile	CHL	69.5	Fiji	FJI	30.6
Colombia	COL	57.3	Gambia, The	GMB	10.6
Congo, Dem. Rep. of	COD	52.4	Grenada	GRD	9.6
Congo, Republic of	COG	85.8	Haiti	HTI	7.5
Côte d'Ivoire	CIV	68.5	Hungary	HUN	12.7
Ecuador	ECU	78.3	India	IND	19.4
Equatorial Guinea	GNQ	96.0	Israel	ISR	4.1
Ethiopia	ETH	41.4	Jamaica	JAM	31.6
Gabon	GAB	84.9	Jordan	JOR	16.4
Ghana	GHA	58.8	Korea, Rep.	KOR	8.3
Guatemala	GTM	43.5	Lebanon	LBN	6.2
Guinea	GIN	75.8	Lesotho	LSO	6.6
Guinea-Bissau	GNB	82.5	Liberia	LBR	22.9
Guyana	GUY	46.2	Malaysia	MYS	24.0
Honduras	HND	55.5	Maldives	MDV	13.1
Indonesia	IDN	47.5	Malta	MLT	7.0
Iran, Islamic Republic of	IRN	81.5	Mauritius	MUS	15.6
Kenya	KEN	38.7	Mexico	MEX	20.1
Lao People's Dem.Rep	LAO	48.4	Morocco	MAR	26.2
Madagascar	MDG	38.3	Nepal	NPL	13.3
Malawi	MWI	75.8	Pakistan	PAK	16.2
Mali	MLI	42.9	Panama	PAN	10.9
Mauritania	MRT	90.2	Philippines	PHL	12.9
Myanmar	MMR	64.4	Samoa	WSM	9.7
Nicaragua	NIC	53.6	Sierra Leone	SLE	25.6
Niger	NER	57.3	South Africa	ZAF	33.9
Nigeria	NGA	98.8	Sri Lanka	LKA	20.7
Oman	OMN	78.9	St. Vincent and the Grenadines	VCT	10.4
Papua New Guinea	PNG	71.1	São Tomé and Principe	STP	24.3
Paraguay	PRY	52.0	Thailand	THA	19.9
Peru	PER	59.1	Tunisia	TUN	17.0
Rwanda	RWA	44.5	Turkey	TUR	12.4
Senegal	SEN	43.8	Vanuatu	VUT	13.4
Seychelles	SYC	35.7			
Solomon Islands	SLB	68.7			
Sudan	SDN	80.0			
Swaziland	SWZ	36.8			
Syrian Arab Republic	SYR	56.2			
Tanzania	TZA	37.5			
Togo	TGO	48.8			
Trinidad and Tobago	TTO	56.9			
Uganda	UGA	45.8			
Uruguay	URY	44.1			
Venezuela, Rep. Bol.	VEN	81.8			
Yemen, Republic of	YEM	81.2			
Zambia	ZMB	74.9			
Zimbabwe	ZWE	61.2			

Note: Cdty ratio refers to the ratio of commodity exports to total exports. A country is commodity-dependent if the share of its commodity exports in total exports exceeds (or is equal to) 35%. Due to missing data, Cdty ratio is arbitrarily set equal to the commodity export to total merchandise export ratio for CAF, GNQ and TCD.

Our definition of what is a currency crisis is taken from Milesi-Ferretti and Razin (2000), this definition being also used by Bussiere et al. (2012) and Gupta et al. (2007).[7] Let S_t denote the dollar nominal exchange rate of any country, expressed as

[7] The definition of Milesi-Ferretti and Razin (2000) actually refines the definition of Frankel and Rose (1996) to account for high-inflation episodes.

units of the country's currency per one unit of the US dollar. Further denote $\Delta S_t = \left(\frac{S_t}{S_{t-1}}\right) - 1$, the rate of depreciation of the exchange rate from year $t-1$ to year t. We therefore consider that a currency crisis occurs at year $t = T$ if ΔS_t satisfies the following three criteria:

(a) The exchange rate depreciates by at least 25 percent: $\Delta S_T \geq 0.25$;
(b) The depreciation of the exchange rate is at least twice higher than the depreciation that occurred the year before: $\Delta S_T \geq 2 * \Delta S_{T-1}$;
(c) The depreciation that occurred during the previous year does not exceed 40 percent: $\Delta S_{T-1} \leqq 0.40$.

We apply these criteria to the US dollar nominal exchange rate of the 104 countries of our panel over the period $1970 - 2018$. Data on exchange rates are taken from the website of the Bank of International Settlements (BIS).[8]

Stylized facts about currency crises are reported in Table 2. Results are displayed for the full panel of countries, along with a breakdown by commodity dependence. Over the 49 years of our sample, 229 episodes of currency collapse are recorded among our panel of 104 countries, so approximatively one crisis every 22 years. These results are in line with those of Bussiere et al. (2012) and Gupta et al. (2007). It also appears that $Cdty$ countries have been more subject to currency crashes than $Non-cdty$ ones: (i) more than two thirds of the currency crashes recorded between 1970 and 2018 occurred in $Cdty$ countries; (ii) the average number of crises per country over 49 years is about 1.5 for $Non-cdty$ countries and 2.7 for $Cdty$ countries; and (iii) the average time separating two crises is about 18 years for $Cdty$ countries and about 32 years for $Non-cdty$ countries. We also note that, during episodes of currency crashes, $Cdty$ countries experienced a larger median depreciation of their exchange rate (59,6%) than $Non-cdty$ countries (46,7%). Most of those differences between $Cdty$ and $Non-cdty$ countries are preserved at the regional level. We also report in Table 2 data on currency crises by making a difference between countries having a fixed exchange rate, countries having a purely floating exchange rate and, finally countries having an intermediate exchange rate regimes.[9] We observe that allowing for differences in countries' exchange rate regimes does not change our previous results, which suggests that the likelihood that a currency collapse arises in a $Cdty$ country does not depend on the currency regime.

We provide country specific evidence in Figs. 2 to 5, putting the focus on the sub-sample of $Cdty$ countries where the share of the commodity exports in the total exports exceeds 50%. In these Figures, episodes of currency crises between 1970 and 2018 are plotted for each country, together with the evolution of a country specific commodity price index (based on the xm_fa proxy of Gruss and Kebhaj (2019), as explained below in the empirical section). One can observe that, in many cases, currency crises are preceded by periods of declining commodity prices.

The above evidence suggests that commodity prices may play a key role in the simultaneous occurrence of currency crises in several countries, in particular and the most obviously in $Cdty$ countries. That is what we investigate formally in the next three sections.

