A Dual Mandate Can Support Price Stability*

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Abstract

Since employment dynamics are persistent, a central bank's dual mandate to promote maximum employment and price stability naturally generates history dependence in monetary policy. This history dependence under a dual mandate flattens the reduced-form Phillips curve, reduces the volatility of inflation in response to demand shocks, and improves outcomes at the zero lower bound. Moreover, we show that a dual mandate can be observationally equivalent to average inflation targeting following a demand shock. However, this equivalence breaks down in the presence of supply shocks. We first illustrate these findings analytically and then examine their quantitative importance in a model with nominal rigidities and labor search frictions calibrated to match U.S. business-cycle moments. An employment mandate can naturally provide the benefits associated with history-dependent policy frameworks.

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1 Introduction

Monetary policymakers around the world are responsible for achieving price stability. In the United States, however, Congress has also tasked the Federal Reserve with promoting maximum employment. Together, these two objectives form a "dual mandate" to dampen adverse fluctuations to both inflation and labor markets.[1] Empirical and theoretical work describing the conduct of policy under a dual mandate often uses a policy rule that responds to deviations of inflation from target and unemployment from its natural rate.

However, a common criticism of the dual mandate is that trying to promote maximum employment could lead the central bank to compromise the achievement of its price stability mandate. In this paper, we highlight an important case in which a dual mandate can *enhance* the central bank's ability to achieve price stability. Labor markets naturally feature persistence in employment as firms and workers take time to form new matches that eventually lead to a separation. If a central bank responds to employment conditions, then the behavior of monetary policy inherits this persistence. In the language of Eggertsson and Woodford (2003), a dual mandate therefore introduces *history dependence* in monetary policy which helps stabilize inflation in response to adverse shocks.

To illustrate this intuition, we begin with a textbook model of nominal rigidities that allows us to analytically show our main results. If the economy experiences a negative demand shock today, households and firms understand that a central bank with a dual mandate will need to be more accommodative in the future to help stabilize the stock of employment. Expectations of this more accommodative future policy lead to a smaller decline in inflation today as firms expect higher demand and lower unemployment in the future. Thus, the history dependence under the dual mandate flattens the reduced-form Phillips curve and reduces the volatility of inflation in response to demand shocks. We show that this stabilizing force inherent to the dual mandate operates both away from and at the zero lower bound and that this history dependence improves outcomes at the zero lower bound.

Moreover, since the structural Phillips curve links labor market outcomes to inflation, we show that the history dependence under a dual mandate can be observationally equivalent to an average inflation targeting framework following a demand shock. From 2020–2025, the Federal Open Market Committee (FOMC) formally adopted a type of flexible average-

[1] Table 2 of Bundick, Smith and Van der Meer (2026) summarizes the mandates of several advanced economy central banks. The central banks of Australia, Canada, Sweden, and Norway also have a second mandate explicitly related to maximum employment.

inflation targeting (FAIT) framework to help deal with the potential adverse effects of the zero lower bound. Our findings suggest that the presence of the dual mandate combined with persistent employment dynamics already imparted much of the gains from history-dependent policy even prior to the formal adoption of average inflation targeting.

The presence of supply shocks, however, breaks this observational equivalence between a dual mandate and flexible average inflation targeting. An average inflation targeting framework better stabilizes inflation in the face of adverse supply shocks but at a larger cost to the real economy. Given that both policies can produce identical outcomes in response to a demand shock (even at the zero lower bound), a policymaker wishing to "look through" the effects of inefficient supply shocks may prefer a dual mandate since it performs better at stabilizing the real economy following a supply shock.

Finally, we build and calibrate a micro-founded model of labor search frictions and nominal rigidities to quantify the inflation-stabilization benefits of a dual mandate. Relative to strict inflation targeting, the inclusion of a dual mandate (all else equal) lowers the volatility of inflation from 0.54 to 0.40 percentage points (a 26 percent reduction). The dual mandate also flattens the model-implied Phillips curve, reducing the correlation between unemployment and inflation from -0.61 to -0.45. These results from the micro-founded model suggests that the presence of the dual mandate can play a quantitatively important role in helping the central bank achieve its price stability mandate in the face of adverse shocks.

Our paper relates to several strands of the literature on the conduct of monetary policy including a large body of work examining the performance of Taylor-type policy rules in models with nominal rigidities. Clarida, Gali and Gertler (1999) provide the normative justification for responding to the output gap in a policy rule, showing that it approximates optimal policy under commitment. We complement this work by identifying a distinct channel through which responding to employment supports price stability: the persistence of employment itself generates history dependence that stabilizes inflation expectations.

