

Is Inflation Domestic or Global? Evidence from Emerging Markets*

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Following a period of disinflation during the 1990s and early 2000s, inflation in emerging markets has remained remarkably low. The volatility and persistence of inflation also fell considerably and remained low despite large swings in commodity prices, the global financial crisis, and periods of strong and sustained U.S. dollar appreciation. A key question is whether this improved inflation performance is sustainable or reflects global disinflationary forces that could prove temporary. In this paper, we use a New Keynesian Phillips-curve framework and data for 19 large emerging market economies over 2004–18 to assess the contribution of domestic and global factors to domestic inflation dynamics. We find that long-term inflation expectations, linked to domestic factors, were the main determinant of inflation. External factors played a considerably smaller role. The results suggest that although emerging markets are increasingly integrated into the global economy, policymakers still hold significant leverage in domestic inflation developments.

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1. Introduction

There is a lively debate about the so-called globalization of inflation hypothesis—that is, whether globalization is responsible for a weakening in the relationship between inflation and domestic slack and a strengthening in the relationship between inflation and global factors (International Monetary Fund 2005b; Ball 2006; Fisher 2006; Kohn 2006; Yellen 2006; and Carney 2017). The empirical evidence, which is almost entirely limited to advanced economies, is mixed: Ihrig et al. (2010) find little support for an increasing role of global factors in the inflation process, while Borio and Filardo (2007) and Auer, Borio, and Filardo (2017) argue that the role of global factors increased since the 1990s.¹ More recently Ha, Kose, and Ohnsorge (2019) turned the attention towards emerging markets. They find that global shocks contributed more to domestic inflation variation in advanced economies than in emerging market and developing economies. However, while global shocks became more important over time, domestic shocks still account for the largest share in domestic inflation variation in both country groups. Even though most of the attention on the role of external factors in inflation dynamics focused on advanced economies—owing chiefly to the underwhelming reaction of prices to the global financial crisis and the subsequent wage puzzles²—this is a particularly relevant issue for understanding the recent macroeconomic performance of increasingly globalized emerging markets.

Following a period of disinflation during the 1990s and early 2000s, inflation in emerging markets has been, on average, remarkably low and stable (IMF 2016, 2018; and Ha, Kose, and Ohnsorge 2019). Even in the aftermath of large commodity price swings, the global financial crisis, and sizable appreciation of the U.S. dollar, inflation in most countries was quick to stabilize, and the short-lived effects of inflationary shocks, in turn, allowed central banks to cut interest rates to fight off recessions. A confluence of economic factors, including improved domestic policy frameworks (Rogoff 2003;

¹The discussion of whether globalization has an impact on domestic inflation applies in the short to medium term, as in the long run the rate of inflation is set by monetary policy (Ihrig et al. 2010).

²See, for instance, IMF (2013), Danninger (2016), and Draghi (2017).

IMF 2005a; and Vegh and Vuletin 2014) and global disinflationary forces (Carney 2017; and Auer, Levchenko, and Sauré 2019) have likely affected the recent inflation performance in emerging markets.

This paper examines the underpinnings of the recent inflation experience in emerging markets. We review the inflation performance in a sample of 19 large emerging markets over the past few decades and quantify the impact of domestic and global factors in determining inflation dynamics since the start of the post-disinflation period in the mid-2000s.³ To do so, we rely on a hybrid variant of the New Keynesian Phillips curve that is augmented with foreign variables (similar to Borio and Filardo 2007, Ihrig et al. 2010, and Auer, Borio, and Filardo 2017 for advanced economies) and estimate the determinants of domestic core and headline inflation over 2004–18.

Our results show that long-term inflation expectations are the main factor driving inflation from target and inflation variability. Although the reduced-form nature of the analysis carries some limitations, we find evidence that inflation expectations reflect domestic developments and the impact of global factors on inflation expectations is marginal when compared with that of domestic factors. Beyond inflation expectations, we find that while some external factors, such as foreign price pressures, have a statistically significant impact on domestic inflation, they played a relatively small role in driving inflation dynamics in our sample. Our findings also reveal significant cross-country heterogeneity, and that there is still significant room for improvement in inflation performance in some emerging markets from further reductions in the level and variability of long-term inflation expectations.

Overall, our results indicate that domestic rather than global factors were the main contributor to the gains in inflation performance among emerging markets since the mid-2000s. They suggest that although these economies are increasingly interconnected with

³The country coverage is defined by data availability of long-term (that is, three-year-ahead and longer) forecasts for inflation and a minimum population of two million people. It includes the following countries: Argentina, Brazil, Bulgaria, Chile, China, Colombia, Hungary, India, Indonesia, Malaysia, Mexico, Peru, Philippines, Poland, Romania, Russia, South Africa, Thailand, and Turkey.

the global economy, their policymakers still have significant leverage on domestic inflation developments.⁴

The rest of the paper is organized as follows. Section 2 discusses the globalization of inflation hypothesis and presents some stylized facts about the recent inflation performance in our sample of emerging markets. Section 3 presents the empirical analysis, starting with the estimation of the Phillips curve, moving to the quantification of the contributions of domestic and global factors, and concluding with a battery of robustness tests. Section 4 reports a few concluding remarks.

2. Background

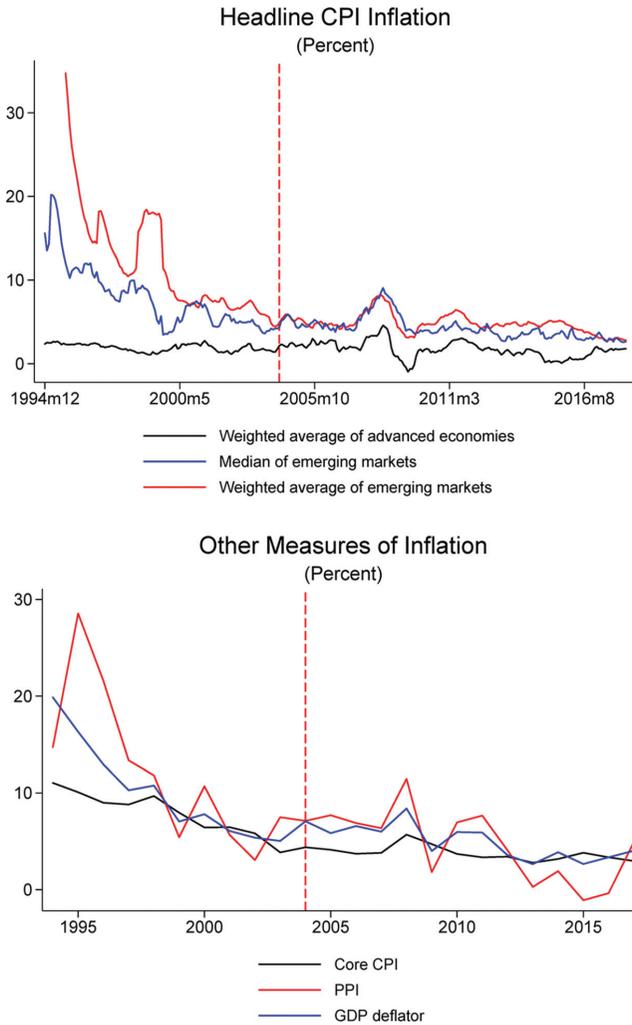
This section first reviews the inflation performance for the 19 emerging markets in the sample. It then introduces the two main arguments that could help explain such performance: the globalization of inflation hypothesis, which relates the integration of emerging markets in the global economy with the price dynamics; and the adoption of rule-based policy frameworks (such as inflation targeting and fiscal rules), which are likely to have strengthened predictability in policy decisions and increased price stability.

2.1 Inflation Performance in Emerging Markets

Following a period of disinflation during the 1990s and early 2000s, inflation in emerging markets remained relatively low and stable. The upper panel of Figure 1 shows that the weighted average of headline consumer price index (CPI) inflation (hereafter, headline inflation) for the 19 emerging markets in the sample declined

⁴A recent related paper by Jašová, Moessner, and Takáts (2018) examines the role of the global output gap in driving inflation in emerging markets in a similar New Keynesian Phillips-curve framework. The main difference between this study and the current paper concerns the measurement of inflation expectations. While Jašová, Moessner, and Takáts (2018) use short-term (end-year) inflation expectations, we focus on the role of long-term inflation expectations (three years ahead and beyond). Given the persistence inherent in the inflation process, we see inflation expectations for longer horizons as essential for capturing the link between the extent of anchoring and inflation in emerging markets.