3. Event study analysis

In this section, we follow Gourinchas and Obstfeld (2012) and estimate an event study model to see how commodity prices change in the vicinity of a currency crash. To do so, we set up the following fixed-effects panel specification based on annual data:

$$y_{i,t} = \alpha_i + \beta_1 FXcrisis_{i,t,s} + \epsilon_{i,t} \tag{1}$$

where subscript i refers to the country and subscript t to the year, $y_{i,t}$ is the annual percentage change in the commodity price index specific to country i, α_i captures country fixed effects, $FXcrisis_{i,t,s}$ denotes a dummy variable equal to 1 when country i has a currency crisis over the period t to $t+s$ (different values will be considered for s, going from -2 to 2) and to 0 otherwise.

Regarding the commodity price index used in the regression, $y_{i,t}$, we use the data constructed by Gruss and Kebhaj (2019). Their commodity prices are country-specific. They are constructed by combining international prices of up to 45 individual commodities with country-level data on exports of individual commodities. Gruss and Kebhaj (2019) provide two sets of commodity price indices, one established with fixed commodity trade weights and one established with time-varying weights. We take as our benchmark the commodity price index constructed with fixed weights (xm_fa), where the weights are based on net commodity exports.[10]

The coefficient β_1 is the primary coefficient of interest, as it captures the behavior of commodity prices around episodes of currency crises. More precisely, it measures the conditional effect of a currency crisis on the commodity price variations over the event window $t => t+s$ relative to tranquil times.[11] As an example, in the case where $s = 2$, the window defining $FXcrisis_{i,t,s}$ goes from t to $t+2$, so β_1 measures how commodity price changes deviate from normal/tranquil times when there is a subsequent currency crisis at time t, $t+1$, or $t+2$. If commodity prices contribute to the occurrence of currency crises, we expect β_1 to be negative and significant for positive values of s.

[8] https://www.bis.org/statistics/xrusd.htm. The BIS nominal exchange rate data set contains long time-series on USD exchange rates for currencies of approximately 190 economies at daily, monthly, quarterly and annual frequencies.

[9] These three categories of exchange rate regimes are based on the exchange rate classification of Ilzetzki et al. (2017). See Section 3 for details about the exchange rate classification.

[10] Fixed-weights are constructed using average trade flows over 1980–2015. The weights for each commodity is given by the share of net exports of each commodity in aggregate output. See Gruss and Kebhaj (2019) for details.

[11] As noted by Gourinchas and Obstfeld (2012), tranquil times are defined as the country-year observations that do not fall into any crisis-event window.

Table 2
Currency crisis statistics.

WORLD	104 countries	59 $Cdty$	45 $Non-cdty$
# crises	229	160	69
# crises/# countries	2.2	2.7	1.5
1 crisis every ...years	22.3	18.1	32.0
AFRICA	46 countries	33 $Cdty$	13 $Non-cdty$
# crises	105	88	17
# crises/# countries	2.3	2.7	1.3
1 crisis every ...years	21.5	18.4	37.5
LATIN AMERICA	26 countries	16 $Cdty$	10 $Non-cdty$
# crises	70	51	19
# crises/# countries	2.7	3.2	1.9
1 crisis every ...years	18.2	15.4	25.8
ASIA	20 countries	6 $Cdty$	14 $Non-cdty$
# crises	33	16	17
# crises/# countries	1.7	2.7	1.2
1 crisis every ...years	29.7	18.4	40.4
OTHER EMERGING	12 countries	4 $Cdty$	8 $Non-cdty$
# crises	21	5	16
# crises/# countries	1.8	1.3	2.0
1 crisis every ...years	28.0	39.2	24.5
FIXED	1917 obs	1243 $Cdty$	674 $Non-cdty$
# crises	55	40	15
# crises/# fixed obs.	2.9%	3.2%	2.2%
1 crisis every ...years	34.9	31.1	44.9
FLOAT	554 obs	373 $Cdty$	181 $Non-cdty$
# crises	56	38	18
# crises/# float obs.	10.1%	10.2%	9.9%
1 crisis every ...years	9.9	9.8	10.1
INTERMEDIATE	2476 obs	1273 $Cdty$	1203 $Non-cdty$
# crises	118	82	36
# crises/# interm. obs.	4.8%	6.4%	3.0%
1 crisis every ...years	21.0	15.5	33.4

Note: Fixed, float and intermediate currency regimes based on the classification of Ilzetzki et al. (2017) (based on 101 countries, as data from CPV, BRB and VCT are not available in their database.).

Estimates of Eq. (1) are reported in Table 3 for s varying from 0 to +2 (the benchmark case where we expect currency crises to be consecutive to abnormal commodity price changes), and in Table 4 for s varying from 0 to −2 (the control case). In both tables, the crisis window period covers t when $s = 0$, t and $t+1$ when $s = 1$, t and $t-1$ when $s = -1$, etc. In each table, the results are reported separately for $Cdty$ countries and for $Non-cdty$ ones.

Our results show that, for $s = 0$, the coefficient β_1 is non-significant for $Cdty$ and $Non-cdty$ countries, while negative for the former and positive for the later. For values of $s > 0$, it appears in Table 3 that, for $Cdty$ countries, the annual change in the commodity price index is significantly lower in the years preceding a currency crises, relative to tranquil times. The estimated coefficients are also economically significant: commodity price growth deviates from normal by 2.0 percentage point when currency crises are recorded over the period $t => t+1$ and by 1.6 percentage point when currency crises are recorded over the period $t => t+2$. For $Non-cdty$ countries, the coefficient β_1 is not significantly different from zero, for any year of the window periods ($s = 1, 2$). Regarding what happens after the currency crises, the results in Table 4 indicate that the behavior of commodity prices is not different from normal, whether the country is commodity dependent or not. What therefore arises from our results is that currency crises in $Cdty$ countries are associated with abnormal (relative to tranquil times) low growth in commodity prices during the years that precede the crises but, following the crises, growth in commodity prices does not remain depressed.

In Table 5, we check whether the results obtained in Table 3 are confirmed when we change the threshold that is used to classify a country as being commodity dependent. So far, it has been considered that a country is commodity dependent if the ratio between the primary commodity exports of the country and its total exports exceeds 35%. In Table 5, we present new results with the threshold fixed at 50% and 60%. For convenience, the results of Table 3 with the threshold fixed at 35% are reproduced in Table 5. On can observe that, for higher values of the threshold, the coefficient β_1 remains negative and significant, whatever the time window. For $Cdty$ countries threshold at 60%, the commodity price growth deviates from normal by up to 3.7 percentage point when currency crises are recorded over the period $t => t+1$.

