The Inflation Consequences of Political Intervention in Monetary Policy*

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Abstract

I study the impact of political intervention in monetary policy on inflation. I examine episodes of political pressure on central banks in emerging markets and find that market inflation expectations increase following political pressure events. I model the game between a government and a central bank in a New Keynesian economy where the government can intervene and take control of monetary policy. I show the central bank may set inflation above its target to prevent government intervention. The quantitative model finds the threat of government intervention in monetary policy can explain half of the observed increase in inflation above the central bank's target.

Keywords: Monetary policy, inflation, central bank independence, political pressure

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1. Introduction

Emerging markets suffer from high and volatile inflation relative to developed economies. Despite the increased independence of central banks and adoption of inflation targeting over recent decades, emerging markets also have inflation further above central bank targets than developed economies (Fraga, Goldfajn and Minella, 2003). There may be many reasons for this, such as greater exposure to shocks and international influences, financial market imperfections, and domestic macroeconomic and political instability (Frankel, 2010).

I argue the political economy of monetary policy can explain high inflation in emerging markets. While many emerging market central banks set monetary policy independent from direct government control, they nonetheless operate under the possibility of political decisions seeking more accomodative policy.[1] This threat of political intervention may lead the central bank to incorporate the government's preferences when setting policy, thereby increasing inflation. Further, the potential for future political intervention raises current inflation via private sector inflation expectations.

I model this strategic interaction between the central bank and government, where the government can intervene and take control of monetary policy. I show the central bank may set inflation above its target to prevent government intervention in monetary policy. I then examine episodes of political pressure on central banks in emerging markets. I find that market inflation expectations increase following political pressure events, as the private sector anticipates potentially looser monetary policy in the future. I use these empirical results in a quantitative model to estimate the impact of political intervention on inflation. I find that the threat of government intervention in monetary policy can explain over half of the observed increase in inflation above the central bank's target.

The first part of the paper sets out a model of a dynamic game between a government and a central bank, where private sector households and firms form inflation expectations incorporating this strategic interaction. I extend the canonical New Keynesian economy with a central bank setting monetary policy (for example, Clarida, Galí and Gertler, 1999;

[1]For example, future appointments of the Governor and board members of the central bank.

Galí, 2015) to incorporate the government deciding whether to intervene and take control of monetary policy decision making, which incurs a fixed cost of intervention. The central bank aims to set inflation at its target, whereas the government also puts weight on a positive output gap,[2] and so the government prefers higher inflation in order to increse output. Both the central bank and goverment are assumed to operate under discretion, choosing monetary policy (and for the government, whether to intervene) each period, taking as given private sector inflation expectations. I show that depending on the cost of intervention to the government, the central bank may increase inflation above its target to prevent the government from intervening and setting even higher inflation.

The model rationalizes inflation in emerging markets above official targets as the result of optimal monetary policy by the central bank under political pressure. By setting inflation above its ideal level, the central bank retains control over monetary policy. Private sector inflation expectations increase given the potential for government intervention. For the government, the threat of intervention raises the output gap closer to its desired level.

The second part of the paper uses daily data on government bond prices to estimate changes in market inflation expectations to political pressure on central banks. I focus on episodes over 2016-2018 for three emerging markets Argentina, Colombia, and Turkey, where governments publicly advocated for looser monetary policy by their central bank. I use public statements by the President on monetary policy and interest rates from media reports as political pressure events. I find that market inflation expectations increase following these political pressure dates using local projections estimation.[3] This supports the model finding that the private sector anticipates potential government intervention leading to looser monetary policy and higher inflation.

A challenge in mapping the empirical results to the quantitative model is measuring the intensity of political pressure. To estimate the magnitude of a political intervention, I use the change in the exchange rate on event dates. I show that political pressure events indeed lead to a depreciation of the exchange rate – consistent with expected lower domestic

[2]Equivalent to a lower level of unemployment, as in Barro and Gordon (1983).

[3]The estimation results include a large set of controls and lags, hold with similar results for each country individually, and are robust to alternative specifications.

interest rates. I then use the change in the exchange rate on impact as an instrument for the political pressure event. I find that inflation expectations increase by 13 per cent – equivalent to 1.6 percentage points for the sample average inflation expectations of 12 per cent – following each political pressure event. I also estimate the elasticity of the change in inflation expectations to the change in the exchange rate ranges between 2.1 and 3.6.

In the final part of the paper, I use this empirical evidence to estimate the impact of potential political intervention in monetary policy on inflation. In the quantitative model for a small-open economy, building on Galí and Monacelli (2005), the cost of intervention for the government follows an exogenous process.[4] I use the empirical estimates of the change in inflation expectations and the elasticity to the change in the exchange rate to calibrate the stochastic intervention cost parameters. In particular, a fall in the cost of intervention leads inflation expectations to increase as the central bank partially accomodates the government's preference for higher inflation and a positive output gap. I show that the calibrated model can match the dynamics of realized inflation and inflation expectations in the data. I then examine the impact of the threat of government intervention on inflation and find that, relative to the counterfactual where the government cannot intervene in monetary policy, under political pressure the level of inflation doubles. This higher inflation due to potential political intervention explains more than half of the increase in inflation above the central bank target seen in the data.

Understanding this strategic interaction between the central bank and government sheds light on the influence of the institutional framework for monetary policy on macroeconomic outcomes. In addition, forward-looking private sector inflation expectations incorporate this which, in turn, increases current inflation. Insulating central bank independence itself from the political process is therefore crucial to macroeconomic stability.

Related Literature This paper is related to theoretical and empirical literature on central bank independence in monetary policy and strategic interaction with the government.

The essential role of an independent central bank in monetary policy follows the seminal

[4] Similar to the stochastic endowment in early quantitative sovereign default models for emerging markets (Arellano, 2008; Aguiar and Gopinath, 2006).

works of Kydland and Prescott (1977) and Barro and Gordon (1983) emphasizing the key channel of inflation expectations, and Rogoff (1985) on the role of an inflation-averse central bank in reducing inflation. This paper more directly builds on game-theoretic contributions on the interactions of monetary and fiscal authorities, and implications for inflation (Dixit and Lambertini, 2003; Adam and Billi, 2008).[5]

The theoretical starting point of the paper is optimal monetary policy in a New Keynesian economy (Clarida *et al.*, 1999).[6] Given the focus of the analysis on political interventions in emerging markets and the important role of the exchange rate in the empirics, the quantitative model extends the small-open economy New Keynesian model of Galí and Monacelli (2005). I incorporate a dynamic game of the control of monetary policy decision making between the central bank and government with different preferences to examine the implications for inflation.[7] In a related paper, Halac and Yared (2021) study optimal monetary policy when the central bank has exogenous changes in political pressure – modeled by shocks to the preference weight on output (following Mishkin and Westelius, 2008) – which is private information. I instead examine the role of public information from Presidential statements on monetary policy on inflation expectations, with exogenous shocks to the utility of the government intervening and taking control of monetary policy decision making.

There is a substantial empirical literature on measures of central bank independence and inflation outcomes, with early contributions by Bade and Parkin (1982), Alesina (1988), Grilli, Masciandaro and Tabellini (1991), and Alesina and Summers (1993). Cukierman (1992) was the first to investigate a large number of emerging markets, with this and subsequent work (for example, Cukierman, Web and Neyapti, 1992; Acemoglu, Johnson, Querubín and Robinson, 2008) generally concluding that greater central bank independence is associated with lower inflation.[8] In addition, Mishkin (2000) and Fraga *et al.* (2003) find the

[5]Earlier work on monetary and fiscal policy interactions include Sargent and Wallace (1981), Leeper (1991), Sims (1994), and Cochrane (2001). See Bassetto and Sargent (2020) for a recent review.

[6]For example, Atkeson, Chari and Kehoe (2010) similarly use a New Keynesian economy to examine monetary policy and the implementation of a desired competitive equilibrium; Halac and Yared (2022) do so to examine central bank monetary policy rules based on instruments versus targets.

[7]By contrast, Gnocchi (2013) and Camous and Matveev (2022) examine strategic interactions where monetary policy can commit to future actions, but fiscal policy cannot.

[8]See Frankel (2010) for more examples of the literature for emerging markets.

adoption of inflation targeting by central banks in emerging markets reduces inflation.

Several recent empirical papers have also examined political intervention on central banks and monetary policy.[9] For the United States, Bianchi, Gómez-Cram, Kind and Kung (2023) use a high-frequency approach by exploiting changes in fed funds futures around President Trump's tweets that criticize the Federal Reserve.[10] My approach adds analysis for emerging markets – where threats to central bank independence are greater – and, ideally, I would similarly use changes in policy rate futures in a short-time window.[11] However, for emerging markets such futures contracts and precise intra-day timing of political statements are not available. Instead, I calculate inflation expectations from daily government bond price data, and political pressure events from Presidential statements on monetary policy in news reports. Binder (2021) constructs quarterly measures of political pressure on central banks for a large set of countries using textual analysis from country analyst reports and finds that political pressure is associated with higher inflation. My paper instead uses daily data and examines the short-time horizon response of market inflation expectations.

Finally, a significant contribution of my paper is combining theoretical results on the threat of government intervention in monetary policy using the empirical moments from political pressure on inflation expectations. Examples of other quantitative models of changing policy regimes include: monetary financing of the government budget (Sargent, Williams and Zha, 2009), how government debt is stabilized (Bianchi and Melosi, 2017), and whether the monetary policymaker can or cannot commit (King and Lu, 2021). Morelli and Moretti (2022) also examine Argentina, for an earlier period than this paper, and use market inflation expectations to estimate the effect of a government's reputation on its borrowing costs.

The rest of the paper is organized as follows. Section 2 presents the model and theoretical

[9]The related literature on political business cycles examines the relationship between electoral timing and macroeconomic variables (see Nordhaus, 1975; Alesina and Roubini, 1992, for early examples).

[10]Bianchi *et al.* (2023) find these political statements lower the expected fed funds rate and increase market inflation expectations, albeit by relatively small magnitudes. The largest estimated effect is a 0.02 percentage points decrease in the federal funds rate, equivalent to an 8.6 per cent increase in the probability of a 0.25 percentage point federal funds rate decrease.

[11]As in the literature identifying monetary policy shocks using high-frequency data, e.g. Kuttner (2001), Cochrane and Piazzesi (2002), Faust, Swanson and Wright (2004), Gürkaynak, Sack and Swanson (2007), Gertler and Karadi (2015), and Nakamura and Steinsson (2018).

results. Section 3 presents the empirical analysis. Section 4 provides the quantitiative results on government intervention in monetary policy and inflation. Section 5 concludes.

2. Theoretical Framework of Government Intervention in Monetary Policy

This section outlines a deterministic closed economy model to explain the mechanism and motivate the empirical analysis in Section 3. Section 4 extends this to the stochastic open economy model used in the quantitative analysis.

The economy follows the canonical New Keynesian (NK) model (Clarida *et al.*, 1999; Galí, 2015), comprising the private sector (households and firms), the central bank, and government. Monetary policy faces a trade-off between closing the output gap $\widetilde{y}_t$ and stabilizing inflation π_t given by the log-linearized NK Phillips curve:

$$\pi_t = \kappa \widetilde{y}_t + \beta \mathbb{E}_t \pi_{t+1} \tag{1}$$

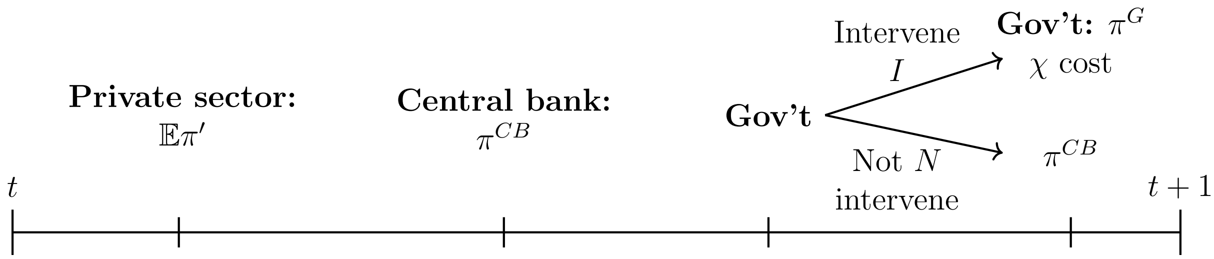
where $\kappa > 0$ is the slope of the NK Phillips curve, $\beta \in (0, 1)$ is the household discount factor, $\mathbb{E}_t \pi_{t+1}$ are the private sector's expectations of inflation next period. Appendix A1 provides the detail on the NK model household and firms' problems which give rise to (1).[12] I focus on the central bank and government decision problems, and private sector inflation expectations $\mathbb{E}_t \pi_{t+1}$.

2.1. Timing

Figure 1 shows the sequence of events within a period. First, the private sector form their inflation expectations $\mathbb{E}\pi'$ for inflation in the next period. The central bank and government both operate under discretion, taking $\mathbb{E}\pi'$ as given. The central bank then sets its monetary

[12] The only shocks in this deterministic model are to productivity. As shown in Galí (2015), these do not enter the optimal monetary policy problem of choosing $(\pi_t, \widetilde{y}_t)$ so can be abstracted from here. Productivity affects the natural rate of interest and, therefore, the policy interest rate given by the IS curve in order to implement $(\pi_t, \widetilde{y}_t)$.

Figure 1: Timing Within Period



policy π^{CB} for the current period. The government can either intervene (I) and choose its own monetary policy π^G, or not intervene (N) and accept the central bank policy π^{CB}.[13] [14] If the government chooses I it incurs a constant utility cost of intervention χ, and the government chooses inflation in each subsequent period.[15] χ may reflect a decrease in aggregate productivity or higher cost of government borrowing as a result of the loss of institutional credibility, or for negative values of χ a political benefit to the government from acting to increase output. Given $\mathbb{E}\pi'$ and the realization of inflation, the output gap is determined by the NK Phillips curve (1). We proceed backwards examining the government and central bank problem.

2.2. Government problem

The government problem between whether to intervene I ($\iota = 1$) or not N ($\iota = 0$) is:

$$V^G(\chi, \mathbb{E}\pi', \pi^{CB}) = \max_{\iota \in \{0,1\}} \iota(V^I(\mathbb{E}\pi') - \chi) + (1 - \iota)V^N(\mathbb{E}\pi', \pi^{CB}) \tag{2}$$

where $V^I(\mathbb{E}\pi')$ is the value to the government if it chooses I which incurs the cost χ, and $V^N(\mathbb{E}\pi', \pi^{CB})$ is the value from N given the central bank monetary policy π^{CB}.[16] The

[13] The government intervening and choosing π^G can be thought of as the government directing the monetary policy implemented by the central bank or installing a central bank governor it controls.

[14] I assume the central bank cannot change its announced monetary policy π^{CB} for the current period if the government chooses N. If the central bank were able to deviate after, the government would anticipate the central bank setting inflation at its target level. In this case the central bank announcement π^{CB} cannot influence the government decision between I and N, which contradicts the empirical evidence on inflation expectations and government pressure on central banks in Section 3.

[15] In the quantitative model both of these assumptions will be relaxed: χ is stochastic, and if the government intervenes the central bank will re-enter the game in each subsequent period with some positive probability.

[16] For simplicity, I consider only pure strategies throughout.

government operates under discretion so takes the private sector $\mathbb{E}\pi'$ as given.

Government preferences are a quadratic loss function in the deviation of the output gap $\widetilde{y}$ from the optimal level $\psi > 0$,[17] and inflation from the inflation target $\pi^* \geq 0$.[18]

The recursive problem for the government if it intervenes is to choose monetary policy:

$$V^I(\mathbb{E}\pi') = \max_{\pi^G, \widetilde{y}} \; -\gamma(\widetilde{y} - \psi)^2 - (\pi^G - \pi^*)^2 + \beta\mathbb{E}[V^I(\mathbb{E}\pi')'] \tag{3}$$

$$s.t. \qquad \pi^G = \kappa\widetilde{y} + \beta\mathbb{E}\pi' \tag{4}$$

where $\gamma > 0$ is the socially optimal weight on the output gap, and the government chooses inflation in each subsequent period. The government's optimal policy if it intervenes I is:

$$\pi^{G*}(\mathbb{E}\pi') = \frac{\gamma}{\kappa^2 + \gamma}\left[\frac{\kappa^2}{\gamma}\pi^* + \beta\mathbb{E}\pi' + \kappa\psi\right] \tag{5}$$

which is increasing in the inflation target π^*, private sector inflation expectations $\mathbb{E}\pi'$, and the socially optimal output gap ψ.

The value for the government if it does not intervene N is:

$$V^N(\mathbb{E}\pi', \pi^{CB}) = \; -\gamma(\widetilde{y} - \psi)^2 - (\pi^{CB} - \pi^*)^2 + \beta\mathbb{E}[V^G(\chi, (\mathbb{E}\pi')', \pi^{CB\prime})] \tag{6}$$

$$s.t. \qquad \pi^{CB} = \kappa\widetilde{y} + \beta\mathbb{E}\pi' \tag{7}$$

2.3. Central bank problem

Central bank preferences are a quadratic loss function in the deviation of inflation from the target π^* only. This assumes that the central bank has a single mandate of targeting inflation, which is common in emerging markets, in contrast to the government which also values the level of the output gap.[19] The central bank also operates under discretion, taking

[17] I assume there is no employment subsidy so the welfare maximizing level of output is positive, which leads to a trade-off for the government between the output gap and stabilizing inflation. See Appendix A1 for further detail.

[18] The government would maximize the second-order approximation of household welfare with $\pi^* = 0$. I allow for a positive inflation target which we see in practice and gives the same qualitative results.

[19] The central bank valuing only inflation is an extreme example of the "conservative" central banker from Rogoff (1985).

$\mathbb{E}\pi'$ as given.

Let $\widehat{\pi}^G \equiv \widehat{\pi}^G(\mathbb{E}\pi')$ denote the central bank's beliefs about the government's monetary policy if it chooses to intervene, and $\widehat{\iota} \equiv \widehat{\iota}(\mathbb{E}\pi', \pi^{CB}) \in \{0, 1\}$ the probability the central bank believes the government will choose I for the central bank policy π^{CB}. The recursive problem for the central bank is to choose monetary policy:

$$W^N(\mathbb{E}\pi') = \max_{\pi^{CB}, \widetilde{y}} \; -\widehat{\iota}(\widehat{\pi}^G - \pi^*)^2 - (1-\widehat{\iota})(\pi^{CB} - \pi^*)^2 + \beta\left(\widehat{\iota}\mathbb{E}[W^I(\mathbb{E}\pi')'] + (1-\widehat{\iota})\mathbb{E}[W^N(\mathbb{E}\pi')']\right) \tag{8}$$

$$s.t. \qquad \pi^{CB} = \kappa\widetilde{y} + \beta\mathbb{E}\pi'. \tag{9}$$

The value $W^I(\mathbb{E}\pi')$ if the government intervenes is:

$$W^I(\mathbb{E}\pi') = -(\widehat{\pi}^G - \pi^*)^2 + \beta\mathbb{E}[W^I(\mathbb{E}\pi')'] \tag{10}$$

where the government sets monetary policy in each subsequent period.

Observe that in the absence of government intervention, the central bank would set inflation at the target level: $\pi^{CB} = \pi^*$. However, when the government can intervene, because the government prefers a positive output gap the central bank has the additional consideration when setting monetary policy that π^{CB} influences the government intervention decision and inflation outcome.

2.4. Equilibrium

We are now ready to define an equilibrium of the model.

***Definition* 1.** *Given the cost χ to the government of intervention, a Markov Perfect Equilibrium is government and central bank value functions $V^G(\chi, \mathbb{E}\pi', \pi^{CB})$, $V^I(\mathbb{E}\pi')$, $V^N(\mathbb{E}\pi', \pi^{CB})$, $W^N(\mathbb{E}\pi')$, and $W^I(\mathbb{E}\pi')$, and policy functions $\pi^{G*}(\mathbb{E}\pi')$, $\iota^*(\chi, \mathbb{E}\pi', \pi^{CB})$, $\pi^{CB*}(\chi, \mathbb{E}\pi')$, and private sector inflation expectations $\mathbb{E}\pi'$, such that:*

1. *given $\mathbb{E}\pi'$, if the government intervenes, π^{G*} solves the government problem (3) and*

V^I is the associated value function, and V^N is given by (6),

2. *given π^{G*}, π^{CB*} and $\mathbb{E}\pi'$, the probability of government intervention ι^* solves the intervention decision (2), and V^G is the associated value function,*

3. *given $\mathbb{E}\pi'$, $\widehat{\pi}^G = \pi^{G*}$, and $\widehat{\iota} = \iota^*$, π^{CB*} solves the central bank problem (8) and W^N is the associated value function, and W^I is given by (10), and*

4. *private sector inflation expectations $\mathbb{E}\pi'$ are consistent with π^{CB*}, ι^* and π^{G*}.*

Intuitively, this states the government's intervention and policy decisions are optimal taking as given private sector inflation expectations (as the government operates under discretion) and the central bank policy. Similarly, the central bank takes as given private sector inflation expectations, and its beliefs about the government's future actions are consistent with the government's optimal policy. Finally, the private sector's beliefs about inflation in the next period are consistent with the central bank and government current and future optimal policies.