Figure 1. Disinflation in Emerging Markets (percent)



Source: Haver Analytics; IMF, World Economic Outlook; and authors' calculations.

Note: The vertical dashed line marks the start of the post-disinflation period. The vertical axis in the upper panel is truncated at 35 percent to ease visualization. Weighted averages are constructed using weights of nominal GDP, expressed in U.S. dollar terms, for 2010–12. The lines in the lower panel denote medians across sample emerging markets of each indicator.

dramatically—by more than a 100 percentage points⁵ from 1995 to 2004—and leveled off at about 5 percent thereafter, which is about 3 percentage points higher than the weighted average of advanced economies.⁶ (For figures in color, see the online version of the paper at <http://www.ijcb.org>.) Median headline inflation, which abstracts from a few hyperinflation episodes of the 1990s, still shows a significant decline from about 20 percent to about 5 percent since 2004.

We now turn to other measures of price inflation. The inflation rate for core CPI (hereafter, core inflation), which excludes food and energy items (typically characterized by more volatile prices), also declined until the mid-2000s and remained low and stable thereafter, as shown in the lower panel of Figure 1. The inflation rate of producer prices fell drastically during the 1990s and remained at relatively low levels ever since. Finally, GDP deflators, which encompass the prices of all domestically produced final goods and services, exhibit the same pattern.

Despite this generalized decline in inflation rates across emerging markets, there is some heterogeneity. To illustrate this, Figure 2 shows the share of emerging markets in the sample with inflation rates exceeding 10 percent. In the late 1990s, about half of the countries in the sample experienced inflation rates above 10 percent. Since 2004, such share declined significantly, yet one country out of 10 emerging markets still experienced relatively high inflation rates.

Figure 3 shows that inflation volatility—defined as the standard deviation of detrended inflation—has been stable or declining in emerging markets since 2004.⁷ While the volatility of core inflation toward the end of the sample became broadly comparable to the average level observed for advanced economies, the volatility of

⁵For ease of visualization, the vertical axis of the upper panel in Figure 1 is truncated at 35 percent.

⁶The 19 countries in the sample constitute 80 percent of the GDP of all emerging market and developing economies.

⁷The decline in the volatility of inflation rates is not driven by exchange rate behavior, as there is no clear evidence of a decline in the volatility of exchange rate movements since the late 1990s. See Ilzetzki, Reinhart, and Rogoff (2017) for a discussion of changes in de facto exchange rate volatility.

Figure 2. Share of Countries with Double-Digit Inflation (percent)



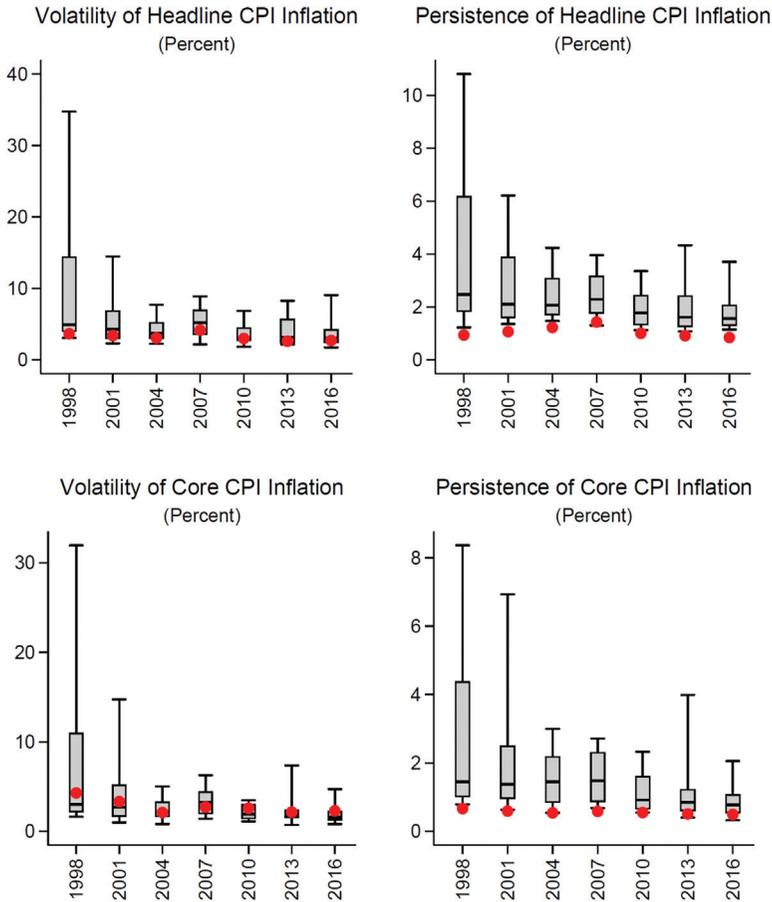
Source: Haver Analytics; and authors' calculations.

Note: The vertical dashed line marks the start of the post-disinflation period.

headline inflation remained somewhat higher. Inflation persistence—defined as the tendency for price shocks to elevate inflation above its long-term level for a prolonged period—also declined gradually during the sample period, even though it remains somewhat above the level observed in advanced economies.⁸ One aspect that may explain the higher volatility for headline inflation in emerging markets is that food and other commodities, whose prices tend to be more volatile, account for a larger share of their consumption baskets than in advanced economies. Higher volatility and persistence of inflation in emerging markets than in advanced economies may also reflect higher pass-through of external shocks to local prices as a result of larger dollar import invoicing shares (Bonadio, Fischer,

⁸We calculate inflation persistence following Stock and Watson (2007, 2010). The approach consists of decomposing inflation, π_t , into a permanent component, ζ_t , and a transitory component, η_t , where $\zeta_t = \zeta_{t-1} + \epsilon_t$ and η_t and ϵ_t are independently normally distributed with time-varying variances $\sigma_{\eta,t}^2$ and $\sigma_{\epsilon,t}^2$, respectively. The measure of inflation persistence underlying the calculations in Figure 3 is the estimated standard deviation of the shock to the permanent component of inflation.

Figure 3. Inflation Dynamics



Source: Haver Analytics; and authors' calculations.

Note: The volatility is computed as the standard deviation of detrended inflation. Persistence is calculated as the standard deviation of the permanent component of inflation based on Stock and Watson (2007). The horizontal lines in each box denote the medians, the upper and the lower edges of each box show the top and bottom quartiles, the vertical lines denote the ranges between the top and bottom deciles, and the red dots denote the averages for advanced economies. The labels on the horizontal axis denote the start of the three-year windows.

and Sauré 2020; Gopinath et al. 2020) and monetary policy institutions and frameworks that are less developed and credible, and thus less effective.⁹

There is, however, substantial cross-country heterogeneity in terms of volatility and persistence of inflation among emerging markets. Either in the case of headline inflation or core inflation, the cross-country distribution for the latest observation covering 2016–18 suggests that the volatility and persistence of inflation for 10 percent of the sample are about two to three times higher than for the median country. Similarly to inflation levels, we conclude that there is some cross-country heterogeneity with respect to the improvements in inflation volatility and persistence.

2.2 The Globalization of Inflation Hypothesis

The globalization of inflation hypothesis posits that, as economies deepen their level of integration in the global markets, prices end up being driven by external factors. The discussion dates back to the oil price swings of the 1970s, but it gained renewed prominence in the context of increased exports from low-wage countries. That is, global competition could lead to downward pressure on prices. However, the evidence on the effects of globalization on inflation is mixed. In the United States, for instance, although globalization could be assimilated to a supply shock that temporarily reduced inflation, it did not in fact affect the underlying inflation process (Ball 2006).