We also check whether the exchange rate regime affects our results. We therefore rely on the "coarse classification" of exchange rate regimes provided by Ilzetzki et al. (2017), over 1940 to 2016 for more than 160 countries. This classification breaks down

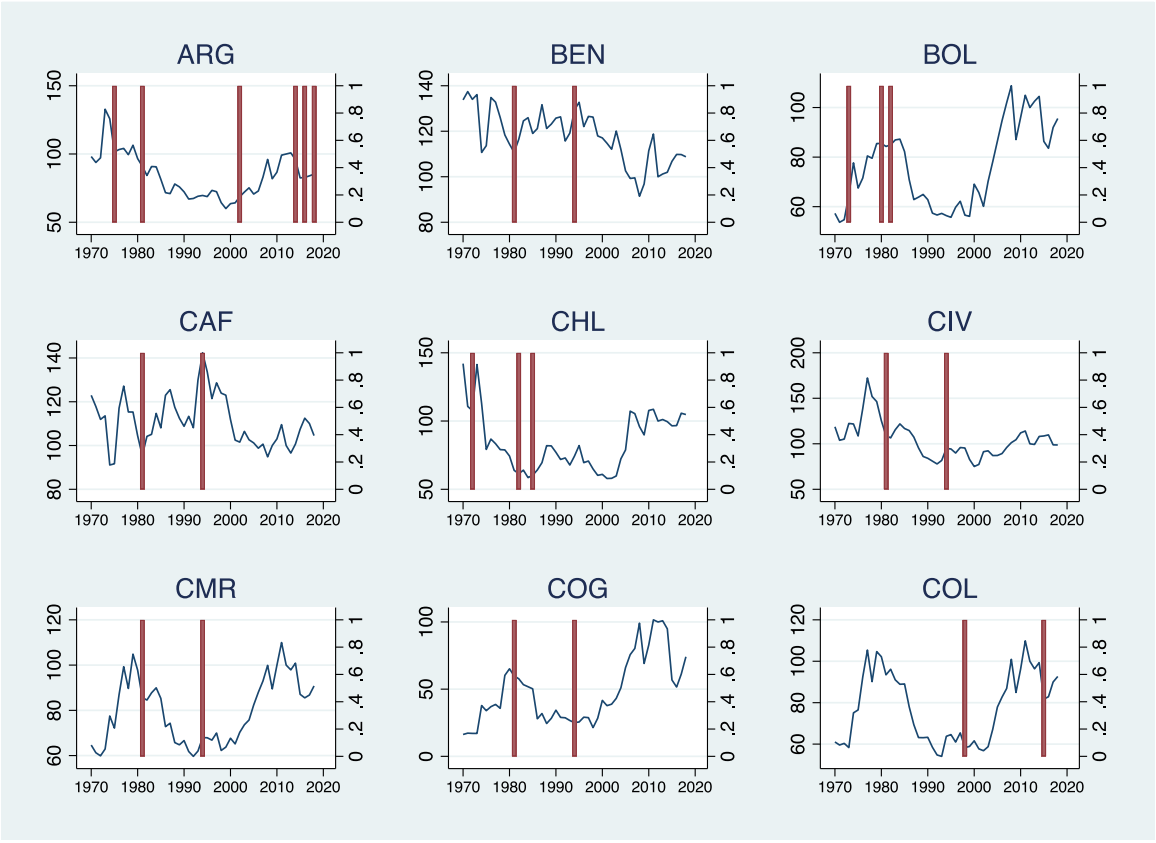

Fig. 2. Commodity price indexes (xm_fa) and currency collapses of countries with commodity dependence above 50% (1/4).

Table 3
Event study analysis — regression of commodity price changes on currency crises in t, t to $t+1$ and t to $t+2$.

	Non-cdty	Cdty	Non-cdty	Cdty	Non-cdty	Cdty
$FXcrisis_{t}$	0.027*	−0.013				
	(0.014)	(0.010)				
$FXcrisis_{t,t+1}$			0.009	−0.020**		
			(0.010)	(0.008)		
$FXcrisis_{t,t+2}$					−0.001	−0.016**
					(0.009)	(0.007)
Constant	−0.010***	0.001	−0.009***	0.002	−0.009***	0.003
	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)
N	2114	2834	2114	2834	2114	2834
Loglik.	1694.9	1899.3	1693.3	1901.9	1692.9	1901.4
AIC	−3.4e+03	−3.8e+03	−3.4e+03	−3.8e+03	−3.4e+03	−3.8e+03
BIC	−3.4e+03	−3.8e+03	−3.4e+03	−3.8e+03	−3.4e+03	−3.8e+03

Note: This table documents how commodity prices deviate from normal times BEFORE currency crises. Fixed effect models based on Eq. (1) where the dependent variable is the annual variation of the country-specific log commodity price index and where the regressors correspond to $FXcrisis_{t,s}$ with s equal to t in columns (1) and (2), to $t+1$ in columns (3) and (4) and to $t+2$ in columns (5) and (6). $Cdty$ ($Non-cdty$) stand for countries where the commodity exports are equal or larger to (smaller to) 35% of total exports. Sample of 104 countries over 1970–2018. Robust standard errors. * p<0.10, ** p<0.05, *** p<0.01.

exchange rate regimes into six categories going from hard fix (coarse code 1) to free float (coarse code 6). We simplify this classification (following Broda, 2004 and Bodart et al., 2015) by considering the regimes to be fixed if the coarse code is equal to 1, to be intermediate if the coarse code is equal to 2 or 3 and to be floating if the coarse code is equal to 4, 5 or 6.

We now estimate the model given by Eq. (2), where the currency crisis dummy $FXcrisis_{i,t,s}$ is now interacted with $Fix_{i,t-1,s}$, a dummy equal to 1 if the exchange rate regime is fixed, to 0 otherwise, and with $Float_{i,t-1,s}$, a dummy equal to 1 if the exchange rate regime is a float, to 0 otherwise. The estimation is only performed for positive values of s (currency crisis thus posterior to commodity price changes). The coefficients of interest, β_2 and β_3, will then measure how commodity price changes deviate from normal/tranquil times when there is a subsequent currency crisis at time t, $t+1$, or $t+2$ in a country with a fixed, respectively