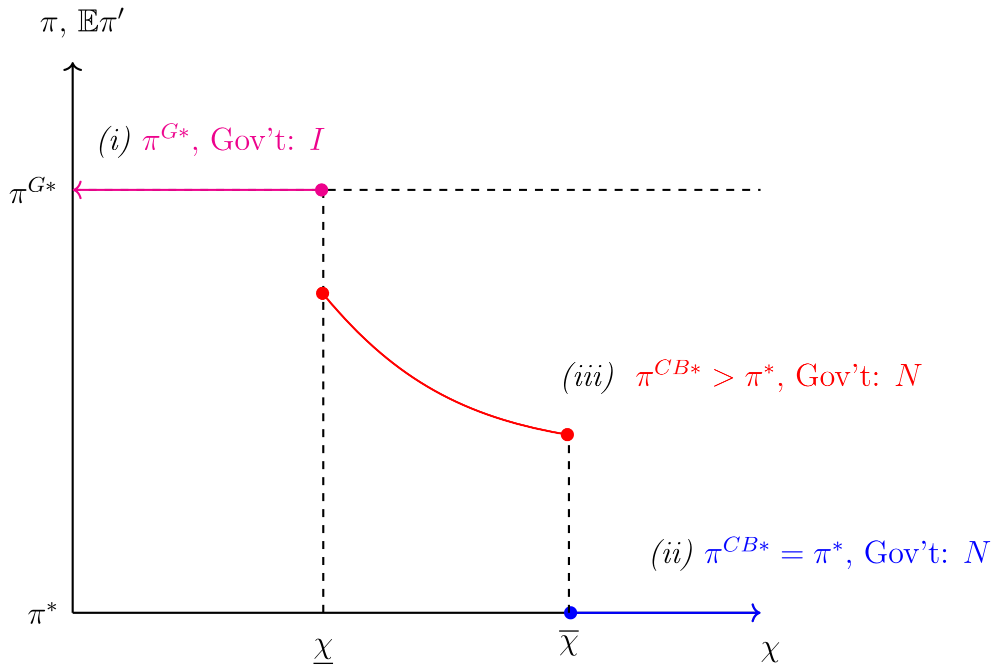
2.5. Characterizing Monetary Policy with Government Intervention

We can characterize the three possible equilibria in the model, depending on the cost of government intervention χ (illustrated qualitatitively in Figure 2, see Proposition 1 for the formal result and Appendix A2 for detail). First, observe that the government's optimal inflation choice if it intervenes (5) does not depend on χ. In an equilibrium in which the government intervenes, the government sets monetary policy in all future periods so we can iterate (5) forward to solve for π^{G*} and the value to the government of intervening $V^I(\pi^{G*})$ with the private sector inflation expectations correct $\mathbb{E}\pi' = \pi^{G*}$. Since the government objective function puts some weight on deviations from a positive output gap, if the government intervenes this leads to inflation above target.[20]

Next, consider the government decision to intervene I or not N. From (2) we can see N

[20] For $\beta \to 1$ or plausible parameter values, $\pi^{G*} > \pi^*$, see Appendix A2 for derivations and expressions.

Figure 2: Equilibria Depending on Intervention Cost χ



Notes: This figure qualitatively illustrates the 3 types of equilibria in Proposition 1: *(i)* when the government intervenes and sets inflation $\pi^{G*} > \pi^*$ the inflation target, *(ii)* when the government does not intervene and the central bank sets inflation $\pi^{CB*} = \pi^*$ the inflation target, and *(iii)* when the government does not intervene and the central bank sets inflation $\pi^{CB*} \in [\pi^*, \pi^{G*}]$. In equilibrium, private sector inflation expectations $\mathbb{E}\pi'$ are consistent with the optimal decisions of the central bank and government. Multiple equilibria for χ may be possible, and the domain of equilibrium type *(iii)* may differ from $[\underline{\chi}, \overline{\chi}]$ or be empty depending on the parameters. See Appendix A2 for the proof and detail.

is optimal for the government if given $\mathbb{E}\pi'$, the central bank monetary policy π^{CB} satisfies:

$$V^N(\mathbb{E}\pi', \pi^{CB}) \geq V^I(\mathbb{E}\pi') - \chi \tag{11}$$

i.e. the central bank faces a cut-off π^{CB} to ensure the government does not intervene. If the cost of intervention χ is lower, this tightens the constraint (11) so the central bank must set higher inflation π^{CB} and a positive output gap to prevent government intervention.[21]

Therefore, if the cost of government intervention χ is sufficiently low this leads to equilibrium type *(i)* where the government intervenes and sets inflation $\pi^{G*} > \pi^*$ the inflation

[21] Note that to be willing to prevent government intervention by setting $\pi^{CB} > \pi^*$ given $\mathbb{E}\pi'$, the central bank must also be better off under π^{CB} than if the government intervenes and sets π^{G*}, which is embedded in the central bank problem (8).

target, with high inflation expectations $\mathbb{E}\pi' = \pi^{G*}$ (pink in Figure 2).

Equilibrium type *(ii)* arises in the other extreme case, for a sufficiently high cost χ the constraint (11) on the central bank does not bind for the central bank setting monetary policy at its target level $\pi^{CB} = \pi^*$. The government does not intervene, and private sector inflation expectations are equal to the inflation target $\mathbb{E}\pi' = \pi^*$ (blue in Figure 2).

The final equilibrium type *(iii)* is the intermediate χ case where the central bank sets π^{CB*} so that the constraint (11) holds with equality and government does not intervene (red in Figure 2). Here the central bank is better off setting inflation above its target level to prevent government intervention. I formalize these results in the following proposition.

***Proposition* 1.** *There exist three types of Markov Perfect Equilibria and for $\pi^* = 0$ bounds on the cost of intervention $\underline{\chi}$, $\overline{\chi}$, $\underset{\sim}{\widetilde{\chi}}$ such that:*

(i) if $\chi \leq \underline{\chi}$ then the government intervenes is an equilibrium, and the government sets inflation $\pi^{G*} > \pi^*$ the inflation target.

(ii) if $\chi \geq \overline{\chi}$ then the government does not intervene is an equilibrium, and the central bank sets inflation $\pi^{CB*} = \pi^*$ the inflation target.

(iii) the government does not intervene, the central bank sets $\pi^{CB*} \in [\pi^*, \pi^{G*}]$ and the threat of intervention constraint (11) binds is an equilibrium, which exists only if $\chi \in [\underset{\sim}{\widetilde{\chi}}, \overline{\chi}]$.

Proof: see Appendix A2.[22]

Proposition 1 illustrates the different equilibria depending on the intervention cost χ, and that the central bank may increase inflation above its target in order to prevent the government from intervening. As illustrated in Figure 2, private sector inflation expectations $\mathbb{E}\pi'$ depend on the cost of government intervention. An important result, in Proposition 2, is that small changes in the intervention parameter only affect equilibrium $\mathbb{E}\pi'$ in type *(iii)* when the central bank is constrained by the threat of government intervention.

***Proposition* 2.** *For equilibrium types (i) when $\chi < \underline{\chi}$ and (ii) when $\chi > \overline{\chi}$ from Proposition 1,* $\frac{\partial \mathbb{E}\pi'}{\partial \chi} = 0$.

[22] Note that Proposition 1 is an existence result (and for *(iii)* a necessary but not sufficient condition), so multiple equilibria may exist depending on the parameters and $\mathbb{E}\pi'$.

Proof: see Appendix A3.

***Corollary* 1.** *If* $\frac{\partial \mathbb{E}\pi'}{\partial \chi} \neq 0$*, then the equilibrium must be for type (iii) from Proposition 1.*

In equilibria types *(i)* and *(ii)* the government and central bank respectively set monetary policy, which in both cases does not depend on the intervention cost χ. For equilibrium type *(iii)*, for a lower intervention cost χ the central bank must set inflation closer to the government's preferred policy to prevent government intervention.

In the empirical analysis in Section 3, I provide evidence on the response of inflation expectations to political pressure events which supports focusing on equilibrium type *(iii)*. Section 4 will extend the simple model to a small-open economy and allow for aggregate shocks to the cost of intervention χ, calibrated using the empirical results, to estimate the increase in inflation due to the threat of government intervention in monetary policy.

3. Empirical Analysis

I now document the response of market inflation expectations to government pressure on central banks using daily bond price data. Section 3.1 describes the sample of episodes, measurement of inflation expectations, and data sources. Section 3.2 presents the results on the response of inflation expectations and the exchange rate to political pressure events. Section 3.3 provides the main results using the exchange rate response as a measure of the magnitude of the change in political pressure.

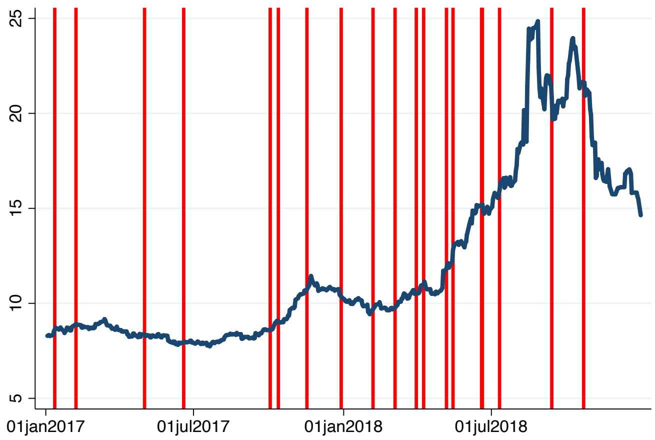
3.1. Data Description

The empirical analysis includes three episodes of government pressure on central bank monetary policy from emerging markets. Figure 3 depicts market inflation expectations measured using daily bond price data for Turkey, Colombia, and Argentina, as well as political pressure on monetary policy events. The three countries have *de jure* independent central banks responsible for setting monetary policy and episodes with a large number of identified political pressure events (described below). For Turkey and Colombia, these periods included

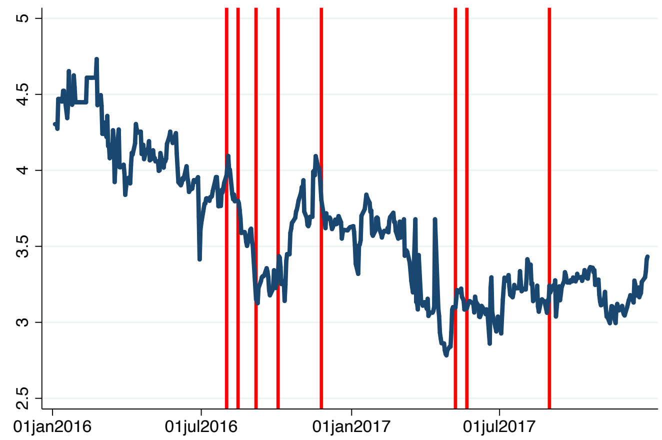
Figure 3: Episodes Included in the Empirical Analysis

Break-even Inflation (%) and Political Pressure Event Days

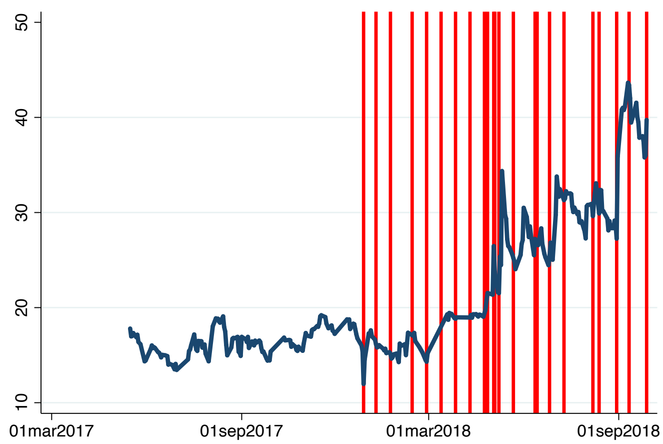
(a) Turkey



(b) Colombia



(c) Argentina



Notes: This figure shows market inflation expectations during each episode and political pressure event days given by the vertical lines in red. Inflation expectations are measured by break-even inflation: $BE_{c,t} = Yield^{Nom}_{c,t} - Yield^{IIB}_{c,t}$, where $Yield^{Nom}_{c,t}$ is the yield on a nominal government bond, and $Yield^{IIB}_{c,t}$ is the yield on an inflation-indexed government bond with similar maturity for country c at time t. Further detail in Appendix B. Data sources: Bloomberg, Çakmaklı, Demiralp and Güneş (2021), Refinitiv.

upcoming Presidential elections, and for Argentina the erosion of the independence of the central bank (Sturzenegger, 2019).

For these episodes both nominal and inflation-indexed government bonds are traded, enabling market inflation expectations to be calculated at a daily frequency. Inflation expectations are measured by break-even inflation (BE_t): the level of inflation that leaves an investor indifferent between a nominal and an inflation-indexed bond. It is calculated by: $BE_t = Yield_t^{Nom} - Yield_t^{IIB}$, where $Yield_t^{Nom}$ is the yield on a nominal government bond, and $Yield_t^{IIB}$ is the yield on an inflation-indexed government bond with similar maturity.[23] Break-even inflation contains the expectations for future realized inflation and, therefore, anticipated future monetary policy. As Figure 3 shows, the level and fluctuations in inflation expectations in the three countries differ significantly.[24]

The episodes contain a number of political pressure events, measured by statements by the President of the country on the central bank and lower interest rates from Çakmaklı *et al.* (2021) based on the Bloomberg news archive.[25] Political pressure which increases the likelihood of looser monetary policy should then lead to higher break-even inflation. Figure 3 shows that break-even inflation increases following some events, but for others it remains roughly constant or declines. Given a number of other factors influence inflation, such as domestic and foreign economic fundamentals and interest rates, a large set of controls are included in the estimation, as well as using an instrumental-variables approach.

Data sources For all countries, I use daily data on bond yields as well as the exchange rate, domestic stock market index, US S&P 500, Volatility Index (VIX), MSCI Emerging Markets bond index from Refinitiv Thomson ONE. Çakmaklı *et al.* (2021) list the dates of statements by the President on monetary policy from the Bloomberg news archive. Monetary policy meeting dates are from the website of the national central bank.

Appendix B provides a more detailed description of the data, including the bonds used to calculate break-even inflation, for each episode.

[23] Appendix B provides detail on the bonds available for each episode and Appendix C5 shows the results are similar when using different bonds to measure break-even inflation.

[24] Figure B1 shows that for each episode inflation moves similar to inflation expectations, and that the episodes include periods of tightening and loosening in the monetary policy rate.

[25] For Argentina during this period President Macri did not publicly comment on interest rates, so event dates are given by the government unanticipatedly raising the central bank's inflation target, the subsequent monetary policy meeting dates, and resignation of the central bank governor when the central bank was widely viewed as being pressured by the government. See Sturzenegger (2019) for a summary of the period.

3.2. Response of Inflation Expectations to Political Pressure

I estimate the response of inflation expectations to political pressure on the central bank using Jordà (2005) local projections panel estimation for each horizon h:

$$\Delta_h BE_{c,t+h} = \beta_{0,h} + \beta_{E,h} E_{c,t} + \gamma_{c,h} + \alpha_h{}' X_{c,t} + \Sigma_{l=1}^{L}(\Gamma_{h,l}\Delta BE_{c,t-l} + \Lambda_{h,l}E_{c,t-l} + \alpha_{h,l}{}' X_{c,t-l}) + \varepsilon_{c,t+h} \tag{12}$$

where $\Delta_h BE_{c,t+h}$ is change in log break-even inflation from $t-1$ to $t+h$ for country c, $E_{c,t}$ is a dummy variable which takes value 1 on political pressure event dates for country c and 0 otherwise, $\gamma_{c,h}$ are country fixed effects, $X_{c,t}$ are controls which include the change in log of the lag exchange rate, lag domestic stock market index, US S&P 500, VIX, MSCI Emerging Markets bond index, and a monetary policy meeting dummy. L is the number of lags which is 5 days in the main specification.[26] $\beta_{E,h}$ is the coefficient of interest which measures the elasticity of break-event inflation to a political pressure event at horizon h.

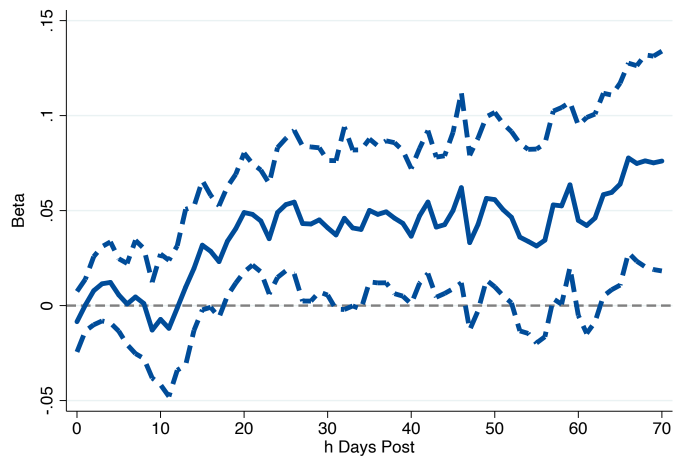
Figure 4 plots the estimate for the coefficient $\beta_{E,h}$ from equation (12) for different horizons. Break-even inflation increases after the political pressure events, becoming significant after 18 days and remaining elevated.[27] The average estimated impact after 30 days is a 5 per cent increase in inflation expectations. Average break-even inflation across the three episodes is 12 per cent, which implies an increase in break-even inflation by 0.6 percentage points after each event.

These results are robust and of similar magnitude in alternative specifications. Figure C1 Panel (a) shows the results with no controls, Panel (b) with only the country-specific control variables, and Panels (c) and (d) when varying the lag length. Figure C2 estimates regression (12) for each country episode individually and finds the political pressure event coefficient to be significant. Investigating the alternative explanation that monetary policy decisions during these episodes increase inflation expectations, Figure C3 shows that the coefficient on

[26] Lag length $L = 5$ is chosen from model selection criteria AIC, AIC_C and BIC. The results are similar when varying the lag length. See Appendix B for more detail.

[27] The delay for the coefficient to be significant may be due to variation in the break-even inflation variable or time for markets to incorporate the information. Using the instrumental variables approach in Section 3.3 finds a significant response after 2 days.

Figure 4: Effect of Political Pressure Event on Break-even Inflation



Notes: This figure plots the estimated per cent change in break-even inflation to political pressure events at horizon h measured by the coefficient estimate $\widehat{\beta}_{E,h}$ from the regression (12) including the full set of control variables X_t and $L = 5$ lags. The dashed lines show a 90% confidence interval using Newey-West standard errors which are heteroskedasticity and autocorrelation consistent up to lag h. Further details in Appendix B.

the monetary policy meeting date dummy variable is not significant, in contrast to political pressure events. Another concern may be that the political pressure events are anticipated,[28] however, the event dates are not able to be predicted by the controls (see Appendix B).[29] Finally, as an additional check, drawing random dates equal to the number in the sample as the variable $E_{c,t}$ and estimating (12) finds no significant effect (see Figure C5).

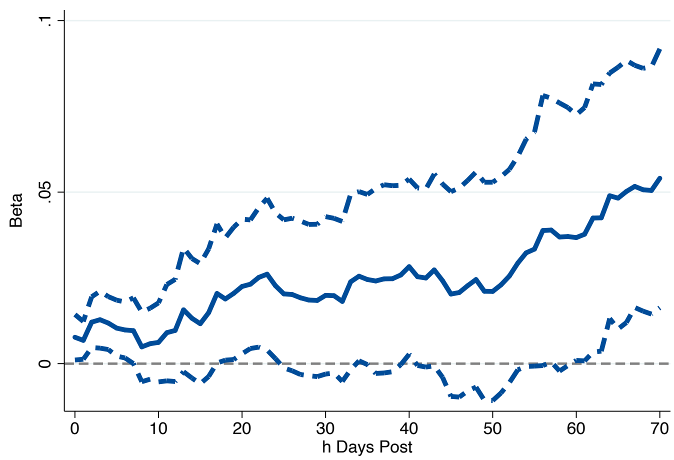
Exchange rate response I next investigate the impact of political pressure events using equation (12) on the change in the domestic exchange rate against the US dollar, shown in Figure 5.[30] I estimate that the exchange rate depreciates by around 0.8 per cent on the

[28]Similar to recent work on high-frequency monetary policy shocks, see e.g., Miranda-Agrippino and Ricco (2021), Cieslak (2018), and Bauer and Swanson (2022).

[29]Figure C4 also shows that there is no pre-trend in the coefficient estimates.

[30]Figure C10 shows the estimates for the change in the local stock market index. As shown there, the local stock market declines following political pressure events, falling by around 5 per cent. This suggests that higher anticipated inflation and an exchange rate depreciation reduce expected discounted returns for large firms in emerging markets. Empirical studies generally find a negative relationship between inflation and expected inflation with stock returns at a short horizon. For early examples for the US, see Lintner (1975), Bodie (1976), Fama and Schwert (1977), and Fama (1981), and including emerging markets, see Gultekin (1983) and Barnes, Boyd and Smith (1999). On the other hand, Bianchi *et al.* (2023) for the US find criticism by President Trump of the Federal Reserve led to a positive reaction of the stock market.

Figure 5: Effect of Political Pressure Event on Exchange Rate



Notes: This figure plots the estimated per cent change in the exchange rate to political pressure events at horizon h measured by the coefficient estimate $\widehat{\beta}_{E,h}$ from the regression (12) including the full set of control variables X_t and $L = 5$ lags. The dashed lines show a 90% confidence interval using Newey-West standard errors which are heteroskedasticity and autocorrelation consistent up to lag h. Further details in Appendix B.

day of the event and increases to average 2.5 per cent after 30 days.[31] The elasticity of the change in inflation expectations to the change in the exchange rate is 2.1 after 30 days, which is large relative to the estimated increase in inflation from the literature on exchange rate pass-through.[32]

3.3. Using Exchange Rate Response as Magnitude of Political Pressure

The results in Section 3.2 imply an equal magnitude for all political pressure events by using the event date dummy variable. This may mis-measure the actual political pressure exerted by the government on the central bank. Motivated by the response of the exchange rate to the political pressure events in Figure 5, I next instrument for the political pressure variable

[31] As I will explore further in the following section, the change in the exchange rate provides a measure of the market assessment of the change in political pressure on the central bank. Restricting events E_t in the regression (12) to only those with an exchange rate depreciation on impact also finds significant results with a larger magnitude as shown in Figure C6. Appendix C2 show the robustness of the results for the exchange rate.