A critical aspect of globalization is that the global supply chain became increasingly integrated, and with that the possibility of outsourcing and offshoring raised the degree of substitutability of production stages (Auer, Levchenko, and Sauré 2019). Thus, it might be economically convenient to relocate production where slack is larger to enjoy lower costs. A related argument is that the increased ability to purchase final goods from the cheapest locations led to

⁹See Mishkin (2007) for a discussion of how better monetary policy can contribute to a decline in inflation persistence. Bems et al. (2018) document that inflation expectations are on average better anchored in advanced economies than in emerging markets, and show that external shocks tend to have a more persistent effect on domestic inflation when inflation expectations are worse anchored.

greater price competition.¹⁰ Thus, as it is easier to move production abroad, domestic prices should display a stronger sensitivity to external conditions (Borio and Filardo 2007; Auer, Levchenko, and Sauré 2019). In addition, if these factors weigh on the bargaining power of workers, the relationship between domestic slack and wage (or price) inflation would become weaker. For example, a higher share of imports from low-wage countries and competition in traded goods could make it more difficult for domestic firms to adjust prices when labor market conditions are tight and workers demand higher wages (Auer, Degen, and Fischer 2013).

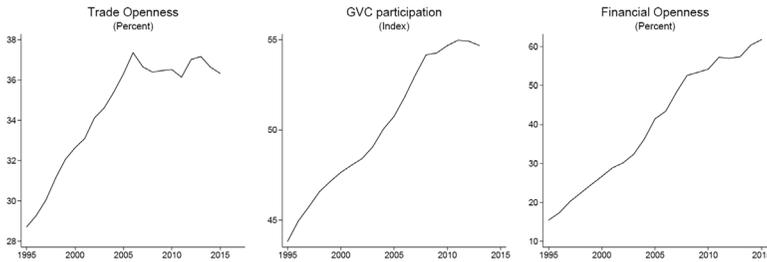
Globalization and increased market contestability can affect inflation indirectly via the components of the Phillips curve, including the domestic output gap and/or inflation expectations. If this is true, foreign factors become progressively more dominant in shaping inflation dynamics, and, in the words of Auer, Borio, and Filardo (2017), the Phillips-curve equation should take a more “globe-centric” view of the inflation process—for example, by including the foreign output gap (Borio and Filardo 2007; Ihrig et al. 2010; and Auer, Borio, and Filardo 2017).

In the past few decades the process of integration in emerging markets was remarkably intense. Emerging markets went from producing a third of global output in the 1990s to more than half. Figure 4 shows that trade openness increased steadily since 1995 for our sample of 19 countries and leveled off thereafter. The participation in global value chains (GVCs) also shows a marked increase over the past two decades, reflecting the intensification of outsourcing and offshoring of production.¹¹ The flip side of the increase in GVC participation is a deeper financial integration through foreign direct investment and portfolio investment. As a result, the

¹⁰The higher concentration of market power in some firms, however, could hamper these effects. As noted by Autor et al. (2020), market power can translate to pricing power.

¹¹The GVC participation index is calculated as the sum of backward participation (imported intermediate inputs used to generate output for export) and forward participation (that is, exports of intermediate goods used as inputs for the production of exports of other countries) as a ratio of gross exports (see Aqib, Novta, and Rodrigues-Bastos 2017 for more details about the global value chain participation measure).

Figure 4. Integration of Emerging Markets into Global Markets



Source: Aqib, Novta, and Rodrigues-Bastos (2017); IMF, Balance of Payments Statistics; IMF, World Economic Outlook; and authors' calculations.

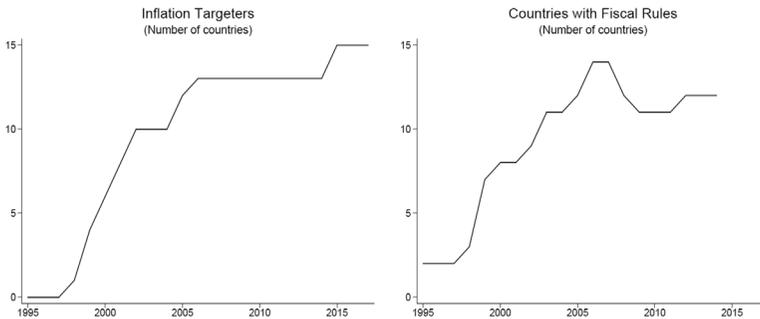
Note: Trade openness is defined as imports in percent of GDP. GVC participation is defined as the sum of backward participation (imported intermediate inputs used to generate output for export) and forward participation (exports of intermediate goods used as inputs for the production of exports of other countries) as a ratio of gross exports; financial openness is defined as the sum of foreign direct investment and portfolio equity liabilities in percent of GDP. All variables are expressed as five-year moving averages.

average financial openness indicator for these economies displays a significant surge.

2.3 Institutional Changes

The literature stresses how an independent central bank and sound and sustainable fiscal policy are key attributes for the credibility of monetary policy (Mishkin 2000; Mishkin and Savastano 2001) and therefore potential drivers of the extent of anchoring of inflation expectations and inflation performance. Other papers find that transparency about the objective and conduct of monetary policy is also a key determinant of inflation expectations. Finally, some studies find an association between fiscal institutions and credibility on the one hand, and inflation performance and the anchoring of inflation expectations on the other hand (Combes et al. 2017; Montes and Acar 2018), or a link between expected fiscal performance and inflation expectations (Celasun, Gelos, and Prati 2004).

The last two decades witnessed important institutional changes in emerging markets, as shown in Figure 5. Out of the 19 countries in the sample, the number of inflation targeters increased from zero

Figure 5. Adoption of Policy Frameworks

Source: IMF, Balance of Payments Statistics; national authorities; and authors' calculations.

Note: The number of countries with fiscal rules is the sum of the countries with any fiscal rule, as defined in the IMF Fiscal Rules Dataset (2016).

in 1995 to 15 in 2017. At the same time, the number of countries with some type of fiscal rule rose from 2 to 14 in 2007; by 2011, it fell to 11 as Argentina, India, and Russia suspended their fiscal rules, and rose again to 12 when Russia implemented a new fiscal rule in 2013. These institutional changes towards rule-based policymaking generally come with increased price stability and some predictability in policy decisions. If this is the case, the sensitivity of inflation to domestic factors may have increased.

3. The Role of Domestic and Global Factors: An Empirical Assessment

The empirical analysis to uncover the role of domestic and foreign factors in determining inflation consists of two stages. The first stage estimates a Phillips curve augmented with variables proxying external factors for a panel of 19 emerging markets using quarterly data from the first quarter of 2004—the start of the post-disinflation period—to the first quarter of 2018.¹² After establishing the statistical significance of the inflation determinants, the second stage

¹²The results are broadly unchanged if the start of the disinflation period is set to any quarter of 2004 or 2005.

explores the contribution of domestic and foreign factors to inflation variation, across countries and over time.

Excluding the inflationary period prior to 2004 allows us to focus on a time frame of current relevance, during which price stability was at the forefront of the monetary frameworks in emerging markets. The pre-2004 sample is, instead, characterized by the presence of several runaway inflation episodes (and the subsequent disinflation periods), which are associated with large exchange rate devaluations as a result of specific events rather than factors studied in the paper.¹³

The section concludes by presenting a set of tests to ensure the robustness of the results.

3.1 *An Augmented Phillips-Curve Framework*

3.1.1 *Empirical Strategy*

The analysis relies on a hybrid variant of a standard New Keynesian Phillips curve (Galí and Gertler 1999; Galí, Gertler, and Lopez-Salido 2001, 2003). Drawing from the literature, the specification is augmented with variables that serve as proxies for macro developments abroad (Borio and Filardo 2007; Ihrig et al. 2010; and Auer, Borio, and Filardo 2017). Formally, we estimate the following equation:

$$\pi_{i,t} = \gamma^b \pi_{i,t-1} + \gamma^f \pi_{i,t}^e + \beta Y_{i,t}^{gap} + \theta Z_{i,t}^* + \eta_i + \epsilon_{i,t} \quad (1)$$

in which π is either core inflation or headline inflation; π^e denotes three-year-ahead inflation expectations; Y^{gap} is the domestic output gap; Z^* is a vector of external variables that includes, depending on

¹³These include, among others, the military coup in Turkey in 1997, the abandonment of the Convertibility Plan in Argentina in 2001 and the currency board in Bulgaria in 1997, the elimination of subsidies in 1997 in Romania, the financial crisis in Russia in 1998, and the effects of the Asian crisis in Indonesia in 1998. As a result, the standard deviation of core (headline) inflation in the period 1997–2003—the period for which we can retrieve information on long-term inflation expectations and inflation targets—is about 10 (5) times the standard deviation of the period 2004–18. Core and headline inflation peaked at 519.1 percent and 583.5 percent during 1997–2003, respectively, compared with 28.3 percent for core inflation and 53.2 percent for headline inflation during 2004–18.

the specification, the import-weighted foreign output gap, an indicator for external price pressure in the previous period, and the lag of energy and food price inflation. Differently from Borio and Filardo (2007), Ihrig et al. (2010), and Auer, Borio, and Filardo (2017), we include the foreign output gap *and* external price pressure in the specification to capture both demand and supply shocks.¹⁴ η_i denotes country fixed effects; ϵ is the error term; and i and t are the subindexes for the country and the time period, respectively.¹⁵

Inflation expectations, a key variable in the analysis, are from Consensus Economics and report the average of inflation forecasts across professional forecasters.¹⁶ These forecasts are available biannually up to 2014 and at quarterly frequency thereafter. In the case of South Africa, the source is the Bureau for Economic Research, and data are available at quarterly frequency for the entire sample period. In all cases, inflation expectations are based on headline inflation forecasts, but it should be noted that the CPI definition may have changed over time.