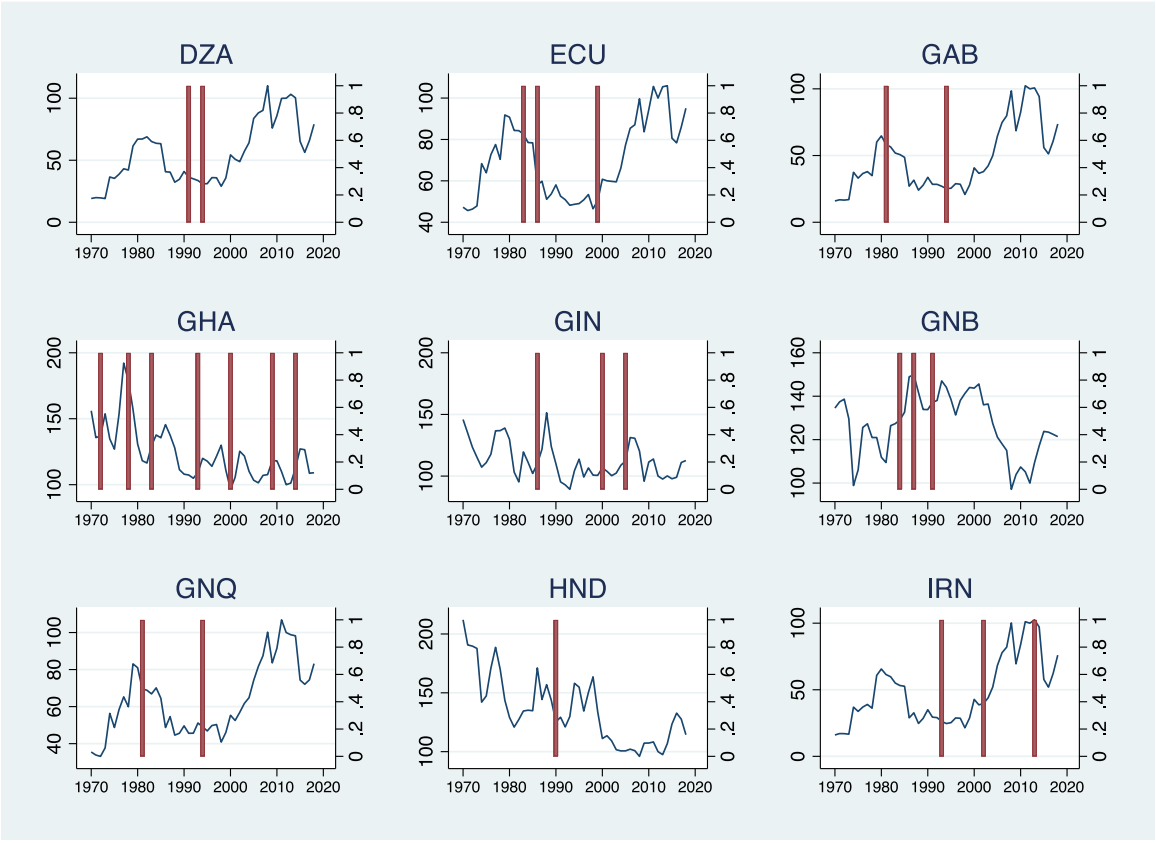

Fig. 3. Commodity price indexes (xm_fa) and currency collapses with commodity dependence above 50% (2/4).

Table 4
Event study analysis — regression of commodity price changes on currency crises in t, t to $t-1$ and t to $t-2$.

	Non-cdty	Cdty	Non-cdty	Cdty	Non-cdty	Cdty
$FXcrisis_{t}$	0.027*	−0.013				
	(0.014)	(0.010)				
$FXcrisis_{t,t-1}$			0.008	0.003		
			(0.010)	(0.008)		
$FXcrisis_{t,t-2}$					0.009	−0.007
					(0.009)	(0.007)
Constant	−0.010***	0.001	−0.009***	−0.000	−0.010***	0.001
	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)
N	2114	2834	2114	2834	2114	2834
Loglik.	1694.9	1899.3	1693.3	1898.6	1693.5	1899.2
AIC	−3.4e+03	−3.8e+03	−3.4e+03	−3.8e+03	−3.4e+03	−3.8e+03
BIC	−3.4e+03	−3.8e+03	−3.4e+03	−3.8e+03	−3.4e+03	−3.8e+03

Note: This table documents how commodity prices deviate from normal times AFTER currency crises. Fixed effect models based on Eq. (1) where the dependent variable is the annual change of the country-specific log commodity price index and where the regressors correspond to $FXcrisis_{t,s}$ with s equal to t in columns (1) and (2), to $t-1$ in columns (3) and (4) and to $t-2$ in columns (5) and (6). $Cdty$ ($Non-cdty$) stand for countries where the commodity exports are equal or larger to (smaller to) 35% of total exports. Sample of 104 countries over 1970–2018. Robust standard errors. * p<0.10, ** p<0.05, *** p<0.01.

floating, exchange rate regime.

$$y_{i,t} = \alpha_i + \beta_1 FXcr_{i,t,s} + \beta_2 FXcr_{i,t,s} * Fix_{i,t-1,s} + \beta_3 FXcr_{i,t,s} * Float_{i,t-1,s} + \epsilon_{i,t} \quad (2)$$

Results are reported in Table 6. They reveal that the association observed between commodity price growth and currency crises in $Cdty$ countries does not depend on the exchange rate regime. While we would expect from a standard view that $Cdty$ countries with a floating exchanges rate would be better at absorbing international commodity price fluctuations, our evidence suggests that this is not the case.

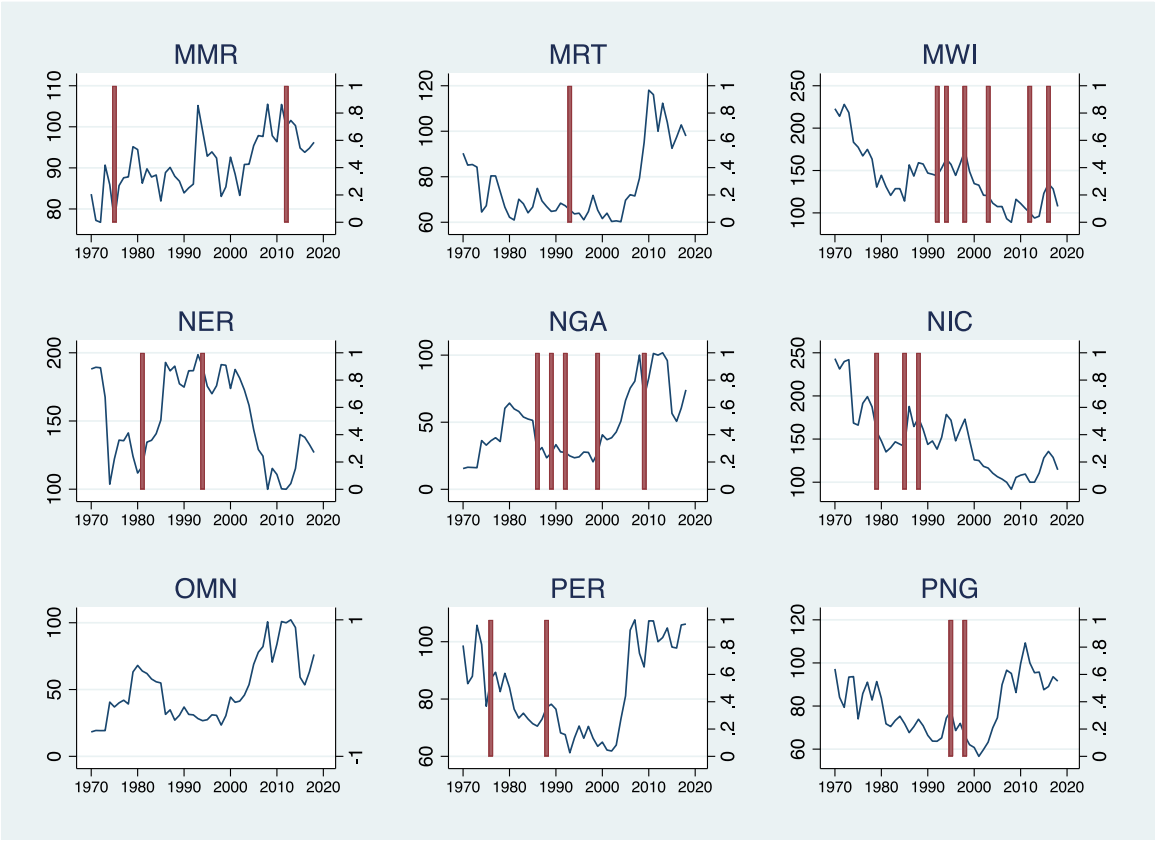

Fig. 4. Commodity price indexes (xm_fa) and currency collapses with commodity dependence above 50% (3/4).