[32] Campa and Goldberg (2005) estimate the long-run exchange rate pass-through elasticity to import prices for 23 OECD countries to be 0.64. Taylor (2000) argued that higher inflation and more accomodative monetary policy leads to higher exchange rate pass-through (see also Devereux and Engel, 2001), supported empirically by Gagnon and Ihrig (2004).

using the change in the exchange rate for the political pressure events: $Z_{c,t} = E_{c,t}\Delta XR_{c,t}$, where I normalize $\Delta XR_{c,t}$ by the mean and standard deviation by country.[33] This provides a measure of the change in political pressure on the central bank based on the President's comments, e.g. market participants expect lower interest rates, which leads to an exchange rate depreciation.[34] The first stage panel estimation[35] is:

$$E_{c,t} = \widetilde{\beta}_0 + \widetilde{\beta}_Z Z_{c,t} + \widetilde{\gamma}_c + \widetilde{\varepsilon}_{c,t} \tag{13}$$

and the second-stage panel estimation is the regression (12). The identifying assumption is that on political pressure event days when $E_{c,t} = 1$ the exchange rate affects break-even inflation. This will deliver consistent estimates of the parameters $\beta_{E,h}$ under the exclusion restriction:

$$\mathbb{E}[E_{c,t}\Delta XR_{c,t} \times \varepsilon_{c,t+h}|c] = 0 \text{ for all } c \tag{14}$$

which requires that there be no systematic relationship for any country c, between the change in the exchange rate *on political pressure event dates* and the error $\varepsilon_{c,t+h}$ at horizon h.[36] Concerns about the exclusion restriction are mitigated by using the daily response in the exchange rate, with both positive and negative values, as a fast-moving measure of the change in political pressure. In addition, including the large number of country-specific and global contemporaneous and lagged variables (see Section 3.2) controls for potential unexplained factors affecting both $\Delta XR_{c,t}$ and changes in break-even inflation $\Delta BE_{c,t+h}$.

Figure 6 plots the estimate for the coefficient $\beta_{E,h}$ from equation (12) using the exchange rate IV regression (13) for different horizons. The response is positive and significant from 2 days, which implies that event dates with an exchange rate depreciation increase break-even inflation afterwards. The average estimated impact using the IV is a 12.6 per cent increase

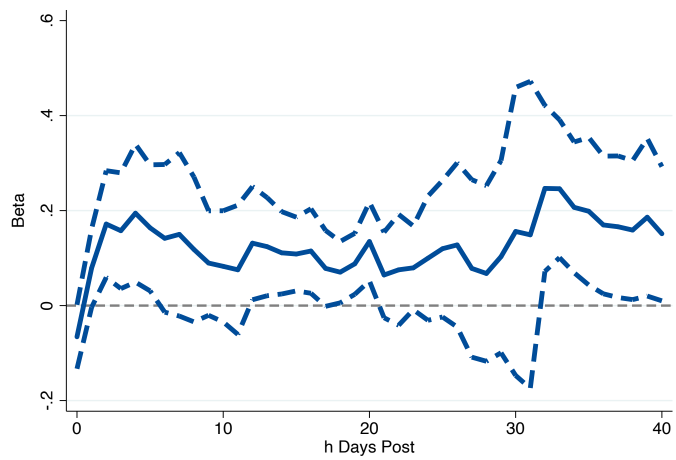
[33] The results are similar without this normalization and dropping outliers as shown in Figure C13.

[34] Importantly, as shown in Figure C9 there is no pre-trend for the change in the exchange rate to political pressure events, which suggests the events do not occur in response to prior changes in the exchange rate.

[35] Table C1 provides the first stage results.

[36] Given that $E_{c,t}$ is a dummy variable we only need to be concerned about threats to the exclusion restriction on political pressure event days when $E_{c,t} = 1$.

Figure 6: Effect of Political Pressure Event on Break-even Inflation – IV



Notes: This figure plots the estimated per cent change in break-even inflation to political pressure events at horizon h measured by the coefficient estimate $\widehat{\beta}_{E,h}$ from the regression (12) using the IV (13) including the full set of control variables X_t and $L = 5$ lags. The dashed lines show a 90% confidence interval using Newey-West standard errors which are heteroskedasticity and autocorrelation consistent up to lag h. Further details in Appendix B.

in inflation expectations 30 days after each political pressure event, larger than the OLS dummy variable estimate of 5 per cent. I also find a larger average elasticity of the change in break-even inflation to the change in the exchange rate of 3.6.[37]

The results for break-even inflation are similar when residualizing the IV Z_t by all controls and lags of Z_t, and using events with only exchange rate depreciations, as shown in Figure C14 Panels (a) and (b) respectively. Figure C14 Panel (c) shows the results with no controls and Panel (d) with only the country-specific control variables. As with the OLS results, the monetary policy meeting date dummy variable is not significant and there is no pre-trend before event dates (see Figures C15 and C16).

[37]Figure C17 plots the estimate using the IV on future changes in the exchange rate and finds a significant effect. The average of the ratio of the coefficients in Figures 6 and C17 gives the estimated elasticity.

4. Quantitative Analysis

I next undertake the quantitative analysis of potential government intervention in monetary policy and the impact on inflation, extending the model in Section 2, and using the empirical results from Section 3. Section 4.1 sets out a small-open economy (SOE) model with aggregate shocks to the cost of government intervention. In Section 4.2, I use the empirical moments from Section 3 to calibrate the stochastic process for the cost of government intervention. Section 4.3 provides the quantitative results of the model on the increase in inflation due to the threat of government intervention, as well as model extensions.

4.1. Small-Open Economy Model

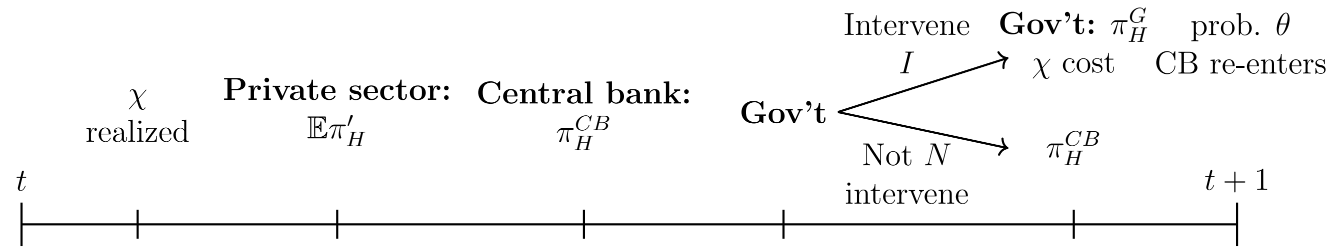
As I showed in the theoretical model in Section 2, the cost of government intervention χ influences monetary policy and intervention decisions by the central bank and government. Section 3 documented the response of inflation expectations and the exchange rate to political pressure events. I interpret these events as changes in the cost of government intervention, motivating a model with aggregate shocks. The SOE model also incorporates fluctuations in the exchange rate which, as I showed in Section 3.2, depreciates with political pressure.

I extend the SOE NK model of Galí and Monacelli (2005) to the dynamic monetary policy game between the government and central bank. The domestic private sector (household and firms' problems) gives the log-linearized SOE NK Phillips curve:

$$\pi_{Ht} = \kappa_\omega \widetilde{y}_t + \beta \mathbb{E}_t \pi_{Ht+1} \tag{15}$$

where $\pi_{Ht} \equiv p_{Ht} - p_{Ht-1}$ is domestic price p_{Ht} inflation, $\widetilde{y}_t$ is the domestic output gap, $\kappa_\omega > 0$ is the slope of the SOE NK Phillips curve. $\mathbb{E}_t \pi_{Ht+1}$ are the private sector's expectations for domestic price inflation next period. Monetary policy is choosing $(\pi_{Ht}, \widetilde{y}_t)$ which determines

Figure 7: Timing Within Period



consumer price inflation π_t and the change in the exchange rate Δe_t:

$$\pi_t = \pi_{Ht} + \omega(\Delta\widetilde{y}_t - \Delta\widetilde{y}_t^w) \tag{16}$$

$$\Delta e_t = \pi_{Ht} - \pi_t^w + \Delta\widetilde{y}_t - \Delta\widetilde{y}_t^w \tag{17}$$

where e_t is the log exchange rate and $\Delta e_t > 0$ is a depreciation, $\omega \in [0, 1]$ measures openness, $\Delta\widetilde{y}_t^w$ is the change in the world output gap, and π_t^w is world price inflation. Appendix D1 provides the detail on the SOE NK model household and firms' problems which give rise to (15), and the derivation of (16) and (17), following Galí and Monacelli (2005).

Timing Figure 7 shows the sequence of events within a period, where the cost of intervention χ is realized before agents' actions, which follow the same sequence as the deterministic model. Private sector expectations for domestic inflation $\mathbb{E}\pi'_H$, and central bank and government decisions in the current period then depend on the expected cost of intervention in future. χ is assumed to follow an AR(1) process with Bernoulli component E_t:

$$\chi_t = \rho\chi_{t-1} + (1 - \rho)\mu_\chi - \Delta_\chi E_t + \sigma\varepsilon_t \tag{18}$$

where $\rho \in (0, 1)$, $\varepsilon_t \sim N(0, 1)$, $E_t \sim$ Bernoulli with probability q that $E_t = 1$. Political pressure events in the empirics are interpreted as an $E_t = 1$ realization when χ_t decreases by Δ_χ. As described in Section 4.2, these parameters are calibrated to match the empirical results from Section 3 for the average response of inflation expectations and the exchange rate to political pressure events.

If at t the government chooses to intervene I it incurs the utility cost of intervention χ_t, and in $t+1$ with probability $1-\theta$ the government retains control of monetary policy, and with probability θ the central bank re-enters to follow the sequence in Figure 7.

Government problem The government decision between whether to intervene I ($\iota = 1$) or not intervene N ($\iota = 0$) is:

$$V^G(\chi, \mathbb{E}\pi'_H, \pi_H^{CB}) = \max_{\iota \in \{0,1\}} \iota(V^I(\chi, \mathbb{E}\pi'_H) - \chi) + (1-\iota)V^N(\chi, \mathbb{E}\pi'_H, \pi_H^{CB}) \tag{19}$$

where $V^I(\chi, \mathbb{E}\pi'_H)$ is the value if the government chooses I and $V^N(\chi, \mathbb{E}\pi'_H, \pi_H^{CB})$ if the government chooses N, which depend on the realization of the cost of intervention χ. Government preferences are the domestic household social welfare function, comprising domestic price inflation and the output gap (see Appendix D1 for detail). $V^I(\chi, \mathbb{E}\pi'_H)$ is given by:

$$\begin{aligned} V^I(\chi, \mathbb{E}\pi'_H) = \max_{\pi_H^G, \widetilde{y}} \; & -\gamma_\omega(\widetilde{y} - \psi)^2 - (\pi_H^G - \pi^*)^2 \\ & + \beta[(1-\theta)\mathbb{E}V^I(\chi', (\mathbb{E}\pi'_H)') + \theta \mathbb{E}V^G(\chi', (\mathbb{E}\pi'_H)', \pi_H^{CB'})] \end{aligned} \tag{20}$$

$$s.t. \qquad \pi_H^G = \kappa_\omega \widetilde{y} + \beta \mathbb{E}\pi'_H \tag{21}$$

where $\gamma_\omega > 0$ is the socially optimal weight on the output gap, and the central bank re-enters in the subsequent period with probability $1-\theta$.

The value $V^N(\chi, \mathbb{E}\pi'_H, \pi_H^{CB})$ for the government if it does not intervene is:

$$V^N(\chi, \mathbb{E}\pi'_H, \pi_H^{CB}) = -\gamma_\omega(\widetilde{y} - \psi)^2 - (\pi_H^{CB} - \pi^*)^2 + \beta \mathbb{E}V^G(\chi', (\mathbb{E}\pi'_H)', \pi_H^{CB'}) \tag{22}$$

$$s.t. \qquad \pi_H^{CB} = \kappa_\omega \widetilde{y} + \beta \mathbb{E}\pi'_H \tag{23}$$

Central bank problem The central bank is assumed to value deviations in domestic price inflation from the target π^* only.[38] The problem for the central bank is:

$$\begin{aligned} W^N(\chi, \mathbb{E}\pi'_H) = & \max_{\pi_H^{CB}, \widetilde{y}} -\widehat{\iota}(\widehat{\pi}_H^G - \pi^*)^2 - (1-\widehat{\iota})(\pi_H^{CB} - \pi^*)^2 \\ & + \beta \left(\widehat{\iota}(1-\theta)\mathbb{E}[W^I(\chi', (\mathbb{E}\pi'_H)')] + (1 - \widehat{\iota}(1-\theta))\mathbb{E}[W^N(\chi', (\mathbb{E}\pi'_H)')] \right) \quad (24) \\ s.t. \quad \pi_H^{CB} = & \ \kappa_\omega \widetilde{y} + \beta \mathbb{E}\pi'_H \quad (25) \end{aligned}$$

where $\widehat{\pi}_H^G \equiv \widehat{\pi}^G(\chi, \mathbb{E}\pi'_H)$ is the central bank's beliefs about consumer price inflation from the government's monetary policy $(\pi_H^G, \widetilde{y}^G)$ if it intervenes, and $\widehat{\iota} \equiv \widehat{\iota}(\chi, \mathbb{E}\pi'_H, \pi_H^{CB}) \in \{0, 1\}$ is the probability the central bank believes the government will choose I for the central bank policy π_H^{CB}. The value $W^I(\chi, \mathbb{E}\pi'_H)$ if the government intervenes is:

$$\begin{aligned} W^I(\chi, \mathbb{E}\pi'_H) = & -(\widehat{\pi}_H^G - \pi^*)^2 \\ & + \beta \left((1-\theta)\mathbb{E}[W^I(\chi', (\mathbb{E}\pi'_H)')] + \theta \mathbb{E}[W^N(\chi', (\mathbb{E}\pi'_H)')] \right) \quad (26) \end{aligned}$$

Equilibrium In equilibrium, the private sector domestic inflation expectations $\mathbb{E}\pi'_H$ are a function of the state variable χ and are consistent with the government and central bank optimal policy functions. Appendix D2 provides the definition of an equilibrium for the quantitative model, and Appendix D3 outlines the algorithm to solve the model using global solution methods.

From the solution of the model, consumer price inflation expectations $\mathbb{E}\pi'$ which we observe in the data are given from (16):

$$\mathbb{E}\pi' = \mathbb{E}\pi'_H + \omega(\mathbb{E}\Delta\widetilde{y}' - \mathbb{E}\Delta\widetilde{y}^{w\prime}) \quad (27)$$

[38] Domestic price inflation is the household welfare relevant measure and, as we will see in Section 4.3, is very close to targeting overall consumer price inflation.

4.2. Calibration

In this section I detail the calibration, in particular, using the empirical estimates from Section 3. The calibration is for Turkey, the economy with the median inflation of the sample. A period is one quarter.

The fixed parameters are given in Table 1. Panel (a) provides standard parameters from the SOE NK model from Arellano, Bai and Mihalache (2020). Households have log utility in final consumption (the coefficient of relative risk aversion $\sigma = 1$) and discount factor $\beta = 0.987$. Production is constant returns to scale in labor and firms update their prices on average once per year. Households have a Frisch elasticity of labor supply of 1/3, elasticity of substitution between domestic varieties of 6 (which implies a steady state markup of 20%), and home bias $1 - \omega$ of 0.62. Following Galí and Monacelli (2005), the elasticity of substitution between home and foreign goods ζ is set equal to 1.[39] These household preference and technology parameters give the three reduced-form parameters $\{\gamma_\omega, \kappa_\omega, \psi\}$ in Table 1 Panel (b).

Table 1 Panel (c) provides the remaining fixed parameters for the model. The optimal level of inflation π^* is given by the 5 per cent annual inflation target for the Central Bank of Turkey in the sample period.[40] The probability θ of the central bank re-entering after a government intervention is set to match the 4-year term appointment of a central bank governor in Turkey. I normalize world price inflation and the world output gap to zero.

Next, I calibrate the parameters of the stochastic process for the cost of government intervention shown in Table 2. I approximate the process for χ in (18) using the Rouwenhorst method, augmented to incorporate the Bernoulli component, with 6 grid points. The decrease in χ on political pressure events $E = 1$ is Δ_χ, calibrated to match the estimated increase in inflation expectations of 12.6 per cent from Section 3.3. In the model, this moment is

[39] As detailed in Appendix D1, Galí and Monacelli (2005) show that this allows them to derive (16) and (17), and the second-order approximation of the social welfare objective function which is used for the government. $\zeta = 1$ is close to estimate of 1.5 from Feenstra, Luck, Obstfeld and Russ (2018), which is also used in Backus, Kehoe and Kydland (1994), Chari, Kehoe and McGrattan (2002), and Itskhoki and Mukhin (2021). Section 4.4 shows that setting $\zeta = 1.5$ gives similar results.

[40] In an extension in Section 4.4, I instead use the model to estimate the inflation target π^* to match the observed level of inflation for Turkey during this period.

Table 1: Fixed Parameters

Parameter		Value
a. Standard Parameters		
Risk-aversion coefficient	σ	1
Discount factor	β	0.987
Decreasing returns to labor	α	0
Prob. of changing prices	$1-\lambda$	0.25
Frisch labor supply elasticity	$1/\eta$	1/3
Varieties elasticity	ε	6
Home bias	$1-\omega$	0.62
Home-foreign good elasticity	ζ	1
b. Reduced-Form Parameters		
Gov't output gap weight	γ_ω	0.23
SOE NK Phillips curve slope	κ_ω	0.35
Optimal output gap	ψ	0.042
c. Other Parameters		
Inflation target (annual)	π^*	0.05
Prob. of CB re-entering	θ	0.0625
World inflation	π^w	0
World output gap	$\widetilde{y}^w$	0

Notes: This table shows the parameter values of the model calibrated for Turkey. Panel (a) are standard parameters from Arellano *et al.* (2020) and Galí and Monacelli (2005). Panel (b) provides the reduced-form parameters which depend on these underlying parameters (see Appendix D1). Panel (c) are the other parameters – see text for detail.

from (27) when the central bank is constrained by the threat of government intervention. I calibrate the average for χ – given by the parameter μ_χ – to match the elasticity of the change in expected inflation to the change in the exchange rate from political pressure of 3.6. In the model, the exchange rate depreciation is given by (17), determined by the level of domestic inflation and the change in the domestic output gap. As illustrated in Figure D1, the elasticity is relatively more responsive to changes in μ_χ than changes in Δ_χ.[41] The persistence ρ and standard deviation σ for χ are calibrated to match the autocorrelation

[41] To further elaborate, the magnitude of the decrease in χ when $E=1$ is realized Δ_χ targets the percentage increase in inflation *expectations* from when $E=0$. The average μ_χ targets the elasticity of this increase in inflation expectations to the *realized* exchange rate depreciation Δe when $E=1$, as in the empirics.

Table 2: Calibrated Parameters

Parameter	Value	Target	Data	Model
Δ_χ	0.0017	$\Delta\mathbb{E}\pi'(\chi, E=1)$	0.13	0.12
μ_χ	-0.022	$\varepsilon_{\Delta\mathbb{E}\pi',\Delta e}$	3.6	3.9
ρ	0.90	autocorr. $\mathbb{E}\pi'$	0.89	0.89
σ	0.006	std. dev. $\mathbb{E}\pi'$	0.05	0.03

Notes: This table shows the calibrated parameters for χ in (18) to match the empirical estimates from Section 3 and other data moments for Turkey. $\varepsilon_{\Delta\mathbb{E}\pi',\Delta e} \equiv \frac{\Delta\mathbb{E}\pi'(\chi,E=1)}{\Delta e(\chi,E=1)}$ is the elasticity of the change in break-even inflation to the change in the exchange rate. The probability of $E=1$ is $q=0.04$. See text for detail.

and standard deviation, respectively, of $\mathbb{E}\pi'$. Finally, I set the probability q of the Bernoulli political pressure event $E_t = 1$ realization to 0.04 to match the fraction of political pressure events in the sample.

Table 3 reports untargeted moments in the data for Turkey. While below the level of inflation and inflation expectations in the data, with only the aggregate shock to the cost of government intervention χ, the model well approximates the dynamics of inflation over time as shown by the autocorrelation and standard deviation moments.

Table 3: Untargeted Moments

	Data	Model
mean $\mathbb{E}\pi'$ (%)	12.0	10.9
mean π (%)	13.7	11.0
autocorr. π	0.85	0.85
std. dev. π	0.05	0.04

Notes: This table shows the untargeted moments from the calibrated model for Turkey. Inflation expectations ($\mathbb{E}\pi'$) in the data are break-even inflation from daily government bond prices for 2017-18. Inflation (π) in the data are the monthly consumer price index percentage change on the previous year for the sample period 2017-18. Model moments are computed from simulating the calibrated model for 10,000 periods. See text for detail.

4.3. Quantitative Results

In this section I provide the quantitative results from the calibrated model to estimate the impact of government intervention on inflation. Figure 8 shows the model results depending on the cost of intervention χ, where the political pressure events (when $E = 1$) are shown in red. Panels (a) shows the monetary policy outcomes from Proposition 1 illustrated in Figure 2: for low χ the government intervenes, for high χ the central bank sets inflation at target, and for mid values of χ the central bank sets inflation above target.

Figure 8 Panel (b) shows private sector inflation expectations, and the analagous result from Proposition 2 in the stochastic model: for mid values of χ when the central bank is constrained by the threat of intervention, as χ decreases for the political pressure events, inflation expectations increase as the central bank sets higher inflation to prevent government intervention. Panel (c) shows the overall inflation outcome, which depends on domestic inflation set by monetary policy and the exchange rate depreciation shown in Panel (d).

The main result of the impact on inflation is illustrated in Figure 8 Panel (c). When χ is in the intermediate range so the central bank is constrained by the threat of government intervention, the central bank sets monetary policy which leads to annualized inflation of 10.4 per cent. This is well above the counterfactual where if the government could not intervene in monetary policy, the central bank would set inflation at its target of 5 per cent. Average inflation in Turkey during the sample period was 13.7 per cent (see Table 3). Therefore, the threat of government intervention in monetary policy can explain around 60 per cent of the increase in inflation above the central bank's inflation target.