A related literature examines monetary policy in models that combine nominal rigidities with labor market search frictions. Walsh (2005), Ravenna and Walsh (2011), and Gertler, Sala and Trigari (2008) derive welfare-based loss functions and optimal policy prescriptions in such environments. Blanchard and Galí (2010) study the interaction between labor market frictions and nominal rigidities in generating trade-offs for monetary policy. Debortoli et al. (2019) asks whether a dual mandate makes sense by designing simple loss functions for central banks in a similar environment. We differ from this work in focusing on how a simple implementable dual mandate rule, rather than optimal policy or an optimal loss function, stabilizes inflation through the endogenous history dependence that search frictions generate.

Our results also connect to the literature on history-dependent monetary policy at the zero lower bound. Eggertsson and Woodford (2003) show that optimal commitment policy delivers history dependence that improves outcomes when the policy rate is constrained by the zero lower bound. Nakov (2008) and Adam and Billi (2006, 2007) quantify the stabilization gains from such commitment-based history dependence. Our contribution is to show that a dual mandate provides a structural, rule-based source of history dependence that delivers similar stabilization benefits without requiring optimal commitment.

The rest of the paper is organized as follows. Section 2 uses a textbook New Keynesian model to derive analytical results on the stabilizing effects of a dual mandate and its equivalence to average inflation targeting after a demand shock. Section 3 presents a micro-founded model of labor search frictions and nominal rigidities and describes its calibration. Section 4 quantifies the stabilizing effects of the employment mandate both away from and at the zero lower bound. Finally, Section 5 concludes.

2 Analytical Implications of a Dual Mandate

Using a textbook model of nominal rigidities, we illustrate how a dual mandate to promote maximum employment can support a central bank's price stability objective. Specifically, stabilizing employment leads to smaller fluctuations in inflation following adverse (demand) shocks. Beginning from the optimal choices of households and firms, Woodford (2003), Walsh (2017), Galí (2015), and many others derive the following first-order approximation of the macroeconomy:

$$x_t = E_t\, x_{t+1} - \Big(i_t - E_t\, \pi_{t+1} - r_t^n\Big), \tag{1}$$

$$\pi_t = \beta\, E_t\, \pi_{t+1} + \kappa\, x_t, \tag{2}$$

where x_t denotes the gap between actual and potential output, π_t represents inflation in deviations from the central bank's objective, and i_t denotes the nominal policy rate in deviations from its steady-state value. Equations (1) and (2) are the New Keynesian intertemporal substitution (IS) and Phillips curves, respectively. β represents the household's discount factor and κ denotes the structural slope of the Phillips curve. r_t^n is the economy's natural rate of interest (in deviations from its steady-state value) which captures fundamental changes in aggregate demand caused by a change in household preferences.

Since this standard textbook model lacks a concept of unemployment, we introduce an ad hoc specification based on the law of motion for employment. From an accounting perspective, the stock of employment reflects the observed flows of workers into and out of employment:

$$N_{t+1} = \Big(1 - s\Big) N_t + M_t, \tag{3}$$

where N_t is the stock of employment today, s is the separation rate of existing matches (which could vary over time), and M is the quantity of new matches between workers and firms. Solving Equation (3) backward in time implies:

$$N_{t+1} = \sum_{i=0}^{\infty} \Big(1 - s\Big)^i M_{t-i}. \tag{4}$$

Thus, employment is a persistent, backward-looking stock variable that depends on the full history of all past matches.

To incorporate this concept into our textbook model in Equations (1) and (2), we make three simplifying assumptions. First, we assume full participation such that the stock of employment (in deviations from its steady-state value) is negatively related to the unemployment rate gap u_t. Second, we assume that matches are proportional to economic activity. Using these first two assumptions, we can write:

$$u_t = \Big(1 - s\Big) u_{t-1} - \frac{1}{c} x_t, \tag{5}$$

where $c \geq 0$ is an Okun's Law-like parameter that affects the relationship between real activity x_t and unemployment u_t. Finally, for analytical tractability, we assume for now that firms and workers form matches in the previous period and they persist for only one period:

$$u_t = -\frac{1}{c} x_{t-1}. \tag{6}$$

Equations (5) and (6) capture the idea that unemployment depends on the history of economic activity, which will also be the case in the fully microfounded model of labor search frictions we present later in Section 3.

