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Oil prices and inflation dynamics: Evidence from advanced and developing economies [☆]

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ABSTRACT

We study the impact of fluctuations in global oil prices on domestic inflation using an unbalanced panel of 72 advanced and developing economies over the period from 1970 to 2015. We find that a 10% increase in global oil inflation increases, on average, domestic inflation by about 0.4 percentage points on impact, with the effect vanishing after two years and being similar between advanced and developing economies. We also find that the effect is asymmetric, with positive oil price shocks having a larger effect than negative ones. The impact of oil price shocks, however, has declined over time due in large part to a more credible monetary policy and less reliance on energy imports. We further examine the transmission channels of oil price shocks on domestic inflation during the recent decades, by making use of a monthly dataset from 2000 to 2015. The results suggest that the share of transport in the CPI basket and energy subsidies are the most robust factors in explaining cross-country variations in the effects of oil price shocks during the period.

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1. Introduction

How large is the effect of oil price shocks on domestic inflation? Which structural factors or policy frameworks govern the size of inflationary effect of oil price shocks? These questions have drawn a lot of new attention since the recent experience of oil price swings. Despite its relevance for both academics and policymakers, only limited effort has been made to answer these questions in a systematic way. Moreover, mainly due to the data availability, most of prior research focused on advanced economies, leaving out potential heterogeneity between advanced and emerging/developing economies.¹ We fill in the gap in the literature by providing a systematic analysis of the effect of global oil price shocks on domestic inflation

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¹ In the remainder of the paper, we refer to 'emerging market and developing economies' simply as 'developing economies'.

covering both advanced and developing economies for a sufficiently long time. Moreover, we examine the potential structural factors or policy frameworks that explain the cross-country and over-time differences in their effect.

Fig. 1 shows fluctuations in real global oil prices from January 1970 to June 2017. The 1970s can be characterized by two oil crises that resulted in high inflation around the world.² Later then, there was a downward trend in oil prices in the 1980s that coincided with the beginning of the Great Moderation. A temporary spike in oil prices in the 1990s is due to the Persian Gulf crises. In the 2000s, however, oil prices steadily rose with a sharp spike in 2008, followed by an even larger decline in 2009 and a rebound thereafter. Elevated volatility in these developments has raised concerns that oil prices could again spill over into higher overall inflation. In the fourth quarter of 2014, however, global oil prices fell sharply again, and remained low since then, raising deflationary pressures on headline inflation in most economies. Given the unprecedented volatility in global oil prices since 2000, we pay special attention to this period with the availability of higher frequency data of disaggregated consumer price index (CPI).

Against this context, this paper carries out an empirical exploration of the following questions:

- What role have global oil price movements played in shaping domestic inflation since the 1970s?
- Has the impact of the global oil price shocks changed over time? If so, which factors have accounted for this change?
- Did the impact of the oil price shocks differ across advanced and emerging and developing economies and which factors explain cross-countries differences?

Our main results can be summarized as follows:

- A 10% increase in global oil inflation increases, on average, domestic inflation by about 0.4 percentage points at impact. The effect is short-lasting—vanishing two years after the shock—, similar between advanced and developing economies and tends to be larger for positive oil price shocks than for negative ones.
- The impact of oil price shocks on domestic inflation has declined over time due in large part to a more credible monetary policy and less reliance on energy imports.
- Over the last 15 years, the effect of oil price shocks on headline inflation has been similar, on average, between advanced and developing economies. At the same time, there is a large heterogeneity in the magnitude of pass-through within each country groups, with the share of transport in the CPI basket and energy subsidies being the most robust factors explaining this heterogeneity.

The rest of the paper is organized as follows. Section 2 reviews the related literature. Section 3 provides a brief description of the two datasets use in the analysis. Section 4 provides evidence from annual data on the average impact of changes in global oil prices on inflation and how the impact has changed over time.³ Section 5 studies cross-countries differences in the effect oil price shocks using monthly data. Section 6 concludes.

2. Related literature

This section does not aim to provide a thorough literature review on studies that assess the impact of oil price shocks on inflation; rather it summarizes previous work that focuses on assessing the impact of oil price shocks on inflation using international data. Although a large body of literature has analyzed structural factors explaining the magnitude of effects of oil price shocks on inflation, the results are mixed.

By estimating augmented Phillips curves on quarterly data from the US, UK, France, Germany, and Japan on the period 1980Q1–2001Q4, LeBlanc and Chinn (2004) find that a 10% increase in oil price leads to direct inflationary increases of about 0.1–0.8 percentage points in these countries and there is no significant difference in the pass-through between U.S. and the E. U. By extending this framework to 19 advanced economies, Chen (2009) finds that a 10% increase in oil prices increases the overall price level by approximately 0.05% points after one-quarter. He concludes that the effect has declined over time, and attributes this decline to improvements in the conduct of monetary policy and higher trade openness.

De Gregorio et al. (2007) also provide evidence of a decreased pass-through from oil prices to domestic inflation from estimating augmented Phillips curves using data from both advanced and developing economies. They find that the decline in the pass-through is more pronounced in advanced economies and attribute this decline to a reduction in oil intensity and the degree of exchange rate pass-through. Habermeier et al. (2009) estimate the panel data of 50 countries for the period 2007–08 and find that the role of monetary policy is important in determining the size of pass-through of food and oil price shocks. They find that a country with greater central bank independence and inflation targeting regime tends to have lower pass-through. On the other hand, Álvarez et al. (2011) find that the direct effects of oil price increases on inflation have increased over time in the Euro area due to the higher expenditure share of households on refined oil products, whereas their indirect and second-round effects have decreased.

² Because real oil prices were fairly constant up to the early 1970s, we begin our analysis from 1970. We obtain real oil prices by adjusting West Texas Intermediate Crude Oil Prices by the U.S. CPI.

³ For an earlier empirical exploration of this kind, see Loungani and Swagel (2001).

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