Figure 8: Model: Results

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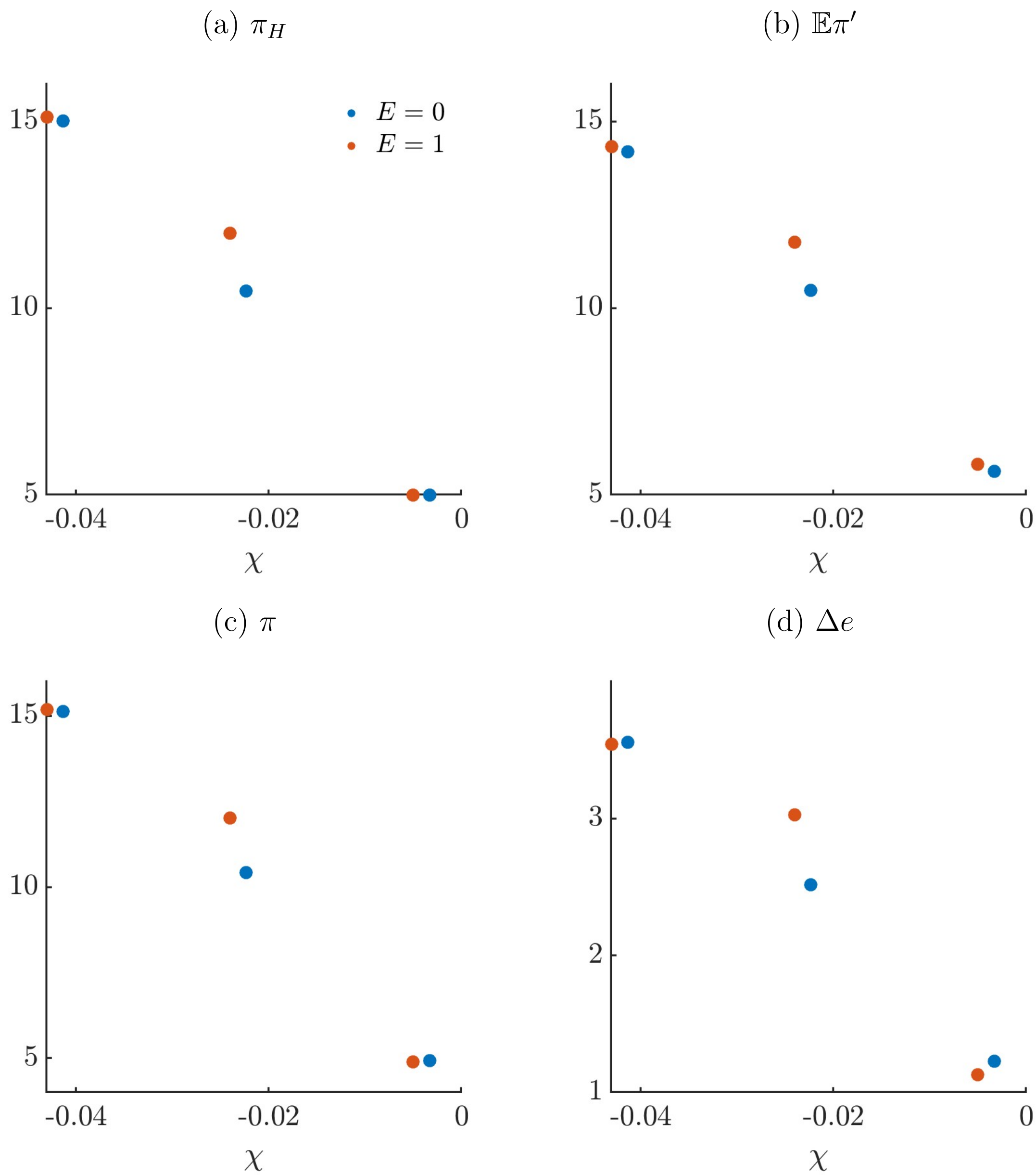

Notes: This figure shows inflation and inflation expectations for different realizations of the cost of intervention χ in the model calibrated for Turkey (described in Sections 4.1 and 4.2). Panel (a) shows the annualized domestic inflation set by monetary policy. Panel (b) shows annualized private sector consumer price inflation expectations for the subsequent period. Panel (c) shows annualized consumer price inflation outcomes. Panel (d) shows the change in the exchange rate ($\Delta e > 0$ is a depreciation). Further details on the model are in Appendix D1.

4.4. Extensions

In this section, I provides additional results and extensions to the quantitative model. First, I re-calibrate the model using a smaller inflation expectations response. Second, I use a higher elasticity of substitution between home and foreign goods. Finally, I use the model to estimate the inflation target in practice, based on the observed inflation data. The result of these exercises is that the main finding of a significant increase in inflation due to the threat government intervention in monetary policy remains.

Lower inflation expectations response I re-calibrate the model using the average of the IV and OLS estimates for the inflation expectations response of 8.8 per cent (baseline estimate of 12.6 per cent used in Section 4.3), and the elasticity of the change in break-even inflation to the change in the exchange rate of 2.9 (baseline estimate of 3.6).[42] As shown in Table 4 and Figure D2, the model produces qualitatively similar results with a lower level of inflation. In particular, when constrained by the threat of government intervention, the central bank increases inflation by around 55 per cent above its inflation target, relative to 60 per cent in the baseline model.

Table 4: Untargeted Moments: Lower $\mathbb{E}\pi'$ response

	Data	Model	Baseline
mean $\mathbb{E}\pi'$ (%)	12.0	10.2	10.9
mean π (%)	13.7	10.2	11.0
autocorr. π	0.85	0.86	0.85
std. dev. π	0.05	0.04	0.04

Notes: This table shows the untargeted moments from the calibrated model for Turkey using a lower inflation expectations response (in the column Model) relative to the baseline results (in the column Baseline). Inflation expectations ($\mathbb{E}\pi'$) in the data are break-even inflation from daily government bond prices for 2017-18. Inflation (π) in the data are the monthly consumer price index percentage change on the previous year for the sample period 2017-18. Model moments are computed from simulating the calibrated model for 10,000 periods. See text for detail.

[42] See Table D1 for details of the calibration.

Home-foreign goods substitutes I re-solve the model using a higher home-foreign good elasticity of substitution $\zeta = 1.5$, in line with the empirical estimates from Feenstra *et al.* (2018),[43] rather than the value of $\zeta = 1$ used in Section 4.3 following Galí and Monacelli (2005).[44] Using the other fixed and calibrated parameters from the baseline, Table 5 Panel (a) shows that the moments targeted in the baseline calibration are similar, and Panel (b) shows the quantitative results for inflation are very close with the higher home-foreign good elasticity of substitution.

Table 5: Moments: Home-Foreign Goods Substitutes

	Data	Model	Baseline
a. Targeted Moments			
$\Delta\mathbb{E}\pi'(\chi, E=1)$	0.13	0.11	0.12
$\varepsilon_{\Delta\mathbb{E}\pi',\Delta e}$	3.6	3.5	3.9
$\mathbb{E}\pi'$	0.89	0.89	0.89
std. dev. $\mathbb{E}\pi'$	0.05	0.03	0.03
b. Untargeted Moments			
mean $\mathbb{E}\pi'$ (%)	12.0	11.2	10.9
mean π (%)	13.7	11.3	11.0
autocorr. π	0.85	0.85	0.85
std. dev. π	0.05	0.04	0.04

Notes: This table shows the calibrated parameters for χ in (18) to match the empirical estimates from Section 3 and other data moments for Turkey. $\varepsilon_{\Delta\mathbb{E}\pi',\Delta e} \equiv \frac{\Delta\mathbb{E}\pi'(\chi,E=1)}{\Delta e(\chi,E=1)}$ is the elasticity of the change in break-even inflation to the change in the exchange rate. The probability of $E=1$ is $q=0.04$. See text for detail.

Estimating inflation target I next use the model to estimate the inflation target of the central bank and government. In the main calibration I set the inflation target π^* equal to the official target of 5 per cent of Turkey. Instead, I now ask how high must the implicit inflation target be in order to rationalize the inflation outcomes observed in the data. To do this, I re-calibrate the model with π^* to target the 13.7 per cent average inflation for Turkey

[43] For example, a home-foreign good elasticity of 1.5 is used in Backus *et al.* (1994), Chari *et al.* (2002), and Itskhoki and Mukhin (2021).

[44] As shown in Appendix D1, in this case $\pi_t = \pi_{Ht} + \omega\sigma_\omega(\Delta\widetilde{y}_t - \Delta\widetilde{y}_t^w)$, and $\Delta e_t = \pi_{Ht} - \pi_t^w + \sigma_\omega(\Delta\widetilde{y}_t - \Delta\widetilde{y}_t^w)$ where $\sigma_\omega = 1$ under the baseline parameterization of $\zeta = 1$.

Table 6: Calibration: Estimating inflation target

Parameter	Value	Target	Data	Model
π^* annual	8.4%	mean π (%)	13.7	13.7
Δ_χ	0.002	$\Delta\mathbb{E}\pi'(\chi, E = 1)$	0.13	0.14
μ_χ	-0.022	$\varepsilon_{\Delta\mathbb{E}\pi',\Delta e}$	3.6	3.8
ρ	0.89	autocorr. $\mathbb{E}\pi'$	0.89	0.89
σ	0.006	std. dev. $\mathbb{E}\pi'$	0.05	0.03

Notes: This table shows the calibration for π^*, as well as the calibrated parameters for χ in (18) to match the empirical estimates from Section 3 and other data moments for Turkey. $\varepsilon_{\Delta\mathbb{E}\pi',\Delta e} \equiv \frac{\Delta\mathbb{E}\pi'(\chi,E=1)}{\Delta e(\chi,E=1)}$ is the elasticity of the change in break-even inflation to the change in the exchange rate. The probability of $E = 1$ is $q = 0.04$. Inflation (π) in the data are the monthly consumer price index percentage change on the previous year for the sample period 2017-18. See text for detail.

in 2017-18. Table 6 shows that this results in an inflation target of 8.4 per cent, significantly above the official target of 5 per cent. Even with the higher inflation target, the central bank again sets inflation well above this in order to prevent government intervention.

5. Conclusion

In this paper I have developed a theory of monetary policy by a central bank with a government intervention decision. In a simple New Keynesian economy of a dynamic game between the government and central bank, I show that depending on the cost of intervention to the government, the central bank may accomodate inflation above its target to prevent government intervention. In empirical analysis of episodes of political pressure on central banks by emerging market governments, I show that inflation expectations measured from daily bond prices increase, supporting the model prediction that monetary policy is constrained by this potential political intervention. I use the empirical estimates in a quantitative version of the model for a small-open economy to calibrate the parameters for the cost of intervention. From the model, I estimate that the threat of government intervention in monetary policy can explain over half of the increase in inflation above the central bank inflation target, relative to the level of inflation observed in the data.

This paper has analyzed control of monetary policy decision making by the central bank and the government, which the existing literature has generally taken as given, or examined as exogenous regime changes. In addition, the empirical evidence presented in this paper and experience in advanced and emerging-market economies supports the role of political influence in monetary policy, affecting both inflation expectations and outcomes. The model could be extended to understand the institutional decision by the government to establish an independent central bank with control over monetary policy, as has occurred in many emerging markets since the late 1990s (Fraga *et al.*, 2003). In addition, similar empirical analysis for the establishment of independent central banks may be interesting to explore.

Further work on endogenizing the cost of government intervention which I have assumed as exogenous would enrich the analysis, for example, by incorporating business cycle shocks, or distributional concerns between households or sectors.[45] In addition, the government may have budgetary considerations to intervene in monetary policy in order to reduce interest payments on government debt. Extending this monetary policy framework to allow for commitment by the central bank (as emphasized by Rotemberg and Woodford, 1997; Clarida *et al.*, 1999), could also provide interesting dynamics between current and future monetary policy decisions, as well as the interaction with inflation expectations.

[45] See the optimal monetary policy in a closed economy heterogenous agent models of Dávila and Schaab (2022), and McKay and Wolf (2022).

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Appendices

A. Theoretical Framework

A1. Deterministic Closed Economy Model

Households The representative household problem is:

$$\max_{\{c_{it}, L_t, B_{t+1}\}_{t=0}^{\infty}} \mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t [U(C_t, L_t)] \tag{A1}$$

$$s.t. \quad P_t C_t + Q_t B_{t+1} = W_t L_t + B_t + \Pi_t \tag{A2}$$

where Q_t is the price a one-period nominal bond and Π_t are the firm profits.

Household preferences are given by:

$$U(C_t, L_t) = \frac{{C_t}^{1-\sigma}}{1-\sigma} - \frac{L_t^{1+\eta}}{1+\eta} \tag{A3}$$

which are CRRA over consumption with relative risk aversion coefficient $\sigma > 0$, and inverse Frisch elasticity of labor supply $\eta > 0$.

C_t is a CES aggregate of varieties $i \in [0, 1]$:

$$C_t \equiv \left(\int_0^1 c_{it}^{\frac{\epsilon-1}{\epsilon}} di \right)^{\frac{\epsilon}{\epsilon-1}} \tag{A4}$$

where $\epsilon > 1$ denotes the elasticity of substitution between varieties.

The aggregate consumer price index is defined by:

$$P_t \equiv \left(\int_0^1 P_{it}^{1-\epsilon} di \right)^{\frac{1}{1-\epsilon}} \tag{A5}$$

Firms There is a continuum of firms $i \in [0, 1]$ with production technology:

$$Y_{it} = A_t L_{it}^{1-\alpha} \tag{A6}$$

where productivity A_t is common to all domestic firms and follows an exogenous AR(1) process:

$$\log A_t = \rho_a \log A_{t-1} + \varepsilon_t^a \tag{A7}$$

All firms i face an identical demand given by the solution to the household problem:

$$C_{it} = \left(\frac{P_{Hit}}{P_{Ht}}\right)^{-\epsilon} C_t \tag{A8}$$

Firms set prices à la Calvo (1983) and each firm i may reset its price with probability $1 - \lambda$ so the average duration of a price is $\frac{1}{1-\lambda}$.

NK Phillips Curve After characterizing an equilibrium and using market clearing, then taking a log-linear approximation around the zero inflation steady state (see Galí (2015) for the derivation) gives the NK Phillips curve (1):

$$\pi_t = \kappa \widetilde{y}_t + \beta \mathbb{E}_t \pi_{t+1} \tag{A9}$$

where $\pi_t \equiv p_t - p_{t-1}$, $p_t \equiv \log P_t$, $\widetilde{y}_t \equiv y_t - y_t^n$, where $y_t \equiv \log Y_t$, $y_t^n \equiv \log Y_t^n$ (the natural level of output under flexible prices), and the slope κ is given by:

$$\kappa = \left(\sigma + \frac{\eta + \alpha}{1-\alpha}\right) \frac{(1-\lambda)(1-\beta\lambda)}{\lambda} \left(\frac{1-\alpha}{1-\alpha+\alpha\epsilon}\right) \tag{A10}$$

Social Welfare Objective As shown in Galí (2015) Chapter 5, a second-order approximation of the household's welfare (A1) around a symmetric zero-inflation steady state gives welfare proportional to:

$$W = -\frac{1}{2}\mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t \left[\pi_t^2 + \gamma\left(\widetilde{y}_t^2 - 2\Phi \frac{1}{\left(\sigma + \frac{\eta+\alpha}{1-\alpha}\right)} \widetilde{y}_t\right)\right] \tag{A11}$$

$$= -\frac{1}{2}\mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t \left[\pi_t^2 + \gamma\left(\widetilde{y}_t - \Phi \frac{1}{\left(\sigma + \frac{\eta+\alpha}{1-\alpha}\right)}\right)^2\right] + const. \tag{A12}$$

$$= -\frac{1}{2}\mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t \left[\pi_t^2 + \gamma\left(\widetilde{y}_t - \psi\right)^2\right] + const. \tag{A13}$$

where $\gamma = \frac{\kappa}{\epsilon}$, $\psi = \Phi \frac{1}{\left(\sigma + \frac{\eta+\alpha}{1-\alpha}\right)} > 0$, and $\Phi \equiv \frac{1}{\epsilon}$. In this case there is a gap between the efficient level of output and the natural level of output. This assumes firms' market power in the goods market is uncorrected through an employment subsidy, leading to inefficiently low output in the zero inflation steady state.

A2. Proof of Proposition 1

Part *(i)* I start by showing *(i)* for the first equilibrium type. To solve for the government's optimal inflation if it intervenes π^{G*}, we use the solution to the government's optimal policy problem (5), given here:

$$\pi_t^{G*} = \frac{\gamma}{\kappa^2 + \gamma} \left[\frac{\kappa^2}{\gamma} \pi^* + \beta \mathbb{E}_t \pi_{t+1} + \kappa \psi \right] \tag{A14}$$

In this case, the government sets inflation in all future periods and private sector inflation expectations must be correct in equilibrium, therefore, $\mathbb{E}_t \pi_{t+1} = \pi_{t+1}^{G*}$ for all t. Substituting and iterating forward (A14) gives:

$$\pi^{G*} = \frac{\kappa^2 \pi^* + \gamma \kappa \psi}{\kappa^2 + \gamma(1-\beta)} \tag{A15}$$

$$\widetilde{y}^{G*} = (1-\beta) \frac{\kappa \pi^* + \gamma \psi}{\kappa^2 + \gamma(1-\beta)} \tag{A16}$$

where $\widetilde{y}^{G*}$ is solved by substituting $\pi^{G*} = \mathbb{E}\pi'$ into the NK Phillips curve (4).

The value to the government of choosing to intervene in such an equilibrium is:

$$V^I(\pi^{G*}) - \chi = -\frac{\gamma(\kappa^2 + \gamma)\left(\kappa^2 \psi^2 + \pi^{*2}(1-\beta)^2 - 2\kappa \pi^*(1-\beta)\right)}{(1-\beta)(\kappa^2 + \gamma(1-\beta))^2} - \chi \tag{A17}$$

To show for $\pi^* = 0$ that $\pi^{G*} > \pi^*$, from (A15) and (A16) respectively:

$$\pi^{G*} = \frac{\gamma \kappa \psi}{\kappa^2 + \gamma(1-\beta)} > 0 \tag{A18}$$

$$\widetilde{y}^{G*} = (1-\beta) \frac{\gamma \psi}{\kappa^2 + \gamma(1-\beta)} \in (0, \psi) \tag{A19}$$

since γ, ψ, κ, $\beta > 0$.

To ensure the central bank cannot prevent the government from intervening when $\mathbb{E}\pi' = \pi^{G*}$, it must be that for all π^{CB} such that $|\pi^{CB} - \pi^*| < |\pi^{G*} - \pi^*|$:

$$V^N(\pi^{G*}, \pi^{CB}) \leq V^I(\pi^{G*}) - \chi. \tag{A20}$$

Since $V^N(\pi^{G*}, \pi^{CB})$ has a maximum of 0, if $\chi \leq \underline{\chi} \equiv V^I(\pi^{G*})$ from (A17) then for any choice of π^{CB} the government is better off to intervene.

This shows that an equilibrium in which the government intervenes and sets π^{G*} exists when χ is less than or equal to the constant $\underline{\chi}$.

Part *(ii)* Next, to show *(ii)* for the second type of equilibrium where the central bank sets monetary policy at its first best level of inflation $\pi^{CB*} = \pi^*$. In this case, the central bank sets inflation in all future periods and private sector inflation expectations must be correct in equilibrium, therefore, $\mathbb{E}_t \pi_{t+1} = \pi^*$ for all t. From the NK Phillips curve (9), the output gap $\widetilde{y}^{CB} = \frac{(1-\beta)}{\kappa}\pi^*$ in every period. Therefore, the value to the government of not intervening in such an equilibrium is:

$$V^N(\pi^*, \pi^*) = -\frac{\gamma\left(\frac{(1-\beta)}{\kappa}\pi^* - \psi\right)^2}{1-\beta} \tag{A21}$$

To ensure the government does not want to deviate and intervene, the optimal government policy given $\mathbb{E}\pi' = \pi^*$ if it intervenes is given by the optimal inflation condition (5) and the NK Phillips curve (4):

$$\pi^G_O = \frac{\gamma}{\kappa^2 + \gamma}\left[\left(\frac{\kappa^2}{\gamma} + \beta\right)\pi^* + \kappa\psi\right] \tag{A22}$$

$$\widetilde{y}^G_O = \frac{1}{\kappa}\left[\pi^G_O - \beta\pi^*\right] \tag{A23}$$

The value to the government of intervening is given by:

$$V^I(\pi^*) - \chi = -\gamma(\widetilde{y}^G_O - \psi)^2 - (\pi^G_O - \pi^*)^2 - \chi + \beta V^I(\pi^{G*}) \tag{A24}$$

where $V^I(\pi^{G*})$ is given by (A17) as if the government intervenes it continues to set monetary policy in each period and private sector inflation expectations in next period must reflect this.

This is an equilibrium where the central bank sets $\pi^{CB} = \pi^*$ in every period and the government does not intervene if the cost of intervention to the government χ is large enough such that:

$$V^N(\pi^*, \pi^*) \geq V^I(\pi^*) - \chi \tag{A25}$$

$$\Leftrightarrow \chi \geq \overline{\chi} \equiv \frac{\gamma\left(\frac{(1-\beta)}{\kappa}\pi^* - \psi\right)^2}{1-\beta} - \gamma(\widetilde{y}_O^G - \psi)^2 - (\pi_O^G - \pi^*)^2 + \beta V^I(\pi^{G*}) \tag{A26}$$

where π_O^G and $\widetilde{y}_O^G$ are given by (A22) and (A23) respectively.

This shows that an equilibrium in which the central bank sets $\pi^{CB*} = \pi^*$ exists when χ is greater than or equal to the constant $\overline{\chi}$.

Part *(iii)* Finally, to show *(iii)* for the third type of equilibrium where the central bank sets π^{CB*} constrained by the threat of government intervention. Again, the central bank sets inflation in all future periods and private sector inflation expectations must be correct in equilibrium, therefore, $\mathbb{E}_t\pi_{t+1} = \pi^{CB*}$ for all t. From the NK Phillips curve (9), the output gap $\widetilde{y}^{CB} = \frac{(1-\beta)}{\kappa}\pi^{CB*}$ in every period. Therefore, the value to the government of not intervening in such an equilibrium is:

$$V^N(\pi^{CB*}, \pi^{CB*}) = -\frac{\gamma\left(\frac{(1-\beta)}{\kappa}\pi^{CB*} - \psi\right)^2 + (\pi^{CB*} - \pi^*)^2}{1-\beta} \tag{A27}$$

As for the type *(ii)* equilibrium, to ensure the government does not want to deviate and intervene, the optimal government policy given $\mathbb{E}\pi' = \pi^{CB*}$ if it intervenes is given by the optimal inflation condition (5) and the NK Phillips curve (4):

$$\pi_O^G = \frac{\gamma}{\kappa^2 + \gamma}\left[\frac{\kappa^2}{\gamma}\pi^* + \beta\pi^{CB*} + \kappa\psi\right] \tag{A28}$$

$$\widetilde{y}_O^G = \frac{1}{\kappa}\left[\pi_O^G - \beta\pi^{CB*}\right] \tag{A29}$$

The value to the government of intervening is given by:

$$V^I(\pi^{CB*}) - \chi = -\gamma(\widetilde{y}_O^G - \psi)^2 - (\pi_O^G - \pi^*)^2 - \chi + \beta V^I(\pi^{G*}) \tag{A30}$$

where $V^I(\pi^{G*})$ is given by (A17) as if the government intervenes it continues to set monetary policy in each period and private sector inflation expectations in next period will reflect this.