Among the variables in vector Z^* , the variable capturing external price pressures is defined as the percent change in the import-weighted producer price index of countries from which country i imports, converted to local currency using the nominal effective exchange rate, and relative to the percent change in the GDP deflator:¹⁷

$$\Delta P_{i,t}^* = \Delta mPPI_{i,t} + \Delta neer_{i,t} - \Delta P_{i,t} \quad (2)$$

¹⁴Energy price inflation and food price inflation, which are constructed interacting global prices by the weight of energy and food products in the price index, are not included in the specifications for core inflation.

¹⁵Despite the relatively high correlation between inflation expectations and past inflation, the variance inflation factor is well below 10 for all explanatory variables, ruling out multicollinearity concerns.

¹⁶The use of inflation forecasts collected through surveys covering professional forecasters is standard in the literature. However, some studies documented significant differences between forecasts of households and firms and those of professional analysts (see, for instance, Mankiw, Reis, and Wolfers 2003). However, such surveys are only available for a handful of countries and their methodologies are not necessarily comparable across countries.

¹⁷One may argue that, when pass-through from external to domestic prices is high, the external price pressure variable would understate the impact of external prices. While this is true, the pass-through within the same quarter to a broad measure of domestic prices such as the GDP deflator is likely to be limited.

in which $P_{i,t}$ is the natural logarithm of country i 's GDP deflator. The change in the import-weighted foreign producer price index is given by

$$\Delta mPPI_{i,t} = \sum_{j=1}^J \omega_{ij,t} \Delta PPI_{j,t}, \quad (3)$$

where $i \neq j$, $PPI_{j,t}$ is the natural logarithm of country j 's producer price index. And the change in the nominal effective exchange rate is constructed as the change in the bilateral exchange rate of each trading partner vis-à-vis the U.S. dollar, weighted by their import shares (Gopinath 2015; and Carriere-Swallow et al. 2016):¹⁸

$$\Delta neer_{i,t} = \sum_{j=1}^J \omega_{ij,t} (\Delta e_{i,t} - \Delta e_{j,t}), \quad (4)$$

where $i \neq j$, $e_{i,t}$ is the natural logarithm of country i 's bilateral exchange rate (expressed in local currency per U.S. dollar, so that an increase denotes a depreciation of the domestic currency); and Δ is the first difference operator.

The foreign output gap is defined as

$$Y_{i,t}^{*gap} = \sum_{j=1}^J \omega_{ij,t} Y_{j,t}^{gap}, \quad (5)$$

where $i \neq j$, $\omega_{ij,t}$ is the share of exports from country j to country i in country i 's total imports (lagged one year and measured annually), and $Y_{j,t}^{gap}$ is the Hodrick-Prescott filtered series of real GDP of country j .

We estimate the baseline specification employing median regressions to account for a few extreme observations. Alternatively, the analysis uses robust regressions, which downplay the influence of outliers, and constrained regressions that restrict the sum of the coefficients on past inflation and inflation expectations to be equal

¹⁸See also Auer, Chaney, and Sauré (2018) for a discussion of pass-through determinants at the firm level and Vogel (2008) for a discussion of firm-level pricing strategy.

to one. Although potential endogeneity is a limitation for the estimation techniques used, the structure of the data (with gaps in the first part of the sample because inflation expectations are available at lower frequency) prevents the use of estimators that rely on lags, such as the system generalized method of moments.

While we first present the results of the standard hybrid New Keynesian Phillips-curve estimation that controls for foreign variable, from the outset we want to rule out the possibility that inflation expectations might reflect global developments rather than domestic factors, thereby overestimating the role of the latter. To do that, we employ a two-stage approach in which we first run a regression of inflation expectations on foreign price pressure, foreign output gap, and country and time fixed effects. This step effectively purges the inflation expectations variable of external factors. Then, in a second stage, we modify the baseline specification to replace inflation expectations with the residual from the first stage, which is orthogonal to all foreign factors (and to domestic effects co-moving over time and fixed across countries).¹⁹

3.1.2 Estimation Results

Table 1 presents the estimation results. Overall, the explanatory variables account for 52 percent (44 percent) of the variation of core (headline) inflation. The findings suggest that price setting was, to some extent, forward looking, with a coefficient on three-year-ahead inflation expectations of 0.6 in the regressions for core inflation and ranging between 0.4 and 0.6 in the regressions for headline inflation.²⁰ Domestic cyclical conditions, for which the output gap serves

¹⁹That said, foreign shocks that have an impact on the domestic output gap but are not captured by changes in the foreign output gap and the external price pressure variable can also lead to a downward bias in the estimated contribution of global factors. On the other hand, some of the fluctuations in the exchange rate embedded in the external price pressure variable can be due to domestic factors, potentially biasing the estimated contribution of foreign factors upward. Further tests can be found in Section 3.4.

²⁰Argentina does not have data for core inflation. Moreover, headline inflation statistics have been heavily criticized and Cavallo (2013) shows that inflation calculated using online prices is about three times higher than the official estimates. To deal with this, we rely on estimates from the IMF's country team. Also, to ensure that our results are not dependent on Argentina, we run the regressions of

Table 1. Hybrid Phillips-Curve Estimation, Specifications Augmented for External Factors

	Core Inflation			Headline Inflation		
	Median Regression (1)	Robust Regression (2)	Constrained Regression (3)	Median Regression (4)	Robust Regression (5)	Constrained Regression (6)
Inflation Expectations	0.587*** (0.111)	0.631*** (0.077)	0.566*** (0.062)	0.396*** (0.134)	0.303*** (0.067)	0.564*** (0.088)
Three Years Ahead	0.494***	0.500***	0.434***	0.422***	0.481***	0.436***
Lag of Core/Headline Inflation	(0.037)	(0.023)	(0.062)	(0.047)	(0.028)	(0.088)
Output Gap	0.159*** (0.045)	0.168*** (0.037)	0.103 (0.070)	0.188** (0.086)	0.182*** (0.067)	0.110 (0.095)
Lag of External Price Pressure	0.018*** (0.004)	0.018*** (0.003)	0.032*** (0.011)	0.005 (0.008)	-0.001 (0.007)	0.020 (0.014)
Foreign Output Gap	0.021 (0.050)	0.060 (0.053)	0.070 (0.100)	0.117 (0.087)	0.085 (0.103)	0.169 (0.130)
Lag of Food Price Inflation				0.013*** (0.004)	0.018*** (0.004)	0.025*** (0.006)
Lag of Energy Price Inflation				0.000 (0.002)	-0.001 (0.002)	-0.001 (0.003)
Countries	18	18	18	19	19	19
Observations	633	633	633	668	668	668
R-squared	0.525			0.445		

Source: Authors' calculations.

Note: All specifications include country fixed effects. Constrained regressions force the sum of the coefficients on past inflation and expected inflation to be one. Median regressions report the pseudo R-squared. Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

as a proxy, also matter, but the size of the impact is small in economic terms: a 1 percentage point increase in the output gap is associated with an increase in the core headline inflation rate by 0.2 percentage point.