Table 5
Event study analysis — regression of commodity price changes on currency crises in (t to $t+1$) and (t to $t+2$) for subsamples based on different degrees of commodity dependence.

	Non-cdty	Cdty35	Cdty50	Cdty60	Non-cdty	Cdty35	Cdty50	Cdty60
$FXcrisis_{t,t+1}$	0.009	−0.020**	−0.029***	−0.037***				
	(0.010)	(0.008)	(0.009)	(0.013)				
$FXcrisis_{t,t+2}$					−0.001	−0.016**	−0.018**	−0.021*
					(0.009)	(0.007)	(0.008)	(0.011)
Constant	−0.009***	0.002	0.008**	0.013***	−0.009***	0.003	0.008**	0.012***
	(0.002)	(0.002)	(0.003)	(0.004)	(0.003)	(0.003)	(0.003)	(0.005)
N	2114	2834	1939	1253	2114	2834	1939	1253
Loglik.	1693.3	1901.9	1186.0	654.6	1692.9	1901.4	1183.7	652.2
AIC	−3.4e+03	−3.8e+03	−2.4e+03	−1.3e+03	−3.4e+03	−3.8e+03	−2.4e+03	−1.3e+03
BIC	−3.4e+03	−3.8e+03	−2.4e+03	−1.3e+03	−3.4e+03	−3.8e+03	−2.4e+03	−1.3e+03

Note: This table documents how commodity prices deviate from normal times BEFORE currency crises for countries with different degrees of commodity dependence. Fixed effect models based on Eq. (1) where the dependent variable is the annual change of the country-specific log commodity price index and where the regressors correspond to $FXcrisis_{t,s}$ with s equal to $t+1$ in columns (1) to (4) and to $t+2$ in columns (5) to (8). $Non-cdty$, $Cdty35$, $Cdty50$ and $Cdty60$ stand for a subset of countries where the commodity exports are smaller to 35%, equal or larger to 35%, 50% and 60% of total exports, respectively. Sample of 104 countries over 1970–2018. Robust standard errors. * p<0.10, ** p<0.05, *** p<0.01.

4. Panel logit analysis

In this section, we follow the vast literature of early warning systems and estimate a latent crisis model where the dependent variable is our currency crisis variable, as defined in Section 2. Two sets of regressors are included. The first set focuses on the role of commodity prices. It comprises the growth rate of commodity prices and, as suggested by the analysis of Eberhardt and Presbitero (2021), their volatility. We use a simple measure of volatility, which is computed as the yearly variance of monthly percentage changes of commodity prices. The growth rate of commodity prices is also interacted with the exchange rate regime. The second set of regressors is composed of standard macroeconomic controls as suggested by previous studies on the determination

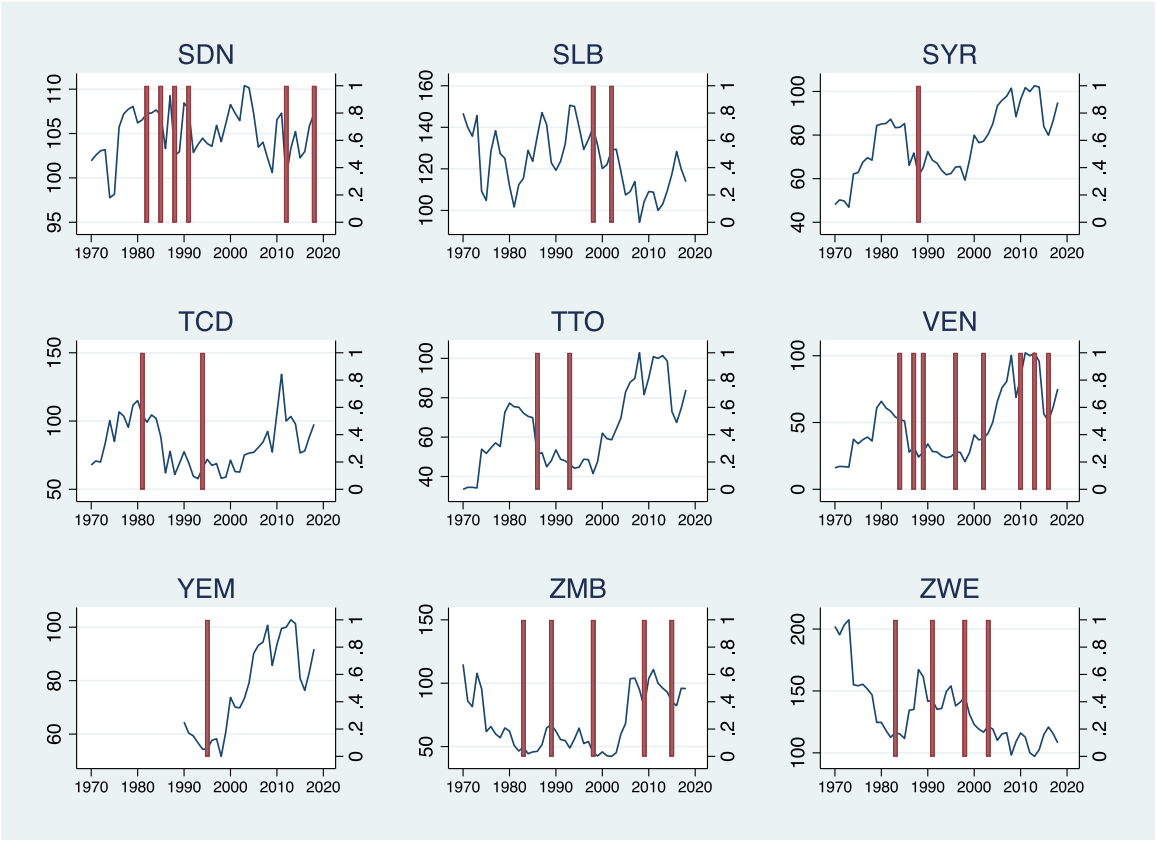

Fig. 5. Commodity price indexes (xm_fa) and currency collapses with commodity dependence above 50% (4/4).