In such an equilibrium, the central bank will set π^{CB*} to make the government indifferent between not intervening and intervening, i.e. π^{CB*} is a solution to:

$$V^N(\pi^{CB*}, \pi^{CB*}) = V^I(\pi^{CB*}) - \chi \tag{A31}$$

otherwise the central bank could set π^{CB*} closer to π^* and be better off. In addition, to ensure the central bank follows a Markov policy in such an equilibrium and does not want to deviate from the private sector expecations for monetary policy, we require that π^{CB*} which solves (A31) be closest to π^*. Therefore, π^{CB*} is given by the solution to:

$$\min_{\pi^{CB*}} (\pi^{CB*} - \pi^*)^2 \tag{A32}$$

$$s.t. \qquad V^N(\pi^{CB*}, \pi^{CB*}) = V^I(\pi^{CB*}) - \chi \tag{A33}$$

$$-\frac{(\pi^{CB*} - \pi^*)^2}{1-\beta} \geq -(\pi^G_O - \pi^*)^2 - \beta\frac{(\pi^{G*} - \pi^*)^2}{1-\beta} \tag{A34}$$

where $V^N(\pi^{CB*}, \pi^{CB*})$ is given by (A27), $V^I(\pi^{CB*})$ is given by (A30), and the constraint (A34) ensures that the central bank is better off preventing the government from intervening (by choosing π^{CB*} each period) than under government intervention and optimal monetary policy given the private sector expectations $\mathbb{E}\pi' = \pi^{CB*}$ (π^G_O in the current period, π^{G*} in each period thereafter).

Now working with the special case $\pi^* = 0$ to show that in such an equilibrium $\pi^{CB*} \in [\pi^*, \pi^{G*}]$.

First, the central bank will never set $\pi^{CB*} = \mathbb{E}\pi' < 0$ in equilibrium. To see this, suppose such an equilibrium exists and observe that if $\pi^{CB*} < 0$, then $\widetilde{y}^{CB} = \frac{(1-\beta)}{\kappa}\pi^{CB*} < 0$. Therefore, the central bank would want to deviate from such a π^{CB*} which satisfies the condition (A31) and could do so by increasing both π^{CB*} closer to the inflation target of $\pi^* = 0$, and $\widetilde{y}^{CB}$ closer to the government's desired output gap of $\psi > 0$ and make both the central bank and government better off. Therefore, $\pi^{CB*} < 0$ cannot be an equilibrium of type (iii).

Second, to show that the central bank will never set $\pi^{CB*} > \pi^{G*}$ in equilibrium. Observe that if $\pi^{CB*} > \pi^{G*}$ then the central bank would be made better off by setting π^{G*} each period, which gives the government's value from Part *(ii)*. Therefore, $\pi^{CB*} > \pi^{G*}$ cannot be an equilibrium of type (iii).

Therefore, for an equilibrium of type *(iii)* $\pi^{CB*} \in [\pi^*, \pi^{G*}]$.

$V^N(\pi^{CB*}, \pi^{CB*})$ from (A27) and $V^I(\pi^{CB*}) - \chi$ from (A30) are given by:

$$V^N(\pi^{CB*}, \pi^{CB*}) = -\frac{\gamma\left(\frac{(1-\beta)}{\kappa}\pi^{CB*} - \psi\right)^2 + (\pi^{CB*})^2}{1-\beta} \tag{A35}$$

$$\begin{aligned} V^I(\pi^{CB*}) - \chi = & -\gamma\left(\frac{\gamma}{\kappa(\kappa^2+\gamma)}\left[\beta\pi^{CB*} + \kappa\psi\right] - \psi\right)^2 - \left(\frac{\gamma}{\kappa^2+\gamma}\left[\beta\pi^{CB*} + \kappa\psi\right]\right)^2 - \chi \\ & - \beta\frac{\gamma(\kappa^2+\gamma)\kappa^2\psi^2}{(1-\beta)(\kappa^2+\gamma(1-\beta))^2} \end{aligned} \tag{A36}$$

I now characterize $[\widetilde{\underline{\chi}}, \overline{\chi}]$, the range of possible values of χ which is necessary, but not sufficient, for such an equilibrium to exist.

First, in order to be feasible there must exist a π^{CB*} which solves the equilibrium condition (A32). Define $\widetilde{\underline{\chi}}$ as the minimum χ given the parameters which does so:

$$\widetilde{\underline{\chi}} \equiv \min_{\pi^{CB*} \in [\pi^*, \pi^{G*}]} f(\pi^{CB*}) = V^I(\pi^{CB*}) - V^N(\pi^{CB*}, \pi^{CB*}) \tag{A37}$$

which must exist from the extereme value theorem as f is a continuous function on the closed interval $\chi \in [\pi^*, \pi^{G*}]$. Given this definition, for $\chi < \widetilde{\underline{\chi}}$ an equilibrium given by (A32) where the central bank, constrained by the threat of government intervention, prevents the government from intervening cannot exist.

Next, for such an equilibrium to be feasible also requires $\pi^{CB*} \geq \pi^*$, which is equivalent to $\chi \leq \overline{\chi}$ from part *(ii)* (observe that the conditions are identical for $\pi^{CB*} = \pi^* = 0$). If $\chi > \overline{\chi}$ then as shown by the definition of $\overline{\chi}$ the central bank is not constrained by the threat of government intervention so (11) cannot bind.

This shows that an equilibrium where the government does not intervene and the threat of intervention constraint (11) binds exists only if $\chi \in [\widetilde{\underline{\chi}}, \overline{\chi}]$.

A3. Proof of Proposition 2

As shown in Proposition 1 Part *(i)*, in equilibrium type *(i)* if $\chi \leq \underline{\chi}$ then the government intervenes and sets π^{G*}, which does not depend on χ, and $\mathbb{E}\pi' = \pi^{G*}$. Therefore, for this type of equilibrium if $\chi < \underline{\chi}$, then small changes in the value of χ do not affect private sector inflation expectations

$\mathbb{E}\pi' = \pi^{G*}$, i.e. $\frac{\partial \mathbb{E}\pi'}{\partial \chi} = 0$.

Similarly for equilibrium type *(ii)* where the central bank sets monetary policy $\pi^{CB*} = \pi^*$, and $\mathbb{E}\pi' = \pi^*$. For this type of equilibrium if $\chi > \overline{\chi}$, then small changes in the value of χ do not affect private sector inflation expectations $\mathbb{E}\pi' = \pi^*$, i.e. $\frac{\partial \mathbb{E}\pi'}{\partial \chi} = 0$.

B. Data

B1. Data Description

Data on bond yields are from Refinitiv Thomson ONE (see Table B2 for more detail), as well as for other variables: exchange rates, stock market indices (Borsa Istanbul 100 Index for Turkey, COLCAP for Colombia, MERVAL for Argentina), Volatility Index (VIX), US S&P 500 index, MSCI Emerging Markets government bond index. Monetary policy meeting dates are from national central bank websites and Central Bank News[46].

Event dates Political pressure event dates are in Table B1. For Turkey and Colombia, these are from Çakmaklı *et al.* (2021) who search the Bloomberg news archive for news articles on the President and interest rates. I include events for statements by the President referring to the central bank or lower interest rates. For Argentina, during this period President Macri did not publicly comment on interest rates but, as detailed by the Central Bank Governor Sturzenegger (2019), the government did exert pressure on monetary policy. I use the dates of the government unanticipated announcement raising the central bank's inflation target (12/28/2017), the subsequent monetary policy decision dates when the central bank was widely viewed as being pressured by the government to loosen monetary policy, and the resignation of the Central Bank Governor (6/14/2018 and 9/28/2018). When an event occurs on a non-trading day (e.g. on the weekend), the date of the next trading day is used.

[46] See http://www.centralbanknews.info.

Table B1: Political Pressure Events by Episode

Event	Turkey 2017-18	Colombia 2016-17	Argentina 2017-18
1	1/12/2017	8/1/2016	12/28/2017
2	2/7/2017	8/15/2016	1/9/2018
3	5/2/2017	10/3/2016	1/23/2018
4	6/19/2017	11/6/2016	2/13/2018
5	10/3/2017	11/25/2016	2/27/2018
6	10/13/2017	5/8/2017	3/13/2018
7	11/17/2017	8/31/2017	3/27/2018
8	12/29/2017	5/22/2017	4/10/2018
9	2/6/2018		4/24/2018
10	3/5/2018		4/27/2018
11	3/31/2018		5/3/2018
12	4/9/2018		5/4/2018
13	5/7/2018		5/8/2018
14	5/15/2018		5/22/2018
15	6/19/2018		6/12/2018
16	6/20/2018		6/14/2018
17	7/11/2018		6/26/2018
18	9/13/2018		7/10/2018
19	10/22/2018		8/7/2018
20			8/13/2018
21			8/30/2018
22			9/11/2018
23			9/25/2018
24			9/28/2018

Data sources: Çakmaklı *et al.* (2021), Central Bank of the Argentine Republic, and Central Bank News.

Bond Yields and Break-even Inflation Rate Table B2 provides the details of the government bonds used to calculate daily inflation expectations. For each country I select the closest maturity bonds with the same coupon frequency and data available for each country episode.[47]

[47]The results are robust to using the different available bonds with a * with a similar maturity (see Appendix C5).

Table B2: Bonds Detail

ISIN	Inflation-Indexed	Maturity	Currency	Coupon Frequency
Turkey 2017-18:				
TRT050220T17	N	5feb2020	TRY	182 days
TRT010420T19	Y	1apr2020	TRY	182 days
TRT020322T17*	N	2mar2022	TRY	182 days
TRT230222T13*	Y	23feb2022	TRY	182 days
Colombia 2016-17:				
COL17CT02864	N	4may2022	COP	Annual
COL17CT02088	Y	23feb2023	COP	Annual
COL17CT02385*	N	24jul2024	COP	Annual
Argentina 2017-18:				
ARARGE3200U1	N	8oct2020	USD	Semi-annual
ARARGE4502L8	Y	28apr2020	ARS	Semi-annual
ARARGE320283*	Y	22jul2021	ARS	Semi-annual

Notes: This table provides the details of the government bonds use in the analysis. Bonds without a * are used in the baseline, and bonds with a * are used in the robustness analysis in Appendix C5. Data sources: Refinitiv.

For Turkey and Colombia the available nominal and inflation-indexed government bonds are traded in domestic currency so I measure break-even inflation as $BE_t = Yield_t^{Nom} - Yield_t^{IIB}$. For Argentina during this episode the only nominal bond is denominated in USD. I follow Morelli and Moretti (2022) who analyze break-even inflation for Argentina for an earlier period and construct a measure using the yield of the nominal bond in dollars ($Yield_t^{US\$}$) and the expected devaluation of the Argentine peso from forward currency contracts data. Let $F_{t,0}$ denote the spot exchange rate and $F_{t,12}$ the future exchange rate 12 months from t (the longest horizon available and with data available from Bloomberg to September 2018). Let $\delta^e_{t,12} \equiv \frac{F_{t,12}-F_{t,0}}{F_{t,0}}$ be the expected devaluation of the exchange rate in 12 months to compute break-even inflation as:

$$BE_t = Yield_t^{US\$} - Yield_t^{IIB} + \delta^e_{t,12} \tag{B1}$$

Lag Length Selection To determine the lag length L for the main specification panel estimation (12) I use the model selection criteria AIC, AIC_C, and BIC. I estimate (12) for $L = 1, ..., 15$ for each horizon $h = 0, 1, ..., 40$ and calculate the $\text{AIC}_{L,h}$, $\text{AIC}_{C,L,h}$, and $\text{BIC}_{L,h}$. Then for each $\text{AIC}_{L,h}$, $\text{AIC}_{C,L,h}$, and $\text{BIC}_{L,h}$ I find the L which minimizes the criteria at each horizon h. I then take the mean L over all h for each criteria which gives a range of $L = 1$ to $L = 10$, and a mean of $L = 5$, which I use as the baseline.[48] Figures C1, C7, and C11 show the baseline results with $L = 5$ are robust to using $L = 1$ and $L = 10$ lags.

Political Pressure Events as Shocks I examine the predictability of the political pressure event dates using a local projections estimation similar to (12). I estimate the following panel model by OLS and by logit given the binary dependent variable:

$$E_{c,t} = \beta_{0,h} + \gamma_{c,h} + \alpha_h{}' X_{c,t} + \Sigma_{l=1}^{L}(\Gamma_{h,l}\Delta BE_{c,t-l} + \Lambda_{h,l}E_{c,t-l} + \alpha_{h,l}{}'X_{c,t-l}) + \varepsilon_{c,t+h} \tag{B2}$$

with fixed effects $\gamma_{c,h}$, the full set of controls $X_{c,t}$ and $L = 5$ lags.

First, the maximum fitted value for the predicted probability of an event by OLS is 0.25 and by logit is 0.10. In particular, for the logit model less than 10% of observations have predicted probabilities greater than 0.05. This suggests that the explanatory variables cannot strongly predict a political pressure event.

Second, from the estimation of (B2), I find the only lagged control variables which are significant at the 5% level are the lagged change in the exchange rate ΔXR_{t-1} and the stock market ΔSM_{t-1}. However, I find these magnitude of these effects are very small: for the logit model a one standard deviation increase in ΔXR_{t-1} and ΔSM_{t-1} at the mean of each variable is associated with a change in the predicted probability of a political pressure event of 0.025 and -0.032, respectively.

Third, I investigate the strongest predicted event days from (B2) equal to the number of events in the sample. I find that this prediction for the highest probability event dates from the model is correct for less than 1/3 of the events in the data.

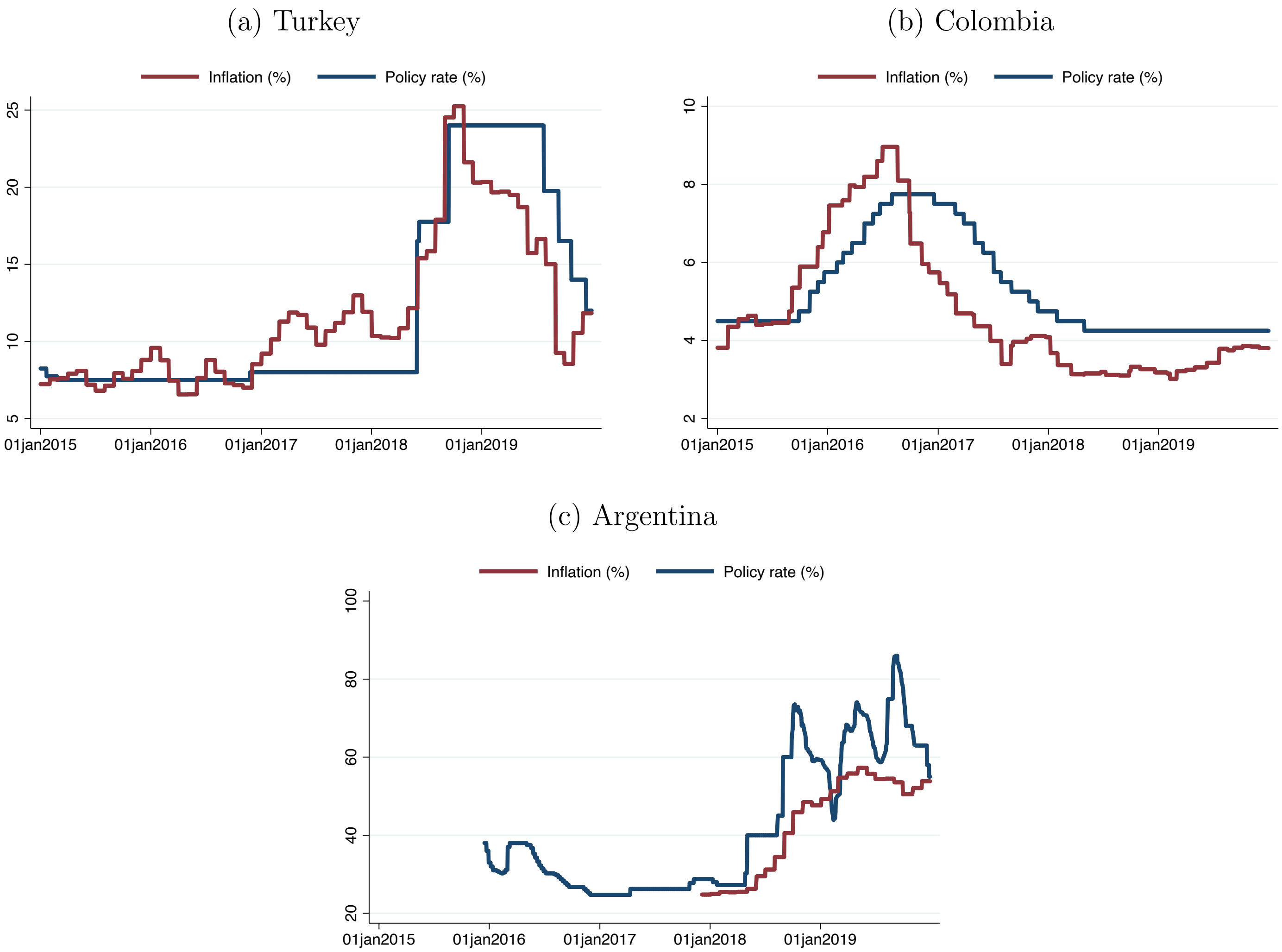
Finally, I re-estimate (B2) by OLS using the instrument Z_t from Section 3.3 as the dependent variable and both the variables ΔXR_{t-1} and ΔSM_{t-1} are not significant.

Taken together, this supports political pressure events not being well-predicted by observables.

[48] The results are similar when taking the mode L over all h for each criteria.

B2. Additional Figures

Figure B1: Inflation and Monetary Policy Rate



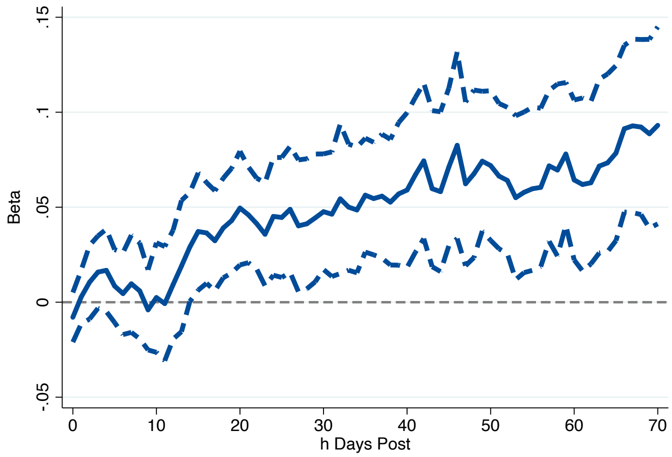
Notes: This figure shows inflation and the monetary policy rate for each country in the sample. Inflation is the monthly consumer price index percentage change on the previous year. The monetary policy rate for Turkey is the 1 week repo rate, for Colombia is the tasa de intervención de política monetaria, and for Argentina the 28-day liquidity bills (Leliq) annual rate. Data sources: OECD, Central Bank of the Republic of Turkey, Bank of the Republic of Colombia, and Central Bank of the Argentine Republic.