Using a 4-period version of this simple setup and a simplified process for the natural rate r_t^n, we can show analytically how the presence of a dual mandate helps stabilize inflation in response to shocks. We assume that the natural rate r_t^n takes a value of 0 in periods 1, 3, and 4. In period 2, the natural rate takes either a positive value Δ or a negative value $-\Delta$ in which both outcomes occur with a probability of 1/2. We focus our analysis on the outcomes in period 2 to illustrate how the dual mandate helps support the central bank's price stability mandate.[2]

2.1 Outcomes Under a Single Price Stability Mandate

As an initial benchmark, we first solve for the macroeconomic outcomes under the assumption that the central bank only has a single price-stability mandate. We implement this single-mandate policy through the following rule:

$$i_t = \phi_\pi \pi_t, \tag{7}$$

where $\phi_\pi > 1$ is the central bank's response to inflation. Since the natural rate equals zero in period 4 (and the model economy ceases to exist after that period), this implies $x_4 = \pi_4 = 0$. Since households and firms fully understand this outcome with certainty, we know $E_3\,\pi_4 = 0$ and $E_3\,u_4 = 0$. Since the natural rate also equals zero in period 3, $x_3 = \pi_3 = 0$ and similarly $E_2\,\pi_3 = 0$ and $E_2\,x_3 = 0$.

Now, we solve for outcomes in period 2 depending on whether the economy experiences a positive (Δ) or negative ($-\Delta$) shock. Since $E_2\,\pi_3 = 0$, Equation (2) implies the following relationship between inflation and economic activity:

$$\pi_2^{\Delta} = \kappa x_2^{\Delta} \qquad\qquad \pi_2^{-\Delta} = \kappa x_2^{-\Delta} \tag{8}$$

where the superscript Δ or $-\Delta$ denotes the outcomes in each state. Equation (8) summarizes the "reduced-form" Phillips curve for this economy in period 2. For a one percent movement in the output gap, the economy experiences a κ percent fluctuation in inflation. Plugging these expressions into the intertemporal substitution relationship in Equation (1):

$$x_2^{\Delta} = \left(\frac{1}{1+\phi_\pi\kappa}\right)\Delta \qquad\qquad x_2^{-\Delta} = -\left(\frac{1}{1+\phi_\pi\kappa}\right)\Delta \tag{9}$$

In an expansion (Δ), the economy experiences a positive output gap and above-target inflation (with opposite outcomes in a downturn if $-\Delta$ occurs). The magnitude of these fluctuations depends on the size of the shock Δ, the slope of the Phillips curve κ, and the central bank's response to inflation ϕ_π.

[2] The Appendix contains further details on the derivations and additional discussion.

2.2 Introducing a Dual Mandate

We compare these outcomes to a central bank that has been given a dual mandate to promote maximum employment and stabilize inflation. For period 3 only, we assume that the central bank now follows this rule:

$$i_t = \phi_\pi \pi_t + \phi_u u_t \tag{10}$$

where u_t is the deviations of the unemployment rate from the natural rate or steady state, and $\phi_u \leq 0$ is the central bank's response to unemployment.[3] Substituting Equation (6) into Equation (10), we can write the policy rule in terms of the output gap:

$$i_t = \phi_\pi \pi_t + \phi_x x_{t-1}, \tag{11}$$

where we define $\phi_x = -\phi_u/c$. Equation (11) highlights that when policymakers have a dual mandate and the evolution of the labor market depends on past outcomes, the behavior of monetary policy also becomes history dependent.[4]

To illustrate the effects of the dual mandate on macroeconomic outcomes, we again solve backward in time beginning with period 4. Since we assume policymakers only follow the dual mandate policy rule in period 3, the outcomes in period 4 remain the same as before ($x_4 = \pi_4 = 0$). In period 3, however, the presence of the dual mandate introduces history dependence in policy. Since $r_3^n = 0$, we can use Equation (11) to solve for the outcomes in period 3 as a function of the past:

$$x_3 = -\frac{\phi_x}{1 + \phi_\pi \kappa} x_2 \qquad \pi_3 = -\kappa \frac{\phi_x}{1 + \phi_\pi \kappa} x_2. \tag{12}$$

Equation (12) illustrates the implications of the history dependence in monetary policy: Outcomes in period 3 now depend on the realization of the output gap in period 2. Under a dual mandate to stabilize prices and the labor market, policymakers offset the macroeconomic outcomes in period 2 in the following period. For example, if the economy experiences a contraction in period 2 ($r_2^n = -\Delta$ and $x_2 < 0$), then policymakers with a dual mandate will be more accommodative in period 3 to help offset this adverse outcome.