With respect to the external variables, the foreign output gap is not significant, even if the external price pressure variable is excluded from the specification. This is in contrast to the results of Borio and Filardo (2007) and Auer, Borio, and Filardo (2017) for advanced economies, which find that foreign slack affects domestic inflation. External price developments, on the other hand, are an important determinant of inflation, as indicated by the positive and significant coefficient on the lag of external price pressure (food price inflation) in the regressions for core (headline) inflation. The effects, however, are economically small: a 1 percentage point increase in the external price pressure variable (food price inflation) is associated with an increase of 0.02 to 0.03 (0.01 to 0.02) percentage point in the core (headline) inflation rate.

We now turn to the results of the two-stage approach in Table 2. Columns 1 and 5 report the estimations of the first-stage regressions, which aim at purging inflation expectations from all external factors and where we include time fixed effects to remove all co-movements across countries. When we only control for external price pressure and foreign output gap in column 1, the coefficient on the former turns out not statistically significant and the latter is positive and only marginally statistically significant. Switching to headline inflation, in column 5 the coefficient on external price pressure becomes negative and statistically significant, while the one on foreign output gap remains positive. Importantly, the results of the second-stage regressions in columns 2 to 4 for core inflation and 6 to 8 for headline inflation are remarkably similar to the ones obtained in the one-stage regressions. The coefficients on inflation expectations are only marginally smaller, confirming that inflation expectations are mostly driven by domestic factors.

headline inflation excluding it. While the coefficient on foreign output gap sometimes turns significant, the one on inflation expectations gets larger. All in all, the results are qualitatively comparable to the ones discussed in this section.

Table 2. Hybrid Phillips-Curve Two-Stage Estimation, Specifications Augmented for External Factors

	Core Inflation			First Stage for Inf. Exp. (5)	Headline Inflation		
	First Stage for Inf. Exp. (1)	Median Regression (2)	Robust Regression (3)		Constrained Regression (4)	Median Regression (6)	Robust Regression (7)
Residual of Infl. Exp. Three Years Ahead		0.464*** (0.108)	0.485*** (0.090)	0.329*** (0.062)	0.384*** (0.122)	0.265*** (0.071)	0.430*** (0.074)
Lag of Core/Headline Price Inflation		0.529*** (0.032)	0.562*** (0.022)	0.671*** (0.062)	0.459*** (0.044)	0.513*** (0.027)	0.570*** (0.074)
Output Gap		0.179*** (0.033)	0.182*** (0.037)	0.076 (0.078)	0.139* (0.082)	0.171** (0.067)	0.112 (0.103)
Lag of External Price Pressure	-0.001 (0.002)	0.018*** (0.003)	0.016*** (0.003)	0.027*** (0.011)	-0.001 (0.007)	-0.005 (0.007)	0.009 (0.014)
Foreign Output Gap	0.225* (0.129)	-0.008 (0.042)	0.041 (0.052)	0.044 (0.097)	0.159 (0.176)	0.088 (0.103)	0.122 (0.125)
Lag of Food Price Inflation					0.015*** (0.004)	0.020*** (0.004)	0.029*** (0.006)
Lag of Energy Price Inflation					-0.068*** (0.025)	-0.001 (0.002)	-0.002 (0.003)
Countries	18	18	18	18	19	19	19
Observations	633	633	633	633	668	668	668
R-squared	0.845	0.518	0.518	0.518	0.444	0.444	0.444

Source: Authors' calculations.
Note: All specifications include country fixed effects. Constrained regression force the sum of the coefficients on past inflation and expected inflation to be one. Median regressions report the pseudo R-squared. Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

3.2 Contributions to Inflation Deviations from “Target”

After establishing that both domestic and external factors play a role in determining inflation, we use the estimated panel coefficients in Table 1 to compute the country-specific contributions of the explanatory variables.²¹ Following Yellen (2015), we calculate the contributions to inflation in each quarter for each regression by taking into account the persistence of the inflation process:

$$C_{i,t}^x = C_{i,t-1}^x \gamma^b + (\varphi^x x_{i,t}), \quad (6)$$

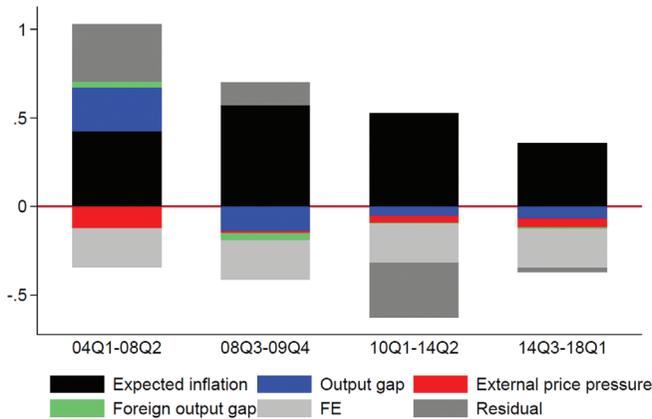
where $C_{i,t}^x$ is the contribution to inflation dynamics in country i at period t of each explanatory variable x in vector $X = [\pi^e, Y^{Gap}, Z^*, \eta_i]$, γ^b is the coefficient on past inflation which captures the persistence of the inflation process, and φ^x is the coefficient on variable x . In other words, a dynamic simulation of the model is run by setting the initial value of each explanatory variable to zero and using the coefficient on lagged inflation to incorporate the effects of inflation persistence that are attributable to previous movements in the explanatory variables. To evaluate what factors contributed to average deviations of inflation from the target, the contribution of inflation expectations is re-expressed in terms of deviation from either an *explicit* target (the one announced under the inflation-targeting regime) or an *implicit* one (the moving average of 10-year-ahead inflation expectations).²²

Figure 6 shows the contribution of each factor to deviations of core inflation from target over four subperiods, which loosely correspond to the precrisis boom (from the first quarter of 2004 to the second quarter of 2008), the global financial crisis (from the third quarter of 2008 to the end of 2009), the post-crisis recovery (the start of 2010 to the second quarter of 2014), and the oil price decline and its aftermath (from the third quarter of 2014 to the first quarter of

²¹The conclusions in Section 3.2 and 3.3 hold when we use the coefficients of Table 2.

²²Such decomposition can be performed under the assumption that the coefficients on the lag of inflation and inflation expectations sum to one. Both for median and robust regressions—in which the coefficients are unconstrained—Wald tests cannot reject the hypothesis of the sum of the coefficients being equal to one.

Figure 6. Contributions to Deviation of Core Inflation from Target, by Subperiod (percentage points)



Source: Authors' calculations.

Note: The bars represent the average contribution of each factor averaged across countries.

2018).²³ The largest contributor to deviations of core inflation from target over the four subperiods is inflation expectations. That is, inflation expectations for the sampled emerging markets, on average, exceeded the inflation target.²⁴ Domestic cyclical conditions played a smaller role. Upswings during the boom period led inflation to move above the target, while downturns during the global financial crisis led to lower inflation compared with the target.

Among the external factors, the largest contributor is the variable capturing external price pressures, which was, on average, deflationary during the sample period. However, the magnitude of this effect (-0.05 percentage point annually, on average, over the sample period) was considerably smaller than that of long-term inflation

²³We report the results for core inflation in the rest of the analysis to abstract from the volatility induced by energy and food prices and focus on the underlying inflationary pressures. However, the results for headline inflation are qualitatively similar to the ones for core inflation.

²⁴This could reflect the public's doubts about the central bank's commitment to the inflation target or concerns about fiscal sustainability that may imply higher inflation in the future.

expectations (0.5 percentage point). The deflationary pressure from external prices was most pronounced during the boom that preceded the global financial crisis.²⁵ The contribution of foreign slack is economically insignificant.

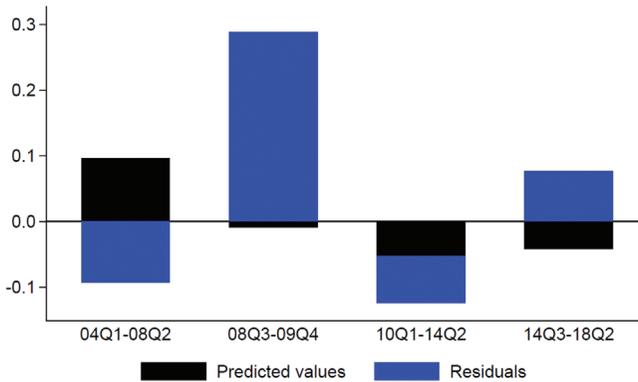
Figure 6 also shows that the overall deviation of inflation from the target declined gradually during 2004–14, by 0.7 percentage point. This trend is partly explained by output gaps (domestic and foreign), which stimulated inflation during the boom of 2004–07, and depressed it during the bust of 2008–09, and partly by the remaining residual.