C. Additional Empirical Results

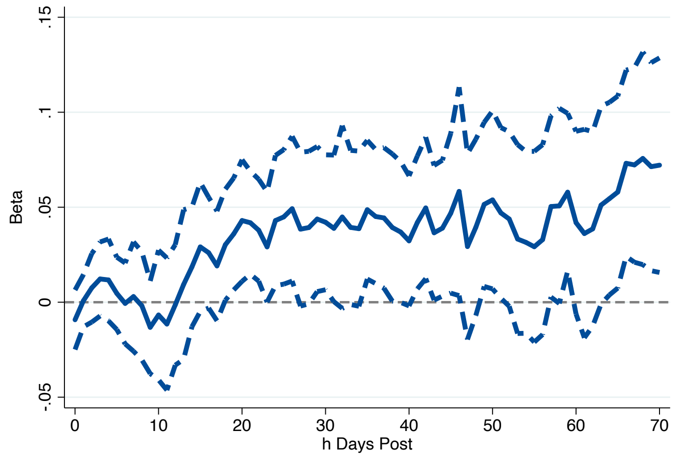
C1. Robustness – OLS Results

Figure C1: Effect of Political Pressure Event on Break-even Inflation – Robustness

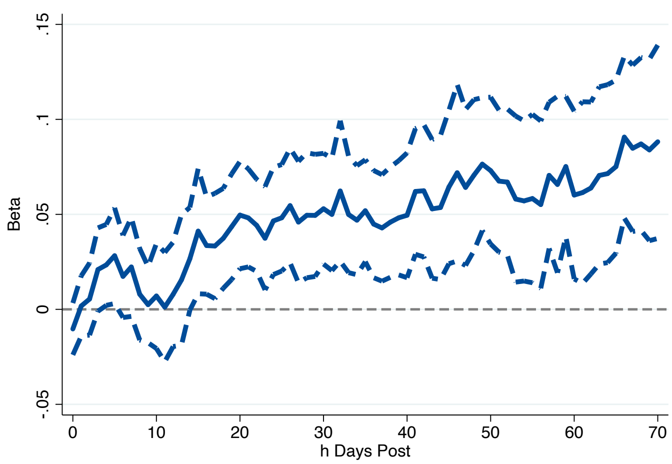
(a) No Controls



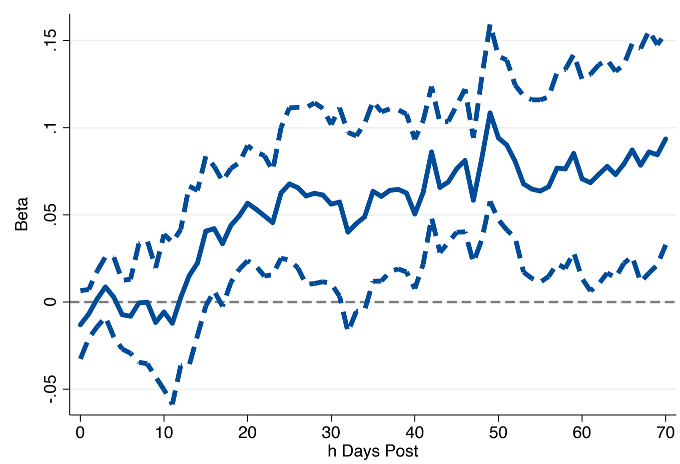
(b) Domestic Controls Only



(c) 1 lag



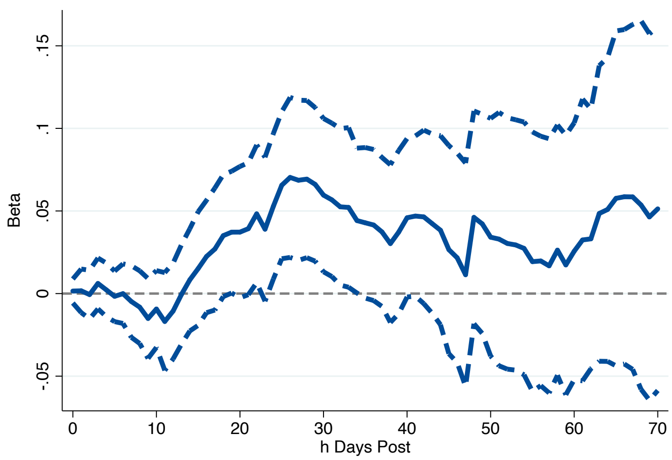
(d) 10 lags



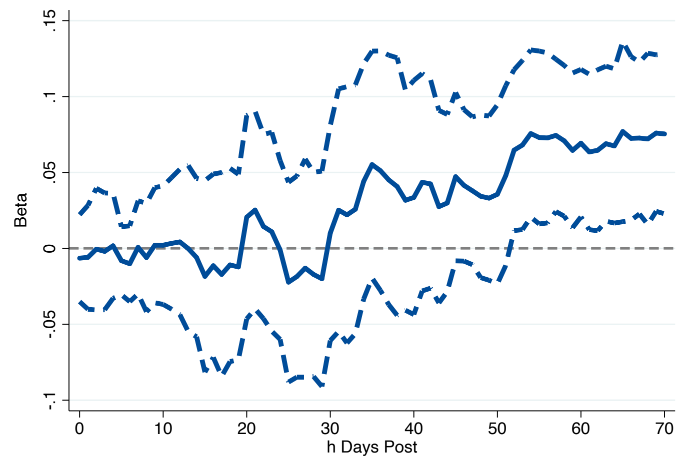
Notes: This figure plots the estimated per cent change in break-even inflation to political pressure events at horizon h measured by the coefficient estimate $\widehat{\beta}_{E,h}$ from the regression (12) in Panel (a) with no control variables X_t and $L = 5$ lags, and Panel (b) only including country-specific control variables and $L = 5$ lags. Panels (c) and (d) include all control variables and $L = 1$ and $L = 10$ lags respectively. The dashed lines show a 90% confidence interval using Newey-West standard errors which are heteroskedasticity and autocorrelation consistent up to lag h. Further details in Appendix B.

Figure C2: Effect of Political Pressure Event on Break-even Inflation – Individual Episodes

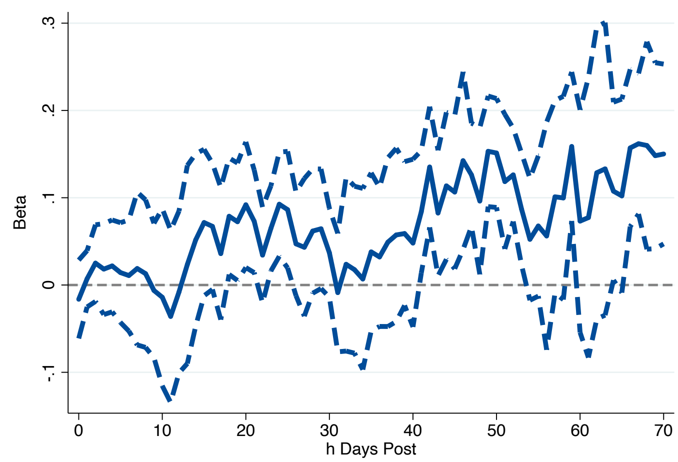
(a) Turkey



(b) Colombia

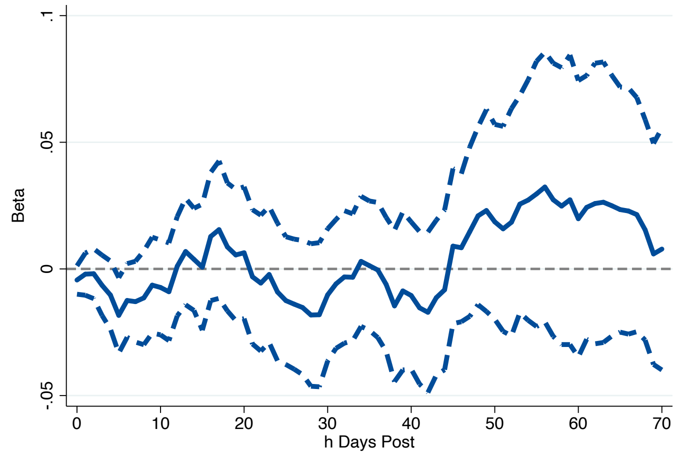


(c) Argentina



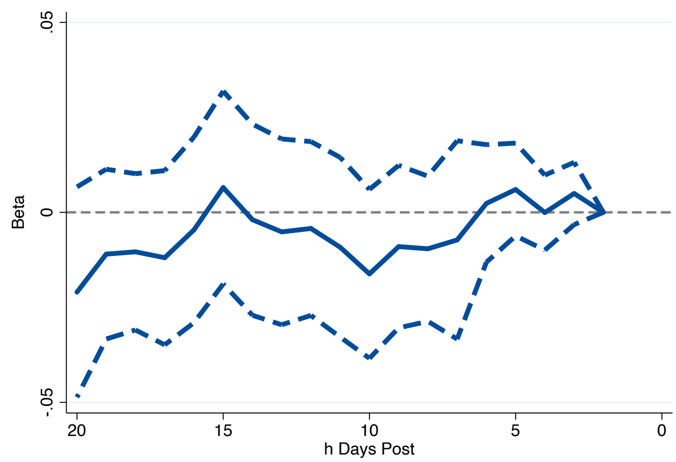
Notes: This figure plots the estimated per cent change in break-even inflation to political pressure events at horizon h measured by the coefficient estimate $\widehat{\beta}_{E,h}$ from the regression (12) with no control variables X_t and $L = 5$ lags. The dashed lines show a 90% confidence interval using Newey-West standard errors which are heteroskedasticity and autocorrelation consistent up to lag h. Further details in Appendix B.

Figure C3: Effect of Monetary Policy Meeting on Break-even Inflation



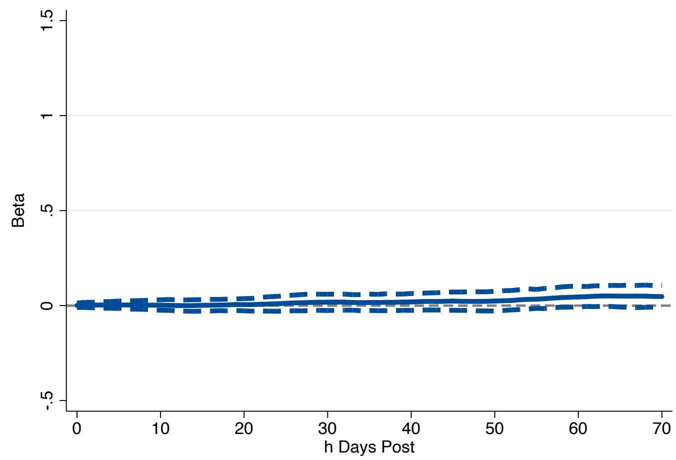
Notes: This figure plots the estimated per cent change in break-even inflation to political pressure events at horizon h measured by the coefficient estimate on the monetary policy meeting dummy variable from the regression (12) including the full set of control variables X_t and $L = 5$ lags. The dashed lines show a 90% confidence interval using Newey-West standard errors which are heteroskedasticity and autocorrelation consistent up to lag h. Further details in Appendix B.

Figure C4: Pre-trend of Political Pressure Event on Break-even Inflation



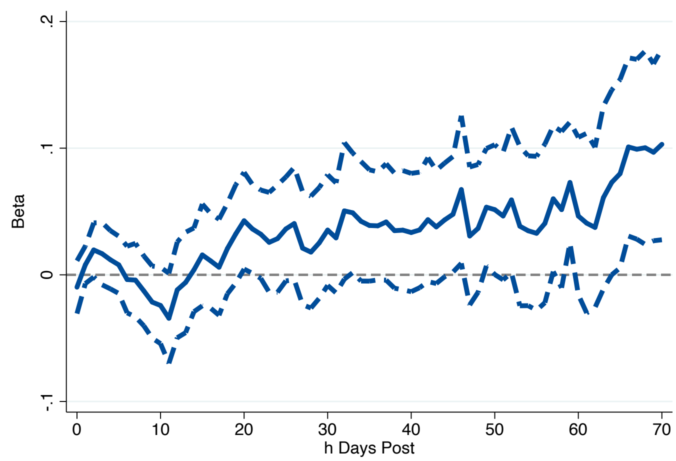
Notes: This figure plots the estimated per cent change in break-even inflation at horizon h days prior to political pressure events measured by the coefficient estimate $\widehat{\beta}_{E,h}$ from the regression (12) including the full set of control variables X_t and $L = 1$ lags. The dashed lines show a 90% confidence interval using Newey-West standard errors which are heteroskedasticity and autocorrelation consistent up to lag h. Further details in Appendix B.

Figure C5: Random Events on Break-even Inflation



Notes: This figure plots the estimated per cent change in break-even inflation to random events at horizon h measured by the coefficient estimate on the monetary policy meeting dummy variable from the regression (12) including the full set of control variables X_t and $L = 5$ lags. The dashed lines show a 90% confidence interval constructed using 1,000 bootstrap draws. Further details in Appendix B.

Figure C6: Effect of Political Pressure Event With Exchange Rate Depreciation on Break-even Inflation

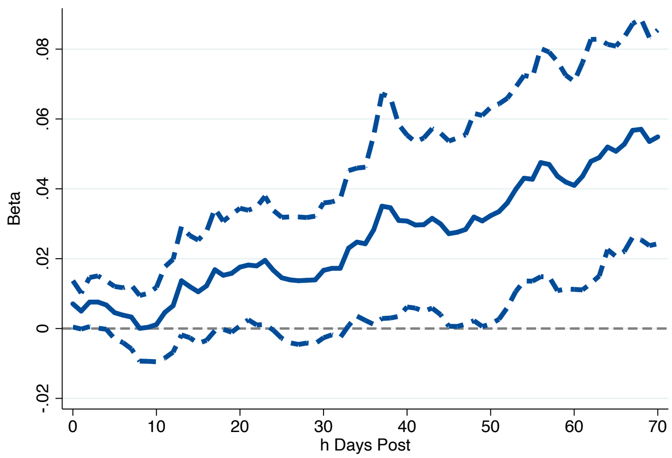


Notes: This figure plots the estimated per cent change in break-even inflation to political pressure event dates with an exchange rate depreciation on impact at horizon h measured by the coefficient estimate $\widehat{\beta}_{E,h}$ from the regression (12) including the full set of control variables X_t and $L = 5$ lags. The dashed lines show a 90% confidence interval using Newey-West standard errors which are heteroskedasticity and autocorrelation consistent up to lag h. Further details in Appendix B.

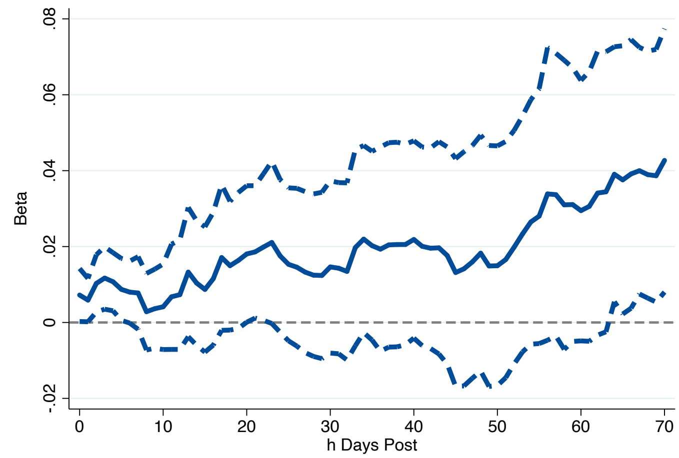
C2. Robustness – Exchange Rate Results

Figure C7: Effect of Political Pressure Event on Exchange Rate – Robustness

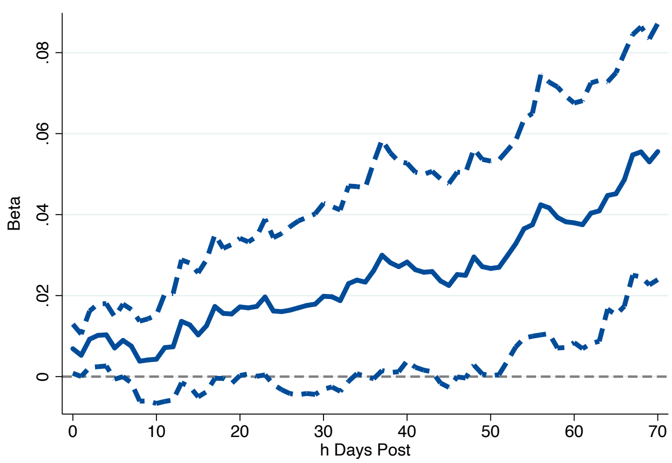
(a) No Controls



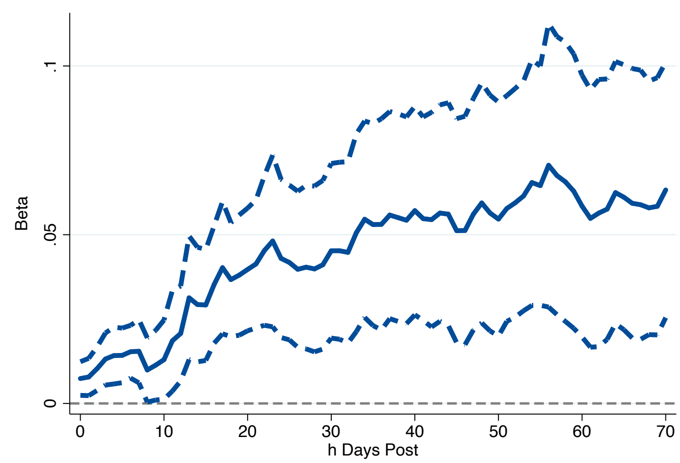
(b) Domestic Controls Only



(c) 1 lag



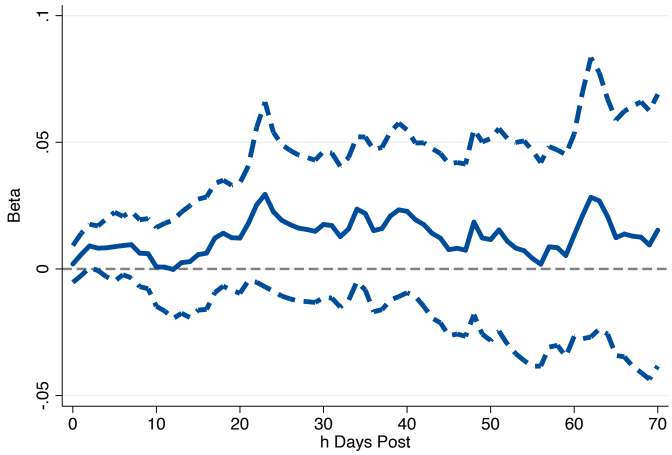
(d) 10 lags



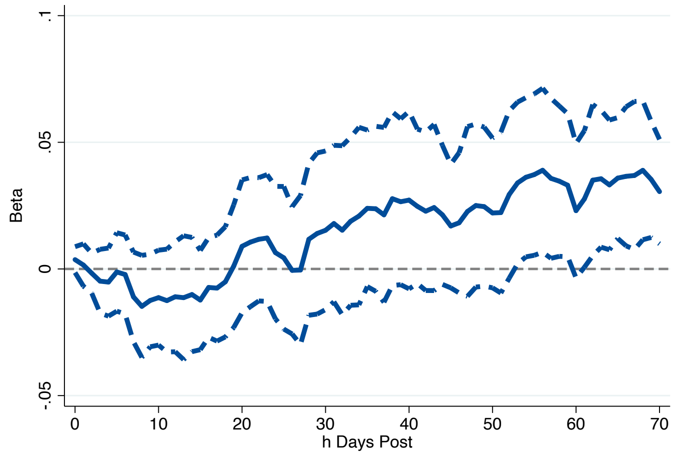
Notes: This figure plots the estimated per cent change in the exchange rate to political pressure events at horizon h measured by the coefficient estimate $\widehat{\beta}_{E,h}$ from the regression (12) in Panel (a) with no control variables X_t and $L = 5$ lags, and Panel (b) only including country-specific control variables and $L = 5$ lags. Panels (c) and (d) include all control variables and $L = 1$ and $L = 10$ lags respectively. The dashed lines show a 90% confidence interval using Newey-West standard errors which are heteroskedasticity and autocorrelation consistent up to lag h. Further details in Appendix B.

Figure C8: Effect of Political Pressure Event on Exchange Rate – Individual Episodes

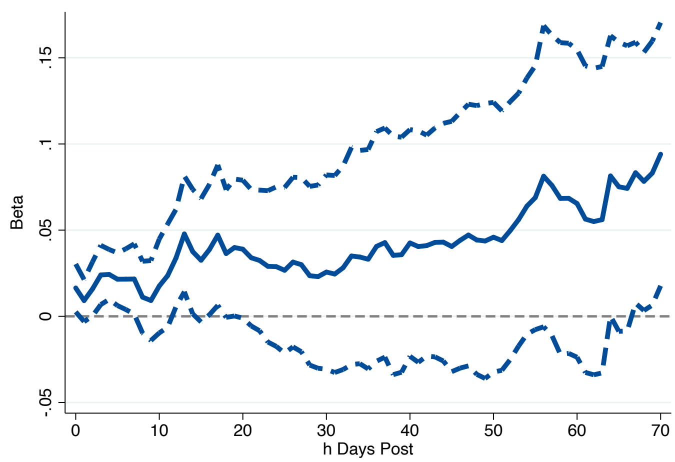
(a) Turkey



(b) Colombia

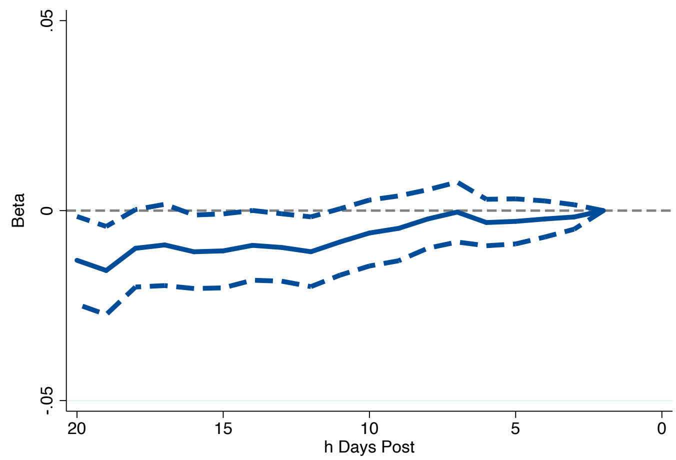


(c) Argentina



Notes: This figure plots the estimated per cent change in the exchange rate to political pressure events at horizon h measured by the coefficient estimate $\widehat{\beta}_{E,h}$ from the regression (12) with no control variables X_t and $L = 5$ lags. The dashed lines show a 90% confidence interval using standard errors which are heteroskedasticity and autocorrelation consistent up to lag h. Further details in Appendix B.

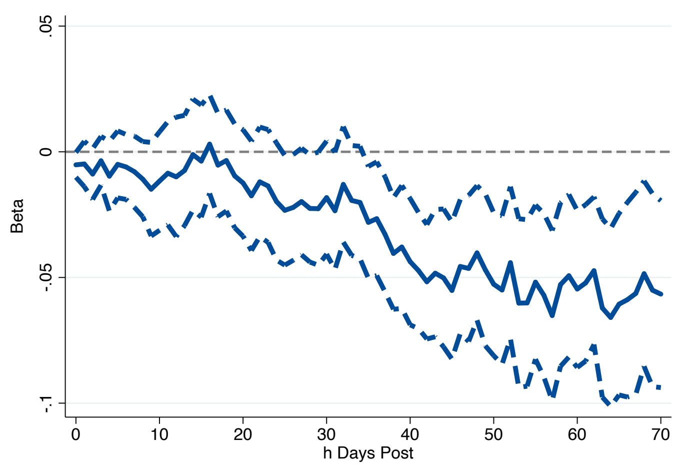
Figure C9: Pre-trend of Political Pressure Event on Exchange Rate



Notes: This figure plots the estimated per cent change in the exchange rate at horizon h days prior to political pressure events measured by the coefficient estimate $\widehat{\beta}_{E,h}$ from the regression (12) including the full set of control variables X_t and $L = 1$ lags. The dashed lines show a 90% confidence interval using Newey-West standard errors which are heteroskedasticity and autocorrelation consistent up to lag h. Further details in Appendix B.