Table 6
Event study analysis — regression of commodity price changes on currency crises in (t to $t+1$) and (t to $t+2$) for subsamples based on different currency regimes.

	All	Non-cdty	Cdty35	All	Non-cdty	Cdty35
$FXcrisis_{t,t+1}$	−0.008	0.024***	−0.022			
	(0.010)	(0.008)	(0.013)			
$Fix\_FXcrisis_{t,t+1}$	−0.013	−0.056	0.005			
	(0.015)	(0.034)	(0.016)			
$Float\_FXcrisis_{t,t+1}$	−0.000	−0.012	0.004			
	(0.011)	(0.016)	(0.014)			
$FXcrisis_{t,t+2}$				−0.011	0.014	−0.023**
				(0.007)	(0.009)	(0.009)
$Fix\_FXcrisis_{t,t+2}$				−0.009	−0.057***	0.011
				(0.011)	(0.017)	(0.013)
$Float\_FXcrisis_{t,t+2}$				0.010	−0.008	0.019
				(0.010)	(0.016)	(0.012)
Constant	−0.003***	−0.009***	0.002*	−0.002***	−0.009***	0.003**
	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)
N	4948	2114	2834	4948	2114	2834
Loglik.	3573.3	1695.9	1902	3574.4	1696.9	1902.2
AIC	−7.1e+03	−3.4e+03	−3.8e+03	−7.1e+03	−3.4e+03	−3.8e+03
BIC	−7.1e+03	−3.4e+03	−3.8e+03	−7.1e+03	−3.4e+03	−3.8e+03

Note: This table documents how commodity prices deviate from normal times BEFORE currency crises for countries with different currency regime. Currency regime classification based on Ilzetzki et alii (2016)'s classification. Fixed effect models based on Eq. (2) where the dependent variable is the annual change of the country-specific log commodity price index and where the regressors correspond to $FXcrisis_{t,t+s}$ and its interaction dummies $Fix/Float_{t-1}$ with s equal to +1 in columns (1) to (3) and to +2 in columns (4) to (6). $Cdty$ ($Non-cdty$) stand for countries where the commodity exports are equal or larger to (smaller to) 35% of total exports. Sample of 104 countries over 1970–2018. Robust standard errors. * p<0.10, ** p<0.05, *** p<0.01.

of financial crises and currency crises (see for instance Kumar et al., 2003). At the country level, this includes the real growth rate of GDP, the CPI inflation rate, the current account balance (in % of GDP), international reserves (as share of total external debt), change in domestic credit (in % of GDP), and the country short-term debt (as share of total external debt). All these variables are retrieved from the World Bank World Development Indicators. As suggested by the literature on the global finance cycle (see for instance Miranda-Agrippino and Rey, 2021), we also include as regressor the US short-term nominal interest rate, as given by the three-month Treasury bill secondary market rate, which is extracted from FRED.

Following Eberhardt and Presbitero (2021), we proceed to the estimation of the model by applying a Random Effects logit estimator with the Mundlak augmentation.[12] The sample period for the estimation is unchanged but, for reasons of data availability, the sample of countries is reduced to 83 countries. Results are presented in Table 7. All explanatory variables but the U.S. interest rate are subject to a standard MA transformation, that is, they are averaged/smoothed over t, $t-1$ and $t-2$. Coefficient estimates are presented in the form of average marginal effects, obtained by multiplying the margins with the standard deviation (SD) of the regressor; the computation of the standard errors for the marginal effect in turn is based on the Delta method.

Results show that commodity price growth is a key predictor of currency crises in emerging and developing countries that are commodity dependent. In all specification for $Cdty$ countries, the variable of commodity price growth is highly significant. By contrast, as it appears in column (6), the coefficient on commodity price volatility is not significant. The interaction terms between commodity price growth and the exchange rate regime are also not significant, confirming the findings of the event study analysis. In economic terms, the estimated coefficient for commodity price growth reported in column (6) indicates that the probability of a currency crisis in $Cdty$ countries increases by about 5 percentage point when commodity price growth is reduced by 1 SD. Results for $Non-cdty$ countries show that neither the growth rate nor the volatility of commodity prices are significant predictors of currency crises in this group of countries.

Regarding the impact of macroeconomic variables, a lower level of international reserves increases the probability of a currency crises, both for $Cdty$ countries and $Non-cdty$ countries. Lower GDP growth also increases very significantly the probability of a crisis in $Cdty$ countries. There is also evidence that a currency crisis is more likely to occur in $Cdty$ countries when US short-term interest rates rise. The effects of these covariates are however small in economic terms, with their magnitude being much smaller than that of the growth rate of commodity prices.

5. Time-series analysis

In this section, we investigate further the role of commodity prices as a key driver of currency crises by taking an approach that is very different from the two previous ones. While the event study and the panel logit analysis were build up on country specific information, we focus here on the number of crises per year. To do so, currency crises computed per country on a yearly basis are aggregated over countries to obtain a count of the total number of crises occurring per year. As Moreno and Trehan (2000), we then regress our dependent variable on a set of potential common shocks. This approach provides a convenient way to emphasize clearly the role played by common factors as key triggers of currency crises. It helps in understanding why crises sometimes bunch together, namely why several countries are hurt by a crisis at the same point in time. This approach ignores the role of independent country-specific factors but, given our large sample, we can assume that the number of crises due to these factors should be approximately constant over time.

In addition to commodity prices, our model includes as main regressors world interest rates and world output growth. The inclusion of these two additional regressors is suggested by the earlier empirical studies on currency crises.[13] For that reason, we limit ourselves in providing only brief insights about their role in predicting currency crises. Higher global (US) interest rates matter as they can lead to a sudden stop of capital flows to emerging and developing countries. They also cause an increase in the cost of debt servicing for countries whose external debt is mainly short-term. A deterioration of the global economic activity may imply lower export revenues for emerging and developing countries, that may result in a sharp deterioration of their external current account and therefore raise doubts about their abilities to meet their external obligations.

The dependent variable of our model is an integer that cannot be negative. Therefore, as in Moreno and Trehan (2000), we use a Poisson regression model to investigate what common factors explain the variation in the aggregate number of crises over time. Formally, we have:

$$E[z_t] = exp[\beta X_t] \tag{3}$$

where E is the mean operator, z_t is the number of currency crises in year t, and X_t is the set of regressors.

The exponential function guarantees the conditional expectation of z_t to be non-negative. To determine the probability of a given outcome, we make the assumption that the conditional number of crises per year has a Poisson distribution with expectation $\lambda_t = exp(\beta X_t)$. The Poisson distribution is characterized by the equidispersion property, whereby the mean of the number of crisis is equal to its variance. This feature is not always appropriate and alternative distributions can be considered (such as the negative binomial model), which allows overdispersion (variance > mean) at the cost of an additional parameter.