Could the decrease in the average decomposition residual during 2004–14 of Figure 6 reflect a neglected common source of downward pressure on inflation? To address this question, the analysis estimates a common driver of inflation across emerging markets that cannot be explained by domestic factors. The approach is implemented in two steps. First, we include time fixed effects in a model specification as Equation (1) but without the external variables in vector Z^* . Second, we regress the common component—that is, the time fixed effects—on the cross-country averages of the domestic determinants of core inflation, and obtain the predicted values and the residuals, which can be thought as the “true” residual of the first regression.

As shown in Figure 7, the common component (the sum of the predicted values and the residuals) captures the commodity-induced inflation surge during 2008, but for other sample subperiods its contribution to inflation deviations from target is small in economic terms. Furthermore, the estimated time fixed effects correlate with domestic explanatory variables, suggesting that the risk of neglecting other external forces is reduced. Beyond these factors, the residual provides a negligible average contribution to inflation during the post-global financial crisis period. These findings corroborate

²⁵Breaking up the contribution of the external price pressure variable into its subcomponents reveals that the contribution of the import-weighted nominal effective exchange rate—which in principle could also reflect domestic developments—is small, hovering around zero with the exception of the global financial crisis subperiod, when it reached 0.15 percentage point. The other two subcomponents, the import-weighted foreign PPI inflation and the percent change in the GDP deflator, present larger contributions ranging between 0 and 0.17 percentage point and -0.12 and -0.25 percentage point, respectively.

Figure 7. Common Driver of Core Inflation (percentage points)



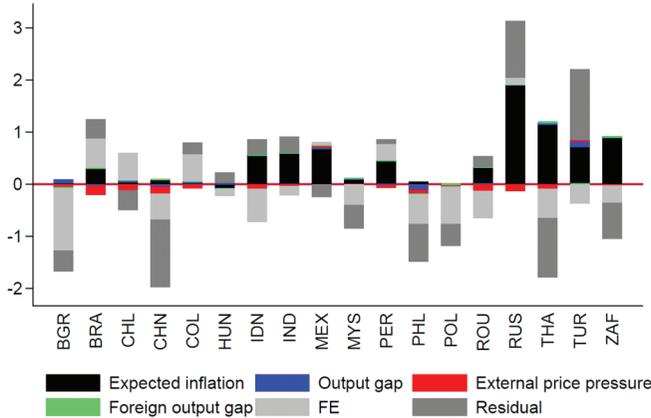
Source: Authors' calculations.

Note: Time fixed effects are based on a panel regression that excludes external variables. Residuals are from a regression of these time fixed effects on country averages of the domestic determinants of core inflation. Predicted values are displayed in terms of deviation from the mean over the sample period.

the earlier results on the comparatively limited average impact of global factors in driving inflation in emerging markets. Overall, the results of this section point to the centrality of fluctuations in long-term inflation expectations in driving inflation in emerging countries, which are interpreted to be of domestic origin.

Examining the contributions at the country level reveals that although changes in long-term inflation expectations are the main overall contributor to the deviations of actual inflation from target, there is noticeable cross-country heterogeneity. As shown in Figure 8, countries such as Chile and Poland, for example, show small contributions of inflation expectations from the target, consistent with the maturity of their monetary frameworks. On the other hand, in Russia and Thailand deviations of inflation expectations from target were large. Overall, the average inflationary impact of expectations is sizable for only half of the economies in the sample. In contrast, external price developments exerted downward pressure on domestic prices for three-fourths of the economies in the sample, even though the magnitude of this contribution is small. The impact of cyclical factors is by construction limited, when averaged over 2004–18.

Figure 8. Contributions to Deviations of Core Inflation from Target, by Country (percentage points)



Source: Authors' calculations.

Note: The bars represent the average contribution of each factor averaged across periods.

3.3 Contributions to Inflation Variation

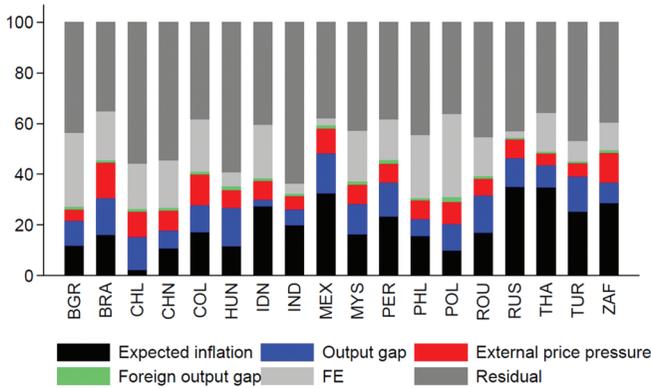
To assess what factors contributed to the variation of inflation deviations from target, we perform an alternative decomposition. In the spirit of a variance decomposition exercise, we calculate the contribution for each x variable of the N vector as

$$C_i^{var,x} = \frac{\frac{1}{T} \sum_t |C_{i,t}^x|}{\sum_N \frac{1}{T} \sum_t |C_{i,t}^n|}, \tag{7}$$

where the contribution of inflation expectations, C^{var,π^e} , is expressed in terms of deviations from the target. In words, the expression in Equation (7) calculates the ratio of the average absolute value of the contribution of each variable to the sum of the same average absolute value of the contributions of all variables.

Figure 9 presents the normalized contributions. The results confirm the importance of fluctuations in long-term inflation expectations around the inflation target. Inflation expectations are the

Figure 9. Normalized Contributions to Deviations of Core Inflation from Target, by Country (percent of total contributions)



Source: Authors' calculations.

Note: The bars represent the average of the absolute values of the country-specific contributions over the period 2004:Q1–2018:Q1, as a percent of the overall deviation of core inflation from the target.

largest contributing explanatory factor for four-fifths of the sample countries, explaining, on average, 20 percent of the variation in inflation. Similar to the evidence in Figure 8, there is substantial heterogeneity across countries, with the share attributable to inflation expectations ranging from 2 percent to 35 percent. One should note that a low average contribution for a given factor over the entire sample does not mean it does not play an important role in driving inflation dynamics over the short term. For instance, Figure 9 shows that the share of inflation variation explained by inflation expectations was sizable in Colombia despite the very small average contribution reported in Figure 8, indicating that the contribution of fluctuations of inflation expectations around the target were relatively large but tended to cancel out along the sample. With respect to the other variables, the results confirm that external price movements played a more limited role for variability in inflation rates, on average explaining 8 percent of inflation deviations, and that the contribution of the foreign output gap is negligible in all decomposition results.

To establish the relative importance of domestic and foreign factors in determining inflation dynamics, we group the contributions into two subsets S^n with $n = [1, 2]$:

$$C_i^{var, S^n} = \frac{\sum_{x \in S^n} \frac{1}{T} \sum_t |C_{i,t}^x|}{\sum_{x \in [S^1 \wedge S^2]} \frac{1}{T} \sum_t |C_{i,t}^x|}, \quad (8)$$