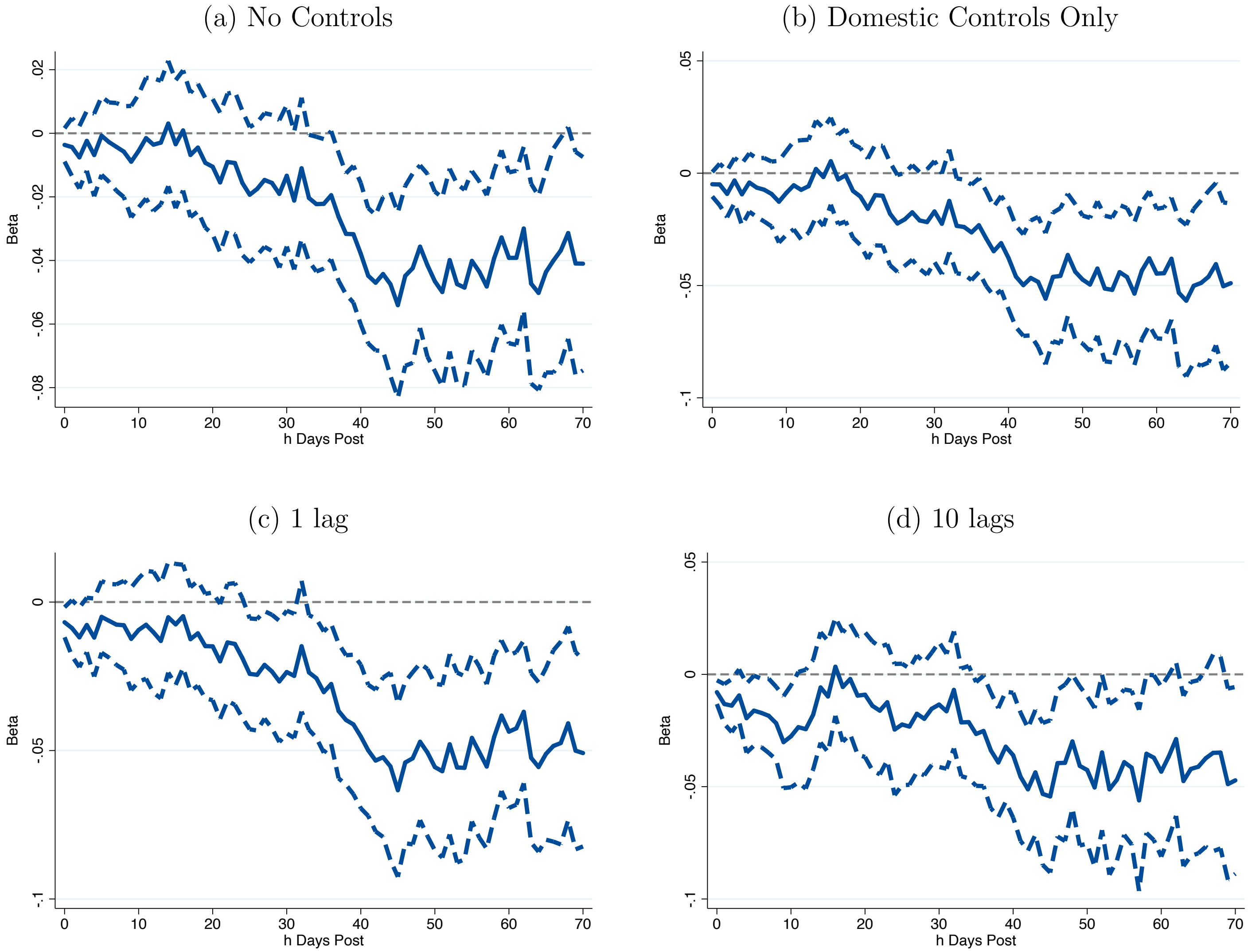
C3. Stock Market Results

Figure C10: Effect of Political Pressure Event on Stock Market



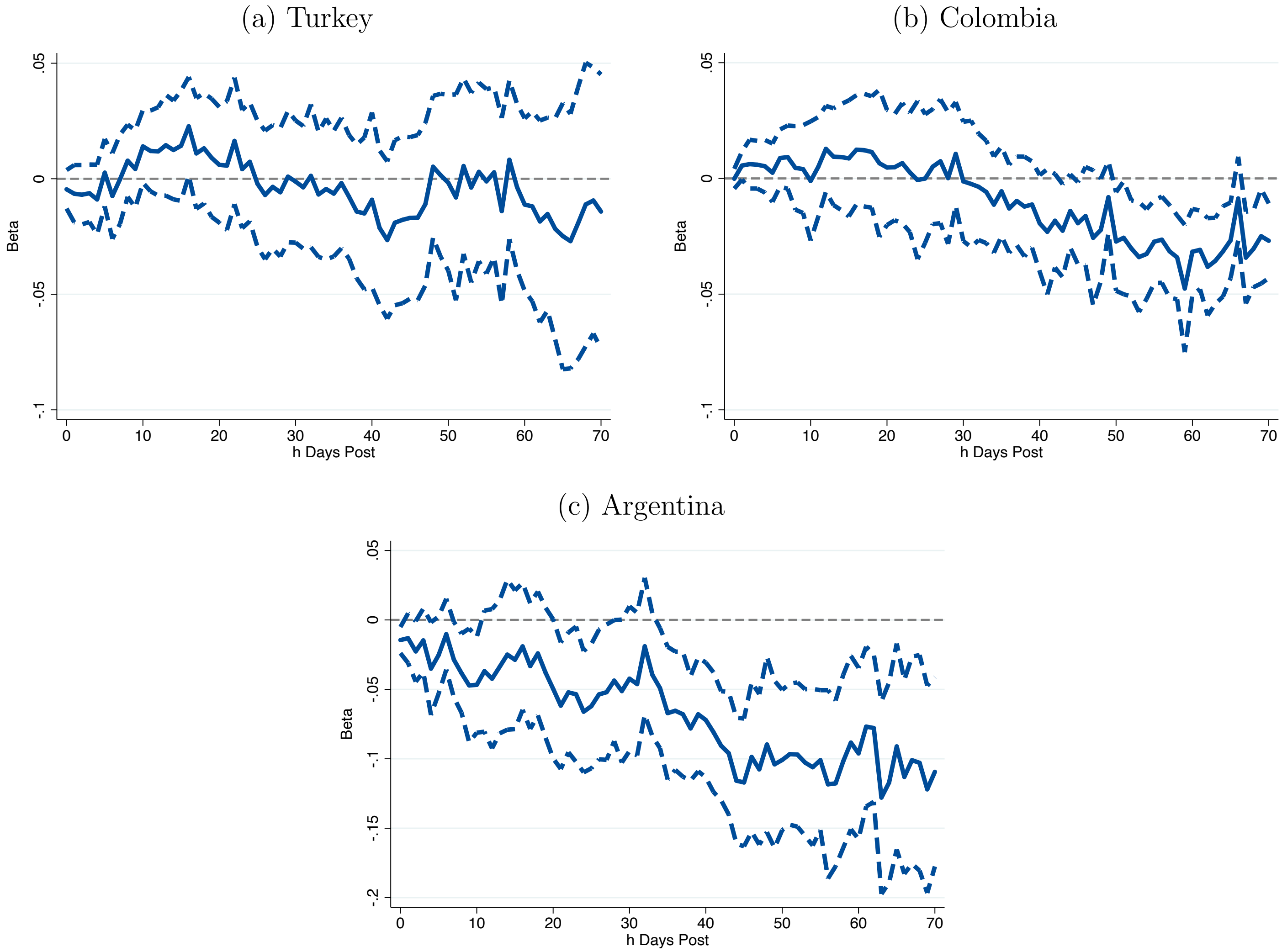
Notes: This figure plots the estimated per cent change in the domestic stock market index to political pressure events at horizon h measured by the coefficient estimate $\widehat{\beta}_{E,h}$ from the regression (12) including the full set of control variables X_t and $L = 5$ lags. The dashed lines show a 90% confidence interval using Newey-West standard errors which are heteroskedasticity and autocorrelation consistent up to lag h. Further details in Appendix B.

Figure C11: Effect of Political Pressure Event on Stock Market – Robustness



Notes: This figure plots the estimated per cent change in the stock market to political pressure events at horizon h measured by the coefficient estimate $\widehat{\beta}_{E,h}$ from the regression (12) in Panel (a) with no control variables X_t and $L = 5$ lags, and Panel (b) only including country-specific control variables and $L = 5$ lags. Panels (c) and (d) include all control variables and $L = 1$ and $L = 10$ lags respectively. The dashed lines show a 90% confidence interval using Newey-West standard errors which are heteroskedasticity and autocorrelation consistent up to lag h. Further details in Appendix B.

Figure C12: Effect of Political Pressure Event on Stock Market – Individual Episodes



Notes: This figure plots the estimated per cent change in the stock market to political pressure events at horizon h measured by the coefficient estimate $\widehat{\beta}_{E,h}$ from the regression (12) with no control variables X_t and $L = 5$ lags. The dashed lines show a 90% confidence interval using standard errors which are heteroskedasticity and autocorrelation consistent up to lag h. Further details in Appendix B.

C4. Additional IV Results

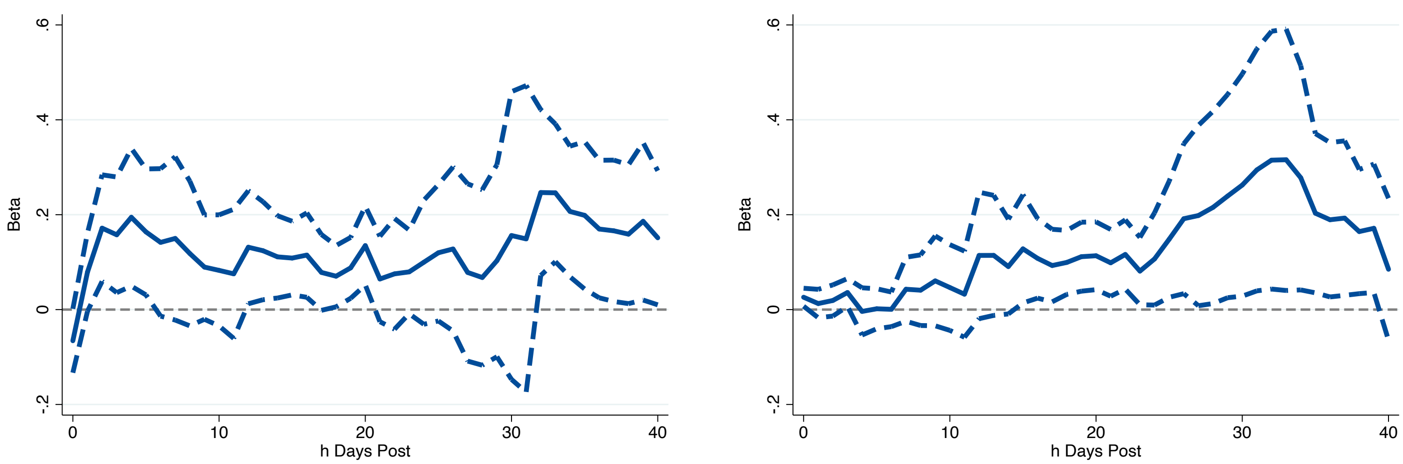
Table C1: First-Stage IV Regression Results

$\widetilde{B}_Z$	(1)	(2)	(3)
ΔXR	9.541***		9.568***
	(3.422)		(3.179)
ΔSM		-0.092	-0.095
		(0.107)	(0.106)
N Observations	971	932	932

Notes: This table shows the coefficient estimate $\widetilde{\beta}_Z$ on the instrument $Z_{c,t}$ from the first-stage panel regression (13), where column (1) uses the change in the log exchange rate $Z_{c,t} = E_{c,t}\Delta XR_{c,t}$, column (2) uses the change in the log domestic stock market index $Z_{c,t} = E_{c,t}\Delta SM_{c,t}$, and column (3) uses both variables as instruments.

Figure C13: Effect of Political Pressure Event on Break-even Inflation – IV Robustness

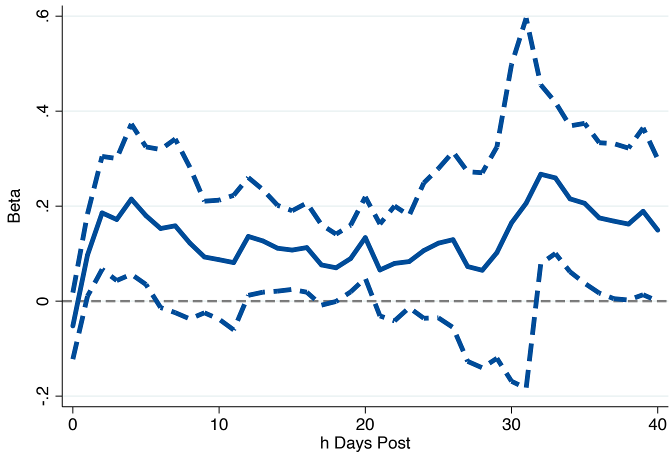
(a) Not Normalizing $Z_{c,t}$ (b) Drop Outliers



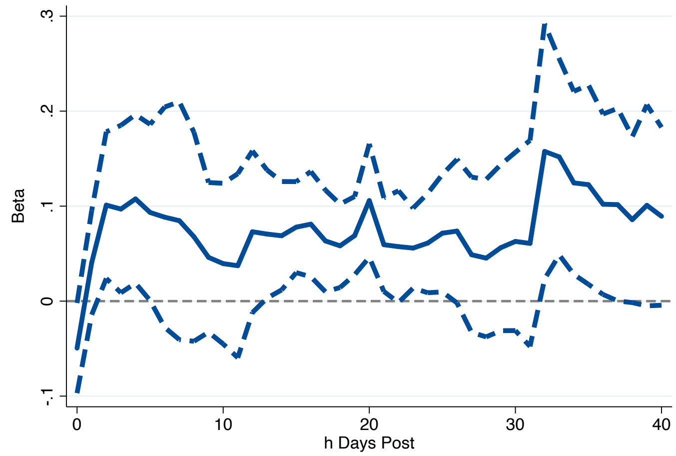
Notes: This figure plots the estimated per cent change in break-even inflation to political pressure events at horizon h measured by the coefficient estimate $\widehat{\beta}_{E,h}$ from the regression (12) using the IV (13) including the full set of control variables X_t and $L = 5$ lags. Panel (a) does not normalize $Z_{c,t}$ by the mean and standard deviation of $\Delta XR_{c,t}$ by episode as in the main specification. Panel (b) drops observations with exchange rate changes of more than ± 2.5 standard deviations. The dashed lines show a 90% confidence interval using Newey-West standard errors which are heteroskedasticity and autocorrelation consistent up to lag h. Further details in Appendix B.

Figure C14: Effect of Political Pressure Event on Break-even Inflation – IV Alternative Specifications

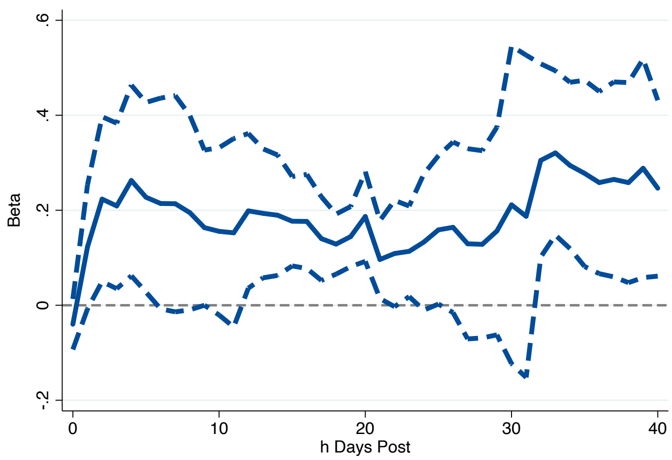
(a) Residualizing Z_t



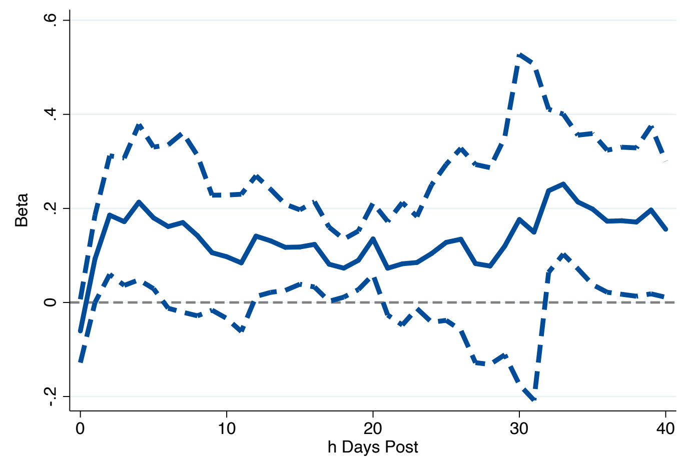
(b) Exchange Rate Depreciation Only



(c) No Controls

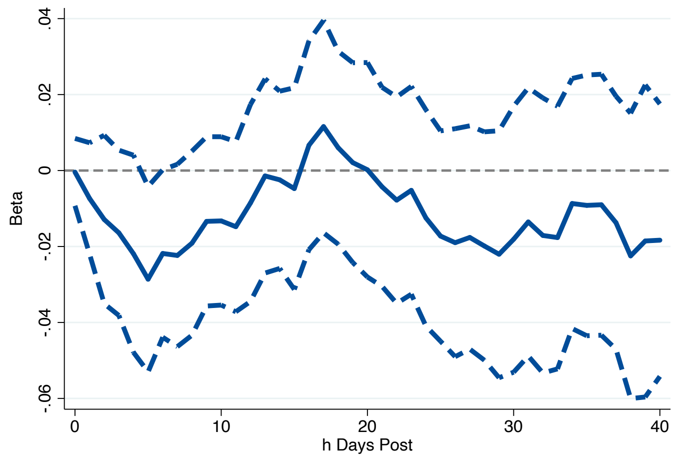


(d) Domestic Controls Only



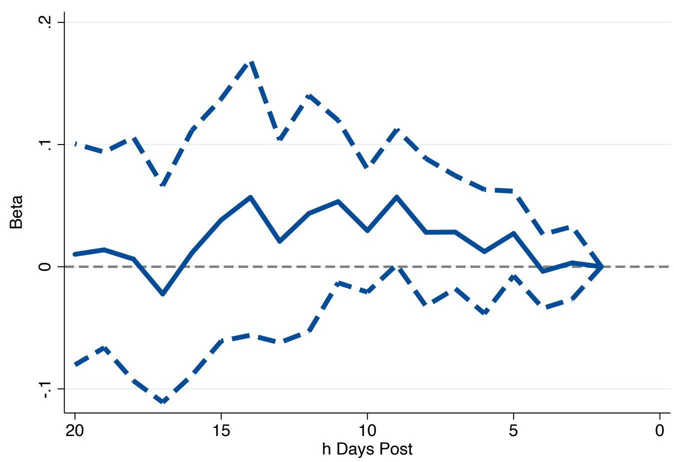
Notes: This figure plots the estimated per cent change in break-even inflation to political pressure events at horizon h measured by the coefficient estimate $\widehat{\beta}_{E,h}$ from the regression (12) using the IV (13) including the full set of control variables X_t and $L = 5$ lags. Panel (a) residualizes Z_t by the full set of controls and lags of Z_t. Panel (b) constructs the instrument for political pressure event days only where the exchange rate depreciated: $Z_{c,t} = E_{c,t}\mathbb{1}_{\{\Delta XR_{c,t}>0\}}\Delta XR_{c,t}$. Panel (c) with no control variables X_t and $L = 5$ lags, and Panel (d) only including country-specific control variables and $L = 5$ lags. The dashed lines show a 90% confidence interval using Newey-West standard errors which are heteroskedasticity and autocorrelation consistent up to lag h. Further details in Appendix B.

Figure C15: Effect of Monetary Policy Meeting on Break-even Inflation – IV regression



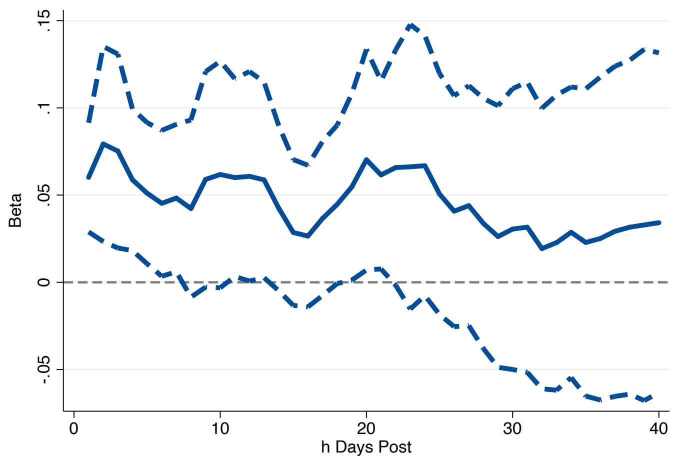
Notes: This figure plots the estimated per cent change in break-even inflation to political pressure events at horizon h measured by the coefficient estimate on the monetary policy meeting dummy variable from the regression (12) including the full set of control variables X_t and $L = 5$ lags. The dashed lines show a 90% confidence interval using Newey-West standard errors which are heteroskedasticity and autocorrelation consistent up to lag h and allow for errors to be dependent cross-sectionally. Further details in Appendix B.

Figure C16: Pre-trend of Political Pressure Event on Break-even Inflation – IV



Notes: This figure plots the estimated per cent change in break-even inflation at horizon h days prior to political pressure events measured by the coefficient estimate $\widehat{\beta}_{E,h}$ from the regression (12) using the IV (13) including the full set of control variables X_t and $L = 1$ lags. The dashed lines show a 90% confidence interval using Newey-West standard errors which are heteroskedasticity and autocorrelation consistent up to lag h. Further details in Appendix B.