[12] For a presentation of this estimator and its advantage over more standard estimators, see Caballero (2016) and Eberhardt and Presbitero (2021).

[13] Among others, Frankel and Rose (1996), Salgado et al. (2000), Kaminsky (2003) and Kaminsky et al. (2009).

Table 7
Panel analysis.

	Non-cdty	Cdty35	Non-cdty	Cdty35	Non-cdty	Cdty35
CdtyPriceGrowth	3.710	−4.519	2.930	−4.354	3.495	−4.857
	(2.80)	(1.65)***	(2.87)	(1.68)***	(5.01)	(2.41)**
FixReg_CdtyPriceGrowth			50.614	−18.159	49.385	−25.400
			(27.99)*	(11.51)	(34.11)	(15.83)
FloatReg_CdtyPriceGrowth			68.625	22.882	43.056	20.561
			(23.79)***	(11.68)*	(29.86)	(17.77)
CdityPriceVolatility					−9.423	2.335
					(37.20)	(13.84)
GDPGrowth					−0.012	−0.129
					(0.10)	(0.04)***
CPIInflation					0.024	−0.006
					(0.02)	(0.00)
InterestRateChange					−0.051	0.141
					(0.14)	(0.08)*
CreditToGDPChange					0.152	−0.057
					(0.13)	(0.07)
ReservesToExtDebt					−0.071	−0.012
					(0.03)***	(0.01)**
STDebtToExtDebt					−0.028	−0.015
					(0.04)	(0.02)
CAToGDP					−0.016	−0.024
					(0.07)	(0.03)
DebtServiceToTotExports					0.004	0.003
					(0.03)	(0.01)
Obs	1697	2269	1697	2269	1022	1179
Countries	45	59	45	59	38	45
Crises	54	145	54	145	25	82
LogL	−235.65	−534.83	−229.46	−528.57	−86.28	−260.60

Note: This table shows the results of a panel logit analysis where the dependent variable is a country specific currency crisis dummy. The regressors include the growth rate of commodity prices (in isolation, interacted with the fixed exchange rate regime ($FixReg$), interacted with the floating exchange rate regime ($FloatReg$) - both based on Ilzetzki et alii (2016)'s currency regime classification), the volatility of commodity prices and a set of potential macroeconomic predictors: the real growth rate of GDP, the CPI inflation rate, the current account balance in percent of GDP ($CAToGDP$), international reserves as share of total external debt ($ReservesToExtDebt$), the country short-term debt as share of total external debt ($STDebtToExtDebt$), change in domestic credit in % of GDP ($CreditToGDPChange$) and changes in the US three-month Treasury bill rate ($InterestRateChange$). All estimates are the economic magnitude for a one standard deviation variation of the explanatory variable, expressed in percent. Standard errors computed via the Delta method from logit estimates. Standard errors are reported in parentheses. Winsorization for the top and bottom 1% of observations for each (non-dummy) variable. All explanatory variables but the U.S. interest rate are averaged/smoothed over t, $t-1$ and $t-2$. $*$ p<0.10, $**$ p<0.05, $***$ p<0.01.

The set of regressors, X_t, includes: a constant, the US short-term interest rate, the growth rate of the world real GDP per capita and the growth rate of world commodity prices.[14] In order to get large enough changes in world real GDP and world commodity prices, the growth rate of the world real GDP and of world commodity prices are computed as percentage changes over a two-year period (so from year $t-2$ to year t). Two series of world commodity prices are used. In Table 8, world commodity prices are given by the HWWI all commodity price index, in US dollars.[15] In Table 9, we use data on commodity prices from the World Bank. Three indices are used: one for all commodities, one for energy commodities and one for non-energy commodities.[16] All commodity prices are deflated by the IMF's value index for manufactured exports (MUV index).

Tables 8 and 9 show the results for the regression of Eq. (3) over the period 1970 to 2018. Results are reported for all countries, for the group of $Non-cdty$ countries and for the group of $Cdty$ countries. The last row of Tables 8 and 9 reports the σ-dispersion statistics which tests the equidispersion property of the Poisson distribution versus the overdispersion property of the Negative Binomial (see Cameron and Trivedi, 2005, pp. 670–671). We find in Table 8 (Table 9) that the null is never rejected at a significance level of 1%. We therefore only report the results based on Poisson regressions.[17] A pseudo-R^2 is also reported at the bottom of the tables.

It first appears that, in all regressions and for all group of countries, the interest rate variable is significant and positive as expected. Regarding the real GDP variable, it has the expected negative sign in all regressions. It is significant when we use the full sample of countries but when we separate the group of $Cdty$ countries from the group of $Non-cdty$ countries, it is only significant for the former group.

[14] The US short-term interest rate is the three-month Treasury bill secondary market rate. World real GDP is expressed in US dollars, as given by the World Bank. Commodity prices come from the German Hamburg Institute of International Economics (HWWI) and the World Bank (WB).

[15] The HWWI overall index is constructed by weighting the price of 31 internationally traded commodities.

[16] A price index for all commodities is actually not provided by the World Bank. We therefore constructed a global index as a standardized series based on the average growth rates of energy and non-energy indexes (as in Gruss and Kebhaj, 2019).

[17] Results based on negative binomial are available on request (no change on the significance and sign of the variables).

Table 8
Explaining the number of currency crises per year via Poisson regressions — HWWI global commodity prices.

	(1)	(2)	(3)	(4)	(5)	(6)
	All	All	Non-cdty	Non-cdty	Cdty	Cdty
$i3M_t$	0.099***	0.121***	0.151***	0.172***	0.077**	0.100***
	(0.026)	(0.023)	(0.034)	(0.038)	(0.034)	(0.030)
$realGDP2Ypc_t$	−15.372***	−9.800**	−9.909	−4.722	−17.473***	−11.776***
	(4.496)	(4.646)	(6.206)	(7.222)	(4.545)	(4.479)
$realHWWI2Ypc_t$		−1.536***		−1.174***		−1.730***
		(0.214)		(0.423)		(0.227)
Constant	1.442***	1.203***	−0.227	−0.440	1.259***	1.004***
	(0.231)	(0.228)	(0.383)	(0.442)	(0.243)	(0.230)
N	49	49	49	49	49	49
Loglik.	−139.5	−121.0	−76.9	−73.2	−115.7	−100.2
R2_p	0.191	0.299	0.154	0.195	0.155	0.268
R2	0.294	0.432	0.221	0.274	0.253	0.408
Over-σ test p-val	0.029	0.068	0.041	0.077	0.046	0.143

Note: This table documents the determinants of the number of currency crises per year. Poisson ML estimation based on Eq. (3). All, $Non-cdty$ and $Cdty$ stand for models where the dependent variable is the number of currency crises per year in all countries, the number of currency crises per year in $Non-cdty$ countries and the number of currency crises in $Cdty$ countries, respectively. $Cdty$ ($Non-cdty$) stand for countries where the commodity exports are equal or larger to (smaller to) 35% of total exports. $i3M_t$ is the "3-Month Treasury Bill: Secondary Market Rate", $realGDP2Ypc_t$ is the "2-year % variation (in decimal terms) of the constant prices World GDP per capita", $realHWWI2Ypc_t$ is the "2-year % variation (in decimal terms) of the MUV-deflated HWWI commodity price index". R2_p is the pseudo-R2. R2 is the squared correlation of the dependent variable and its fitted value. Over-σ test is the overdispersion test where the null is the equality of the variance and of the mean and where the variance exceed the mean under the alternative. Sample of 49 years (1970–2018). Robust standard errors. * p<0.10, ** p<0.05, *** p<0.01.