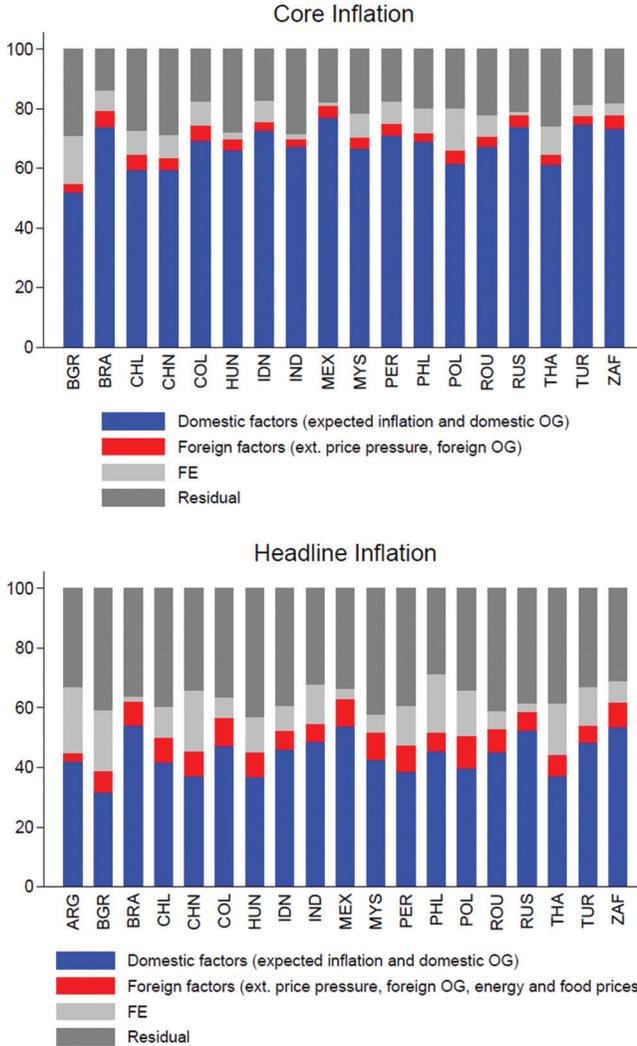
where S^1 denotes a first subset consisting of domestic factors (inflation expectations and the output gap) and S^2 a second subset consisting of foreign factors (foreign output gap, external price pressure, and commodity price inflation). The contribution of inflation expectations here is *not* expressed in terms of deviations from the target.

Applying this definition of global factors, the results shown in Figure 10 confirm that domestic contributions to inflation variation are much larger than foreign contributions, for both core inflation and headline inflation. Domestic contributions explain between 52 percent and 77 percent of core inflation dynamics and between 32 percent and 55 percent of headline inflation dynamics. The proportion of inflation dynamics explained by foreign factors is much smaller, ranging between 3 percent and 5 percent for core inflation and 3 percent and 11 percent for headline inflation.

3.4 Robustness Exercises

The analysis in this paper is subject to some limitations. First, some variables categorized as domestic (foreign) could in reality contain foreign (domestic) elements; also, the results are subject to sizable uncertainty since 45 percent of the variation in inflation remains unexplained. Second, as in many other empirical exercises involving a Phillips-curve estimation, the estimates can be affected by endogeneity arising from omitted variables. Third, three-years-ahead inflation expectations might not be representative of long-term inflation expectations. In this section, we present the results of a series of robustness tests that provide some evidence to limit the concerns about these issues.

Figure 10. Normalized Contributions of Domestic and Global Factors to Inflation Dynamics, by Country (percent of total contributions)



Source: Authors' calculations.

Note: The bars represent the average of the absolute values of the country-specific contributions (accounting for persistence of inflation) over the period 2004:Q1–2018:Q1, as a percent of the sum of all contributions.

3.4.1 *Global Factors*

The baseline specification in Equation (1) includes a vector of external variables, so that the coefficient on inflation expectations already abstracts from any change in external factors. Still, one concern is that the evolution of inflation expectations may be capturing global developments that are common across countries. If one were to make the extreme assumption that all the residual is due to uncaptured foreign factors, the average contribution of foreign factors to inflation variation would be 26 percent for core inflation and 44 percent for headline inflation, still less than or comparable to the average contribution of domestic factors (68 percent for core inflation and 44 percent for headline inflation).

In the alternative specifications of columns 1 and 2 of Table 3, the vector of external variables is replaced with time fixed effects as catch-all variables for foreign factors. In this case, the average contribution of foreign factors to inflation would be 11 percent for both core and headline inflation. Time fixed effects, however, do not capture idiosyncratic movements in external price pressures, given that such pressures can vary by country. Therefore, in columns 3 and 4 of Table 3, we add back the external price pressure variable to the specification that includes time fixed effects.²⁶ The results confirm that external price pressures remain significant despite the inclusion of time fixed effects, and that the average contribution of foreign factors to inflation variation would be 17 percent for core inflation and 14 percent for headline inflation.

Finally, drawing on Choi et al. (2018), in the regression for headline inflation, we interact energy and food price inflation with the weight of these items in CPI baskets. The results in column 5 of Table 3 show that the coefficient for food price inflation remains significant and becomes larger in magnitude, consistent with the large weight of food in the CPI baskets of the 19 sample countries, which averages 32.9 percent. The coefficient for energy inflation, however, is still insignificant, in line with its smaller weight in the CPI basket, which averages 9.6 percent. The results for other variables are virtually unchanged.

²⁶The foreign output gap is not included in these specifications because it turns out to be insignificant in the baseline specifications.

Table 3. Hybrid Phillips-Curve Estimation, Alternative Specifications

	Core Inflation (1)	Headline Inflation (2)	Core Inflation (3)	Headline Inflation (4)	Headline Inflation (5)
	With Time Fixed Effects	With Weighted Commodity Inflation			
Inflation Expectations	0.832*** (0.111)	0.327*** (0.082)	0.862*** (0.104)	0.353*** (0.080)	0.354*** (0.102)
Three Years Ahead	0.444***	0.488***	0.435***	0.490***	0.417***
Lag of Core/Headline Inflation	(0.039)	(0.036)	(0.040)	(0.033)	(0.045)
Output Gap	0.172*** (0.049)	0.230*** (0.059)	0.138*** (0.041)	0.225*** (0.065)	0.167*** (0.081)
Lag of External Price Pressure			0.016*** (0.003)	0.018*** (0.005)	0.006 (0.008)
Foreign Output Gap					0.158** (0.076)
Lag of Food Price Inflation					0.045*** (0.013)
Lag of Energy Price Inflation					0.016 (0.018)
Countries	18	19	18	19	19
Observations	634	669	634	669	668
R-squared	0.561	0.494	0.568	0.498	0.445

Source: Authors' calculations.

Note: The table presents median regression results, for which the pseudo R-squared is reported. All specifications include country fixed effects. Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

3.4.2 Extensions

As discussed in Section 2.2, the past few decades witnessed a trade integration process that led many emerging markets to participate more in GVCs. Deeper integration should be reflected in stronger competition from abroad, possibly affecting inflation dynamics. To capture the role of stronger trade integration that is not yet reflected in the external price pressure variable, the baseline specification is extended to include trade openness and participation in GVCs, as well as their interactions with external variables:

$$\begin{aligned} \pi_{i,t} = & \gamma^b \pi_{i,t-1} + \gamma^f \pi_{i,t}^e + \beta Y_{i,t}^{gap} + \theta Z_{i,t}^* \\ & + \varphi T_{i,t} Z_{i,t}^* + \psi T_{i,t} + \eta_i + \epsilon_{i,t} \end{aligned} \quad (9)$$

in which $T_{i,t}$ is a measure of trade openness or participation in GVCs. The results in Table 4 suggest there is no significant evidence that deeper trade integration has a significant effect on domestic inflation. As shown in columns 1, 3, and 4, if anything, the coefficients on trade openness and GVC participation are positive when they are significant, but they are relatively small, and the results are not consistent across inflation measures. The interaction term between trade openness and foreign output gap in the specification for headline inflation is significant in column 2, suggesting that movements in foreign cyclical conditions have an impact on inflation when the economy is more open, although the magnitude of the effect is small.

Since China joined the World Trade Organization in 2001, China quickly increased its share in global trade owing to relatively lower export prices and became an important trading partner for many emerging markets in the sample, possibly affecting their inflation dynamics. The analysis explores the role of price pressure from China by decomposing the external price pressure variable into its Chinese component and the non-Chinese component. The results in columns 5 and 6 indicate that external price pressure from China does not have any significant impact on core or headline inflation dynamics, while non-Chinese external price pressures remain a significant determinant in the specification for core inflation, consistent with the results of the baseline specification.