Figure C17: Effect of Political Pressure Event on Exchange Rate – IV

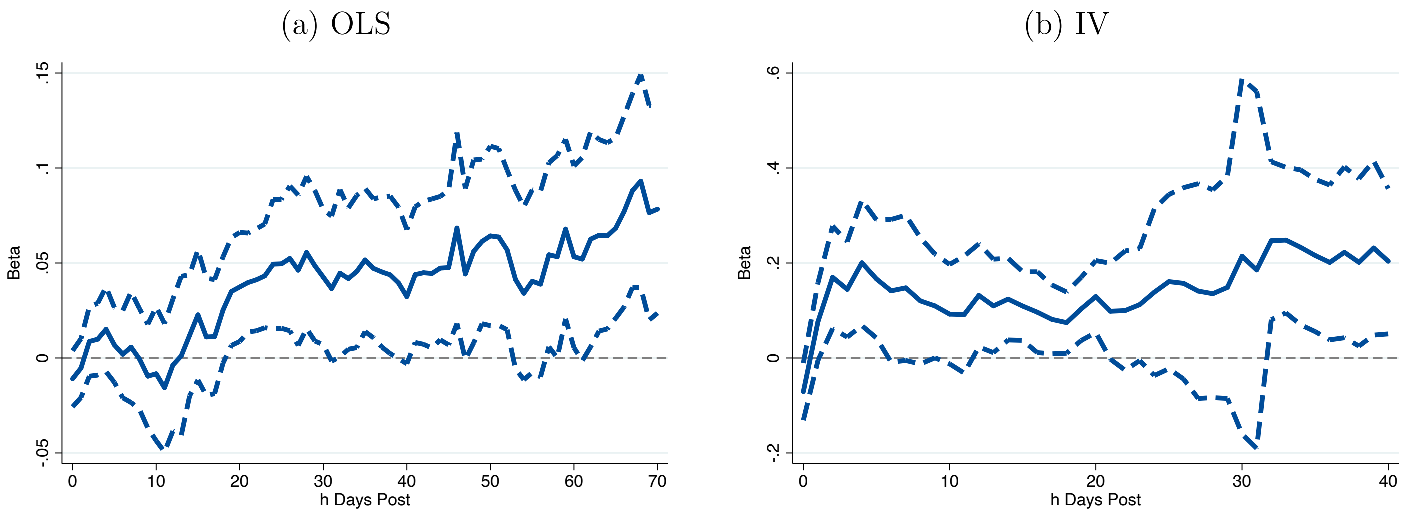


Notes: This figure plots the estimated per cent change in the exchange rate to political pressure events at horizon h measured by the coefficient estimate $\widehat{\beta}_{E,h}$ from the regression (12) using the IV (13) including the full set of control variables X_t and $L = 5$ lags. The dashed lines show a 90% confidence interval using Newey-West standard errors which are heteroskedasticity and autocorrelation consistent up to lag h. Further details in Appendix B.

C5. Robustness – Alternate Bonds

The below figures show the results from the OLS (baseline Figure 4) and IV (baseline Figure 6) specifications using the alternate government bonds from Table B2 marked with a * to calculate break-even inflation for all episodes. The results are also similar for the indidividual episodes.

Figure C18: Effect of Political Pressure Event on Break-even Inflation



Notes: This figure plots the estimated per cent change in break-even inflation to political pressure events at horizon h. Panel (a) is the coefficient estimate $\widehat{\beta}_{E,h}$ from the regression (12). Panel (b) is the coefficient estimate $\widehat{\beta}_{E,h}$ from the regression (12) using the IV (13). Both include the full set of control variables X_t and $L = 5$ lags. The dashed lines show a 90% confidence interval using Newey-West standard errors which are heteroskedasticity and autocorrelation consistent up to lag h. Further details in Appendix B.

D. Quantitative Analysis

D1. Small-Open Economy Model

Households The representative household problem is:

$$\max_{\{c_{Hit}, c_{Ft}, L_t, B_{t+1}\}_{t=0}^{\infty}} \mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t U(C_t, L_t) \tag{D1}$$

$$s.t. \quad P_t C_t + \mathbb{E}_t[Q_{t,t+1} B_{t+1}] = W_t L_t + B_t + \Pi_t \tag{D2}$$

where Q_{t+1} is the stochastic discount factor for one-period-ahead nominal payoffs and Π_t are the firm profits.

Household preferences are given by:

$$U(C_t, L_t) = \frac{{C_t}^{1-\sigma}}{1-\sigma} - \frac{L_t^{1+\eta}}{1+\eta} \tag{D3}$$

which are CRRA over consumption with relative risk aversion coefficient $\sigma > 0$, and inverse Frisch elasticity of labor supply $\eta > 0$.

C_t is a CES aggregate of home c_{Ht} and foreign c_{Ft} goods:

$$C_t \equiv \left[(1-\omega)^{\frac{1}{\zeta}} (c_{Ht})^{\frac{\zeta-1}{\zeta}} + \omega^{\frac{1}{\zeta}} (c_{Ft})^{\frac{\zeta-1}{\zeta}}\right]^{\frac{\zeta}{\zeta-1}} \tag{D4}$$

where $\omega \in [0, 1]$ is the measure of openness, $\zeta > 0$ is the elasticity of substitution between domestic and foreign goods. The domestic good c_{Ht} is a CES aggregate of varieties $i \in [0, 1]$:

$$c_{Ht} \equiv \left(\int_0^1 c_{Hit}^{\frac{\epsilon-1}{\epsilon}} di\right)^{\frac{\epsilon}{\epsilon-1}} \tag{D5}$$

where $\epsilon > 1$ denotes the elasticity of substitution between varieties produced domestically.

The aggregate consumer price index is defined by:

$$P_t \equiv [(1-\omega) P_{Ht}^{1-\zeta} + \omega P_{Ft}^{1-\zeta}]^{\frac{1}{1-\zeta}} \tag{D6}$$

where the price index of domestically produced goods is defined by

$$P_{Ht} \equiv \left(\int_0^1 P_{Hit}^{1-\epsilon} di \right)^{\frac{1}{1-\epsilon}} \tag{D7}$$

and P_{Ft} is price of foreign goods.

Firms The domestic firms' problem is identical to Appendix A1.

SOE NK Phillips Curve Following a similar derivation to the closed economy in Appendix A1 gives the SOE NK Phillips curve (15):

$$\pi_{Ht} = \kappa_\omega \widetilde{y}_t + \beta \mathbb{E}_t \pi_{Ht+1} \tag{D8}$$

where $\pi_{Ht} \equiv p_{Ht} - p_{Ht-1}$ is domestic price inflation and $p_{Ht} \equiv \log P_{Ht}$, $\widetilde{y}_t \equiv y_t - y_t^n$, where $y_t \equiv \log Y_t$, $y_t^n \equiv \log Y_t^n$ (the natural level of output under flexible prices), and the slope κ_ω is given by:

$$\kappa_\omega = \left(\frac{\sigma}{1 + \omega[\sigma\zeta + (1-\omega)(\sigma\zeta - 1) - 1]} + \frac{\eta + \alpha}{1 - \alpha} \right) \frac{(1-\lambda)(1-\beta\lambda)}{\lambda} \left(\frac{1-\alpha}{1 - \alpha + \alpha\epsilon} \right) \tag{D9}$$

Exchange Rate The terms of trade are the price of foreign goods relative to domestic goods $\mathcal{S}_t = \frac{P_{Ft}}{P_{Ht}}$, therefore

$$s_t = p_{Ft} - p_{Ht} \tag{D10}$$

where $s_t \equiv \log \mathcal{S}_t$. Log-linearizing consumer prices P_t around a symmetric steady state with $\mathcal{S} = 1$ gives:

$$p_t = (1-\omega) p_{Ht} + \omega p_{Ft} \tag{D11}$$

$$= p_{Ht} + \omega s_t \tag{D12}$$

$$\pi_t = \pi_{Ht} + \omega \Delta s_t \tag{D13}$$

From the law of one price and definition of the terms of trade, where $p_t^w \equiv \int_0^1 p_{jt} dj$ is the log world price:

$$s_t = e_t + p_t^w - p_{Ht} \tag{D14}$$

Therefore,

$$\Delta s_t = \Delta e_t + \pi_t^w - \pi_{Ht} \tag{D15}$$

where π_t^w is world price inflation.

Substituting Δs_t into consumer price inflation gives:

$$\pi_t = (1-\omega)\pi_{Ht} + \omega(\Delta e_t + \pi_t^w) \tag{D16}$$

Monetary policy sets domestic inflation π_H and output gap $\widetilde{y}$.

Galí and Monacelli (2005) show that aggregating over all countries and using the world market clearing condition:

$$s_t = \sigma_\omega(y_t - y_t^w) \tag{D17}$$

where $\sigma_\omega \equiv \frac{\sigma}{1+\omega[\sigma\zeta+(1-\omega)(\sigma\zeta-1)-1]}$ and y_t^w is world output.

As in Galí and Monacelli (2005), with log utility and elasticity of substitution between domestic and foreign goods $\zeta = 1$, $\sigma_\omega = 1$. Therefore, assuming the world natural output is constant

$$\Delta s_t = \Delta y_t - \Delta y_t^w \tag{D18}$$

$$= \Delta\widetilde{y}_t - \Delta\widetilde{y}_t^w \tag{D19}$$

where $\Delta\widetilde{y}_t^w$ is the world output gap.

Substituting Δs_t into (D13) and (D15) gives consumer price inflation and the change in the exchange rate:

$$\pi_t = \pi_{Ht} + \omega(\Delta\widetilde{y}_t - \Delta\widetilde{y}_t^w) \tag{D20}$$

$$\Delta e_t = \pi_{Ht} - \pi_t^w + \Delta\widetilde{y}_t - \Delta\widetilde{y}_t^w \tag{D21}$$

Social Welfare Objective Following Galí (2015) Chapter 8, a second-order approximation of the household's welfare (D1) around a symmetric zero-inflation steady state with $\sigma = 1$ (log utility in consumption) and elasticity of substitution between domestic and foreign goods $\zeta = 1$ gives welfare proportional to:

$$W = -\frac{(1-\omega)}{2}\,\mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t \left[\pi_{Ht}^2 + \gamma\left(\frac{1+\eta}{1-\alpha}\right)\widetilde{y}_t^2\right] \tag{D22}$$

$$= -\frac{(1-\omega)}{2}\,\mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t \left[\pi_{Ht}^2 + \gamma_\omega \widetilde{y}_t^2\right] \tag{D23}$$

where $\gamma_\omega \equiv \gamma\left(\frac{1+\eta}{1-\alpha}\right)$, and the following terms are as in the closed economy: $\gamma = \frac{\kappa}{\epsilon}$, $\psi = \Phi\frac{1}{\left(\sigma+\frac{\eta+\alpha}{1-\alpha}\right)} > 0$, and $\Phi \equiv \frac{1}{\epsilon}$.

D2. Equilibrium

The following defines an equilibrium of the quantitative model in Section 4.1.

Definition 2. *Given the exogenous process for χ by (18), a Markov Perfect Equilibrium is government and central bank value functions $V^G(\chi, \mathbb{E}\pi'_H, \pi_H^{CB})$, $V^I(\chi, \mathbb{E}\pi'_H)$, $V^N(\chi, \mathbb{E}\pi'_H, \pi_H^{CB})$, $W^N(\chi, \mathbb{E}\pi'_H)$, and $W^I(\chi, \mathbb{E}\pi'_H)$, and policy functions $\pi_H^{G*}(\chi, \mathbb{E}\pi'_H)$, $\iota^*(\chi, \mathbb{E}\pi'_H, \pi_H^{CB})$, $\pi_H^{CB*}(\chi, \mathbb{E}\pi'_H)$, and private sector domestic inflation expectations $\mathbb{E}\pi'_H(\chi)$ such that:*

1. *given $\mathbb{E}\pi'_H$, if the government intervenes, π_H^{G*} solves the government problem (20) and V^I is the associated value function, and V^N is given by (22),*

2. *given π_H^{G*}, π_H^{CB*} and $\mathbb{E}\pi'_H$, the probability of government intervention ι^* solves the intervention decision (19), and V^G is the associated value function,*

3. *given $\mathbb{E}\pi'_H$, $\widehat{\pi}_H^G = \pi_H^{G*}$, and $\widehat{\iota} = \iota^*$, π_H^{CB*} solves the central bank problem (24) and W^N is the associated value function, and W^I is given by (26), and*

4. *private sector inflation expectations $\mathbb{E}\pi'_H$ are consistent with π_H^{CB*}, ι^* and π_H^{G*}.*

D3. Algorithm

The following provides the algorithm to solve the quantitative model in Section 4.1.

1. Define discrete grid for state χ. Guess private sector domestic inflation expectations $\hat{\mathbb{E}}[\pi'_H|\chi]$.

2. Guess central bank optimal monetary policy $\hat{\pi}_H^{CB*}(\chi)$ for every χ. Solve government optimal monetary policy if it intervenes $\hat{\pi}_H^{G*}(\mathbb{E}\pi'_H)$ using $\hat{\mathbb{E}}$ and guess for $\hat{\pi}_H^{CB*}$, and then the government optimal intervention decision $\widehat{\iota} \in \{0, 1\}$ for every χ.

3. Solve central bank $\hat{\pi}_H^{CB*}(\chi, \mathbb{E}\pi'_H)$ using $\hat{\mathbb{E}}$, $\hat{\pi}_H^{G*}(\mathbb{E}\pi'_H)$, $\widehat{\iota}$ from step 2. Update guess for $\hat{\pi}_H^{CB*}(\chi)$ and repeat from step 2 until convergence.

   At this stage we have solved for the optimal government decision given the central bank policy function and optimal central bank decision given the government policy functions, given the guess for $\hat{\mathbb{E}}[\pi'_H|\chi]$. We now need to ensure that private sector inflation expectations are consistent with these policies.

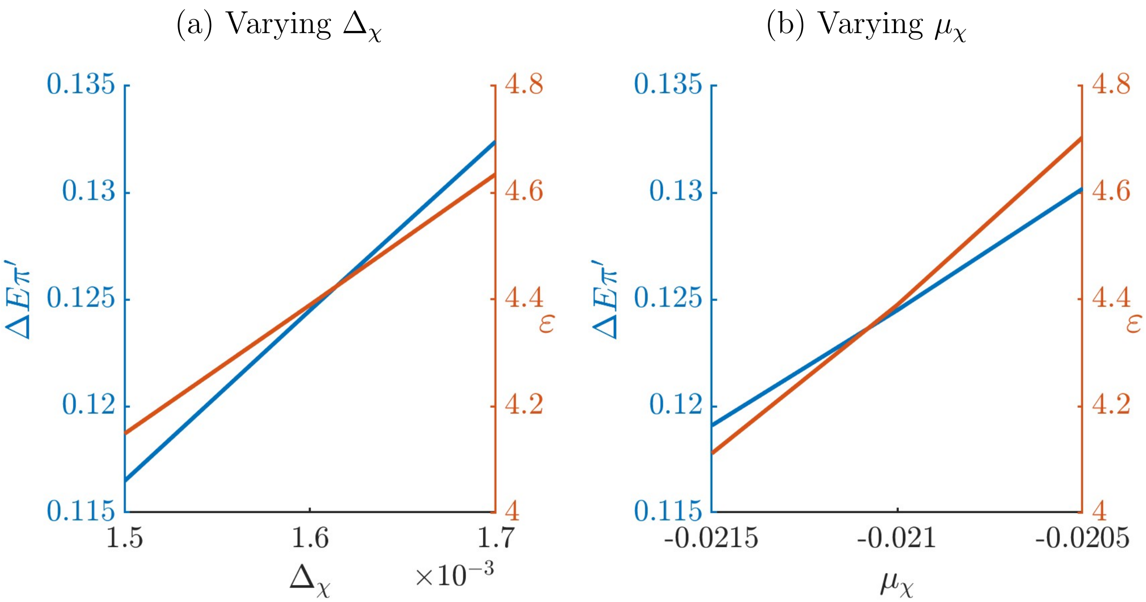
4. Solve for the expected domestic inflation $\widetilde{\mathbb{E}}[\pi'_H|\chi]$ given the policy functions $\hat{\pi}_H^{G*}$, $\widehat{\iota}$, $\hat{\pi}_H^{CB*}$ from steps 2 and 3.

5. If $|\hat{\mathbb{E}}[\pi'_H|\chi] - \widetilde{\mathbb{E}}[\pi'_H|\chi]| < \epsilon$ for all χ then $\hat{\mathbb{E}}$ is an equilibrium. If not, update $\hat{\mathbb{E}}$ and repeat from step 2 until convergence.

We have then solved for the equilibrium functions $\mathbb{E}[\pi'_H|\chi]$, $\pi_H^{G*}(\chi, \mathbb{E}\pi'_H)$, $\iota^*(\chi, \mathbb{E}\pi'_H, \pi_H^{CB})$, $\pi_H^{CB*}(\chi, \mathbb{E}\pi'_H)$, for all χ.

D4. Calibration - Detail

Figure D1: Calibration: Detail



Notes: This figure provides an illustrative example to motivate the parameter and model targets in Table 2. Panel (a) varies the cost of intervention on event days Δ_χ, holding μ_χ and other parameters fixed (described in Sections 4.1 and 4.2). Panel (b) varies the average cost of intervention μ_χ, holding Δ_χ and other parameters fixed. The left vertical axis shows the change in inflation expectations in the model and right vertical axis the elasticity of the change in inflation expectations to the change in the exchange rate.

D5. Extensions

Lower inflation expectations response

Table D1: Calibrated Parameters

Parameter	Value	Target	Data	Model
Δ_χ	0.0012	$\Delta\mathbb{E}\pi'(\chi, E=1)$	0.088	0.086
μ_χ	-0.021	$\varepsilon_{\Delta\mathbb{E}\pi',\Delta e}$	2.9	3.1
ρ	0.90	autocorr. $\mathbb{E}\pi'$	0.89	0.90
σ	0.006	std. dev. $\mathbb{E}\pi'$	0.05	0.03

Notes: This table shows the calibrated parameters for χ in (18) to match the empirical estimates from Section 3 and other data moments for Turkey. $\varepsilon_{\Delta\mathbb{E}\pi',\Delta e} \equiv \frac{\Delta\mathbb{E}\pi'(\chi,E=1)}{\Delta e(\chi,E=1)}$ is the elasticity of the change in break-even inflation to the change in the exchange rate. The probability of $E=1$ is $q=0.04$. See text for detail.

Figure D2: Model: Robustness

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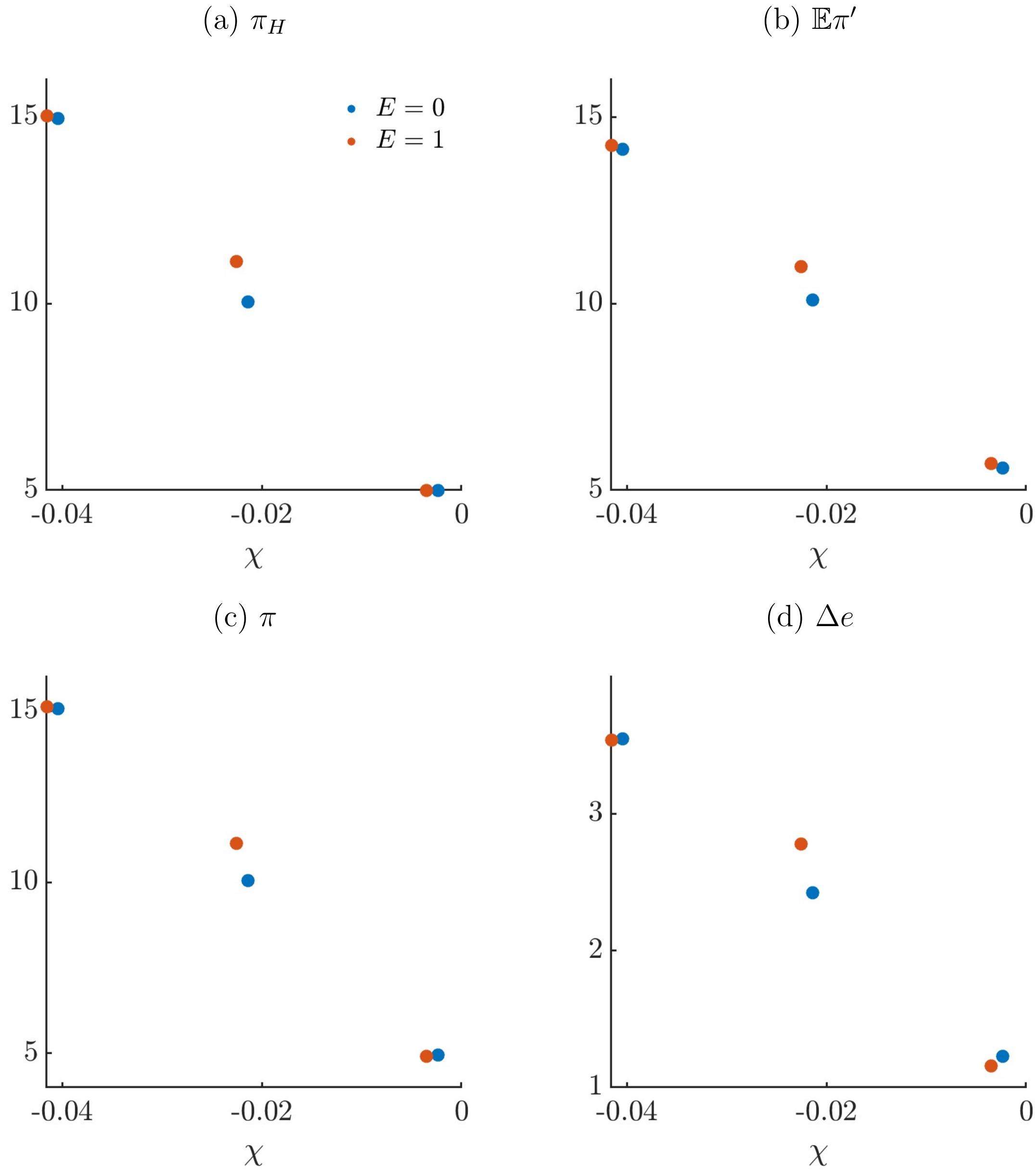

Notes: This figure shows inflation and inflation expectations for different realizations of the cost of intervention χ in the model calibrated for Turkey (described in Sections 4.1 and 4.2). Panel (a) shows the annualized domestic inflation set by monetary policy. Panel (b) shows annualized private sector consumer price inflation expectations for the subsequent period. Panel (c) shows annualized consumer price inflation outcomes. Panel (d) shows the change in the exchange rate ($\Delta e > 0$ is a depreciation). Further details on the model are in Appendix D1.