Table 9
Explaining the number of currency crises per year via Poisson regressions — WB commodity prices.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	All	All	All	Non-cdty	Non-cdty	Non-cdty	Cdty	Cdty	Cdty
$i3M_t$	0.116***	0.121***	0.097***	0.166***	0.166***	0.150***	0.095***	0.104***	0.075**
	(0.025)	(0.023)	(0.026)	(0.037)	(0.037)	(0.035)	(0.031)	(0.029)	(0.033)
$realGDP2Ypc_t$	−10.108**	−12.405**	−13.118**	−5.396	−7.738	−6.536	−11.945**	−14.131***	−15.594**
	(4.897)	(4.975)	(6.033)	(7.438)	(7.285)	(7.468)	(4.733)	(4.676)	(6.327)
$realWB_t$	−1.855***			−1.307**			−2.139***		
	(0.355)			(0.619)			(0.343)		
$realENERGY_t$		−0.985***			−0.566			−1.238***	
		(0.284)			(0.365)			(0.271)	
$realNONENER_t$			−0.694			−0.964			−0.598
			(1.087)			(1.055)			(1.231)
Constant	1.238***	1.326***	1.379***	−0.391	−0.297	−0.330	1.033***	1.110***	1.209***
	(0.246)	(0.234)	(0.294)	(0.441)	(0.427)	(0.420)	(0.249)	(0.226)	(0.312)
N	49	49	49	49	49	49	49	49	49
Loglik.	−123.6	−123.1	−138.6	−74.1	−74.7	−76.3	−101.7	−100.0	−115.2
R2_p	0.283	0.286	0.197	0.184	0.178	0.160	0.257	0.269	0.158
R2	0.397	0.429	0.290	0.258	0.253	0.224	0.367	0.424	0.245
Over-σ test p-val	0.087	0.036	0.061	0.048	0.046	0.036	0.174	0.096	0.087

Note: This table documents the determinants of the number of currency crises per year. Poisson ML estimation based on Eq. (3). All, $Non-cdty$ and $Cdty$ stand for models where the dependent variable is the number of currency crises per year in all countries, the number of currency crises per year in $Non-cdty$ countries and the number of currency crises in $Cdty$ countries, respectively. $Cdty$ ($Non-cdty$) stand for countries where the commodity exports are equal or larger to (smaller to) 35% of total exports. $i3M_t$ is the "3-Month Treasury Bill: Secondary Market Rate", $realGDP2Ypc_t$ is the "2-year % variation (in decimal terms) of the constant prices World GDP per capita", $realWB_t$ ($realENERGY_t$ $realNONENER_t$) is the "2-year % variation (in decimal terms) of the MUV-deflated WB (energy and non-energy components) commodity price index". R2_p is the pseudo-R2. R2 is the squared correlation of the dependent variable and its fitted value. Over-σ test is the overdispersion test where the null is the equality of the variance and of the mean and where the variance exceed the mean under the alternative. Sample of 49 years (1970–2018). Robust standard errors. * p<0.10, ** p<0.05, *** p<0.01.

Regarding commodity prices, we first examine the results obtained with the $HWWI$ (Table 8) and WB (Table 9) all commodity prices indices. In all regressions, whatever the group of countries being considered, both indices are significant and have the expected negative sign. Looking at the difference between $Cdty$ and $Non-cdty$ countries, it appears however that, in most cases, the significance and size of the coefficient is larger for $Cdty$ countries. We can further notice that the addition of the commodity price variable increases substantially the R^2 in the regression of $Cdty$ countries (from 0.155 to 0.268 for the $HWWI$ index; from 0.155 to 0.257 for the WB index) while the R^2 increase is much smaller (from 0.154 to 0.195 for the $HWWI$ index; from 0.154 to 0.184 for the WB index) for $Non-cdty$ countries. When we split commodity prices into its energy component and its non-energy component (see Table 9), it turns out that the energy component enters significantly and with the expected sign in the regressions,

while it is not the case for the non-energy component. This is probably due to the fact that oil is the main commodity exported, by far. One can further notice that the energy component is significant for $Cdty$ countries but not for $Non-cdty$ countries. Overall, the evidence in Tables 8 and 9 suggests that commodity prices play a key role in triggering currency crises and that this role is more determining for $Cdty$ countries than for $Non-cdty$ ones. Regarding the magnitude of the effect, we find that the coefficient of commodity prices in Table 8 implies that a 10% decrease in commodity prices leads to an expected increase of the number of currency crises of 7.3% for $Cdty$ countries versus 1.7% for $Non-cdty$ countries.

6. Conclusions

What triggers outbreaks of currency crises is a major economic concern, which has received a lot of attention from academics, monetary officials and policy makers. While the role of global interest rates has been largely documented, the role of commodity prices has not received, at least to our knowledge, a close attention. This gap is pretty striking, given that many emerging and developing countries are specialized in the production of primary commodities and are therefore highly sensitive to abrupt changes in the price of the commodities that they export. The purpose of this paper is to fill this gap, by exploring whether falls in commodity prices can explain the simultaneous occurrence of currency crises in emerging and developing countries. Using event studies, we find that slowing commodity prices can lead to simultaneous currency crises in emerging and low-income countries, in particular and the most obviously in commodity dependent countries, where we note that commodity price growth of commodity exporting countries deviate (negatively) from normal by 2 to 4 percentage points before the currency crisis hits. A panel logit analysis confirms these findings, by showing that commodity price growth is a key predictor of currency crises in commodity dependent countries. We also find via a Poisson regression analysis that the number of currency crises negatively depends on past commodity price variations. The economic effect is quite substantial, as a 10% decrease in commodity prices leads to an expected increase of the number of currency crises of 7.3% for commodity dependent countries.

CRediT authorship contribution statement

Vincent Bodart: Conceptualization, Methodology, Resources, Data curation, Writing – original draft, Writing – review & editing. **Jean-François Carpantier:** Conceptualization, Methodology, Software, Validation, Formal analysis, Data curation.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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