Table 4. Hybrid Phillips-Curve Estimation, Extensions

	Core Inflation (1)	Headline Inflation (2)	Core Inflation (3)	Headline Inflation (4)	Core Inflation (5)	Headline Inflation (6)
	Interaction: Trade Openness	Interaction: Trade Openness	Interaction: GVC Participation	Interaction: GVC Participation	Interaction: China's External Price Pressure	Interaction: China's External Price Pressure
Inflation Expectations	0.643*** (0.100)	0.406*** (0.107)	0.632*** (0.096)	0.378*** (0.121)	0.551*** (0.096)	0.399*** (0.104)
Three Years Ahead	0.479*** (0.031)	0.422*** (0.047)	0.479*** (0.032)	0.427*** (0.049)	0.502*** (0.030)	0.426*** (0.046)
Lag of Core/Headline Inflation	0.154*** (0.044)	0.223*** (0.073)	0.173*** (0.040)	0.194** (0.085)	0.163*** (0.037)	0.206*** (0.079)
Output Gap	0.009 (0.008)	0.011 (0.016)	-0.001 (0.014)	0.029 (0.036)		
Lag of External Price Pressure	-0.047 (0.106)	-0.195 (0.139)	0.038 (0.160)	-0.141 (0.290)	0.019 (0.040)	0.082 (0.095)
Foreign Output Gap		0.014 (0.009)		0.020 (0.017)		0.012*** (0.004)
Lag of Food Price Inflation		-0.002 (0.004)		-0.008 (0.008)		0.000 (0.002)
Lag of Energy Price Inflation		0.026 (0.020)				
Trade Openness	0.015* (0.008)	-0.000 (0.001)				
Trade Openness * Lag of External Price Pressure	0.000 (0.000)	0.007** (0.003)				
Trade Openness * Foreign Output Gap						

(continued)

Table 4. (Continued)

	Core Inflation (1)	Headline Inflation (2)	Core Inflation (3)	Headline Inflation (4)	Core Inflation (5)	Headline Inflation (6)
	Interaction: Trade Openness	Interaction: Trade Openness	Interaction: GVC Participation	Interaction: GVC Participation	Interaction: China's External Price Pressure	Interaction: China's External Price Pressure
Trade Openness * Lag of Food Price Inflation		-0.000 (0.000)				
Trade Openness * Lag of Energy Price Inflation		0.000 (0.000)				
GVC Participation			0.060** (0.030)	-0.033 (0.065)		
GVC Participation * Lag of External Price Pressure			0.000 (0.000)	-0.000 (0.001)		
GVC Participation * Foreign Output Gap			-0.001 (0.003)	0.004 (0.006)		
GVC Participation * Lag of Food Price Inflation				-0.000 (0.000)		
GVC Participation * Lag of Energy Price Inflation				0.000 (0.000)		
External Price Pressure Excl. China					0.018*** (0.003)	0.007 (0.007)
External Price Pressure from China					-0.004 (0.004)	-0.002 (0.009)
Countries	18	19	18	19	18	19
Observations	624	659	633	668	627	662
R-squared	0.524	0.453	0.526	0.446	0.523	0.446

Source: Authors' calculations.

Note: The table presents median regression results, for which the pseudo R -squared is reported. All specifications include country fixed effects. Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

3.4.3 *Inflation Expectation Horizons*

Inflation expectations in the baseline specification correspond to three-year-ahead inflation forecasts, a sufficiently long horizon to capture beliefs about inflation in the long term rather than the effect of transitory shocks and the response of monetary policy. However, to ensure that the results are not dependent on the selection of this specific horizon, we perform a series of robustness tests using inflation expectations of up to seven years ahead. The results in Table 5 for core inflation are robust to the change of the horizon for inflation expectations, with the magnitude of the coefficient decreasing only marginally as the horizon gets larger (the coefficient on expected inflation for horizons three to seven years ahead ranges from 0.56 to 0.64).²⁷ In the case of headline inflation, inflation expectations become insignificant for horizons of six years ahead and beyond, reflecting the higher volatility of headline inflation compared with core inflation.

4. Conclusions

Following a period of disinflation during the 1990s and early 2000s, inflation in emerging markets has remained remarkably low and stable despite large swings in commodity prices, the global financial crisis, and periods of strong and sustained U.S. dollar appreciation. A key question is whether this improved inflation performance is sustainable, or if instead it reflects a temporary constellation of global factors that put downward pressure on inflation. The literature on the role of global factors in driving domestic inflation focuses on advanced economies and presents mixed results.

This paper studies the role of domestic and global factors in driving inflation dynamics in emerging markets. We estimate a New Keynesian Phillips-curve model for core and headline inflation using data for 19 large emerging markets over 2004–18. Following recent contributions in the literature (Borio and Filardo 2007; Ihrig et al.

²⁷One potential concern with the Phillips-curve specification is reverse causality from current inflation to inflation expectations, especially at shorter horizons. The decrease in estimated coefficients as the horizon lengthens is consistent with this concern. But the small magnitude of the differences suggests the effect is limited in economic terms.

Table 5. Hybrid Phillips-Curve Estimation, Varying Inflation Expectation Horizon

	Core Inflation				Headline Inflation			
	Four-Year Ahead Infl. Exp. (1)	Five-Year Ahead Infl. Exp. (2)	Six-Year Ahead Infl. Exp. (3)	Seven-Year Ahead Infl. Exp. (4)	Four-Year Ahead Infl. Exp. (5)	Five-Year Ahead Infl. Exp. (6)	Six-Year Ahead Infl. Exp. (7)	Seven-Year Ahead Infl. Exp. (8)
Inflation Expectations	0.637*** (0.125)	0.614*** (0.130)	0.585*** (0.131)	0.560*** (0.155)	0.397** (0.158)	0.448* (0.245)	0.256 (0.262)	-0.066 (0.247)
<i>n</i> Years Ahead	0.502*** (0.037)	0.524*** (0.037)	0.548*** (0.037)	0.549*** (0.036)	0.459*** (0.047)	0.461*** (0.044)	0.502*** (0.048)	0.537*** (0.040)
Lag of Core/Headline Inflation	0.138*** (0.036)	0.136*** (0.040)	0.144*** (0.038)	0.168*** (0.041)	0.164* (0.088)	0.152** (0.077)	0.179** (0.081)	0.172** (0.081)
Output Gap	0.021*** (0.003)	0.018*** (0.003)	0.020*** (0.004)	0.020*** (0.003)	0.008 (0.009)	0.004 (0.008)	0.008 (0.009)	0.003 (0.008)
Lag of External Price Pressure	0.050 (0.047)	0.042 (0.051)	0.057 (0.048)	0.002 (0.050)	0.080 (0.098)	0.119 (0.077)	0.034 (0.088)	0.051 (0.101)
Foreign Output Gap					0.013*** (0.004)	0.013*** (0.004)	0.013*** (0.005)	0.013*** (0.005)
Lag of Food Price Inflation					0.000 (0.002)	0.000 (0.002)	-0.000 (0.002)	-0.000 (0.002)
Lag of Energy Price Inflation								
Countries	18	18	18	18	19	19	19	19
Observations	577	603	576	576	612	638	611	610
R-squared	0.514	0.519	0.513	0.511	0.446	0.439	0.442	0.443

Source: Authors' calculations.
 Note: The table presents median regression results, for which the pseudo R-squared is reported. All specifications include country fixed effects. Robust standard errors are in parentheses. ****p* < 0.01, ***p* < 0.05, **p* < 0.1.

2010; and Auer, Borio, and Filardo 2017), we augment the model with variables capturing foreign macro developments, including the import-weighted output gap and producer price inflation of trading partners.

We find that domestic factors accounted for the lion's share of inflation dynamics in emerging markets, in line with the findings of Ha, Kose, and Ohnsorge (2019). Fluctuations in long-term inflation expectations, linked to domestic developments, were the main driver of average deviations of inflation from target and inflation variability. The contribution of global variables is not always statistically significant and, in any case, substantially smaller than the one from domestic factors in economic terms. To address potential endogeneity concerns, we implement a battery of robustness tests that confirm the marginal impact of global factors compared with that of domestic factors, and that inflation expectations reflect the evolution of domestic variables rather than global developments.

Our findings have important implications for monetary policy in emerging markets. The results show that the gains in inflation performance since the mid-2000s are largely attributable to domestic factors, which could capture improved policy frameworks and gains in credibility. One implication, suggested by these findings, is that although emerging markets are increasingly integrated with the global economy, domestic policies, through their impact on inflation expectations, continue to hold significant leverage over domestic inflation outcomes.

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