Solving back to period 2 highlights how the dual mandate helps stabilize inflation when

[3] Assuming that the central bank only follows the dual mandate rule in period 3 helps keep the problem analytically tractable yet still highlights the key insights.

[4] If we instead use a simple contemporaneous version of Okun's Law $u_t = 1/c \times x_t$ then monetary policy would not be history dependent. However, this contemporaneous specification would be inconsistent with the patterns in the data and many modern models of labor search frictions that imply persistent dynamics in unemployment that are linked to economic activity.

the economy experiences adverse fluctuations. Once household and firms realize the state of the world in period 2 ($r_2^n = \Delta$ or $-\Delta$), they take into consideration that the central bank will offset the shock's impact in the future under the dual mandate. Thus:

$$E_2\, x_3 = -\frac{\phi_x}{1+\phi_\pi \kappa}\, x_2 \qquad\qquad E_2\, \pi_3 = -\,\kappa\, \frac{\phi_x}{1+\phi_\pi \kappa}\, x_2. \tag{13}$$

This expectation of future accommodation dampens the initial impact of the shock in period 2 and results in a flatter reduced-form Phillips curve under the dual mandate:

$$\pi_2^{\Delta} = \Psi^D \kappa x_2^{\Delta} \qquad\qquad \pi_2^{-\Delta} = \Psi^D \kappa x_2^{-\Delta}, \tag{14}$$

where we define $\Psi^D \equiv \left(1 - \frac{\phi_x \beta}{1+\phi_\pi \kappa}\right)$ which is less than 1 if $\phi_x > 0$. For a given movement in the output gap, the economy experiences smaller fluctuations in inflation if the central bank is also committed to stabilizing the labor market $\phi_x > 0$.[5]

In addition to flattening the Phillips curve, expectations of more accommodative policy in the future also help dampen the initial fluctuations in output following an adverse shock. Combining the flatter Phillips curve with the IS equation yields:

$$x_2^{\Delta} = \left(\frac{1}{1+\phi_\pi \kappa \Psi^D + \phi_x \frac{1+\kappa}{1+\phi_\pi \kappa}}\right)\Delta \qquad\qquad x_2^{-\Delta} = -\left(\frac{1}{1+\phi_\pi \kappa \Psi^D + \phi_x \frac{1+\kappa}{1+\phi_\pi \kappa}}\right)\Delta \tag{15}$$

The denominator illustrates the channels of stabilization present under the dual mandate. The first expression, $\phi_\pi \kappa \Psi^D$, reflects the flatter reduced-form Phillips curve from Equation (14). The second component, $\phi_x(1+\kappa)(1+\phi_\pi\kappa)^{-1}$, captures the stabilization of the output gap provided by expectations of future policy through the IS curve. Equations (14) and (15) illustrate both a smaller output gap *and* a flatter reduced-form Phillips curve under the dual mandate, which leads to better stabilization of inflation following a demand shock.

Result 1. *The Dual Mandate Reduces Inflation Volatility Following Demand Shocks*
When $\phi_x > 0$, the dual mandate helps stabilize the output gap through two channels—a

[5] We often receive the following question: How would our conclusions change if the separation rate for existing matches varies with the business cycle? Equation (13) provides the intuition for the answer. Suppose that the economy receives a negative shock today and firms choose to endogenously increase the number of separations. Under a dual mandate, households and firms would understand that the monetary authority will be more accommodative in the future to help stabilize the stock of employment. Thus, expectations of higher demand in the future induces firms to optimally choose to sever fewer existing matches today in response to the negative shock. Thus, endogenous separations would provide an additional channel through which the presence of a dual mandate would further stabilize the economy in response to shocks versus a single mandate.

flatter Phillips curve ($\Psi^D < 1$) and a direct effect on output today through expectations of future policy—and this smaller output gap translates into smaller inflation fluctuations.

2.3 Connection with Average Inflation Targeting

Using this framework, we can also show that the history dependence introduced by the dual mandate can be observationally equivalent to average inflation targeting following a change in aggregate demand. In period 3 only, we now assume that monetary policy aims to stabilize some weighted average of recent inflation:

$$i_t = \phi_\pi \pi_t + \phi_\pi^a \pi_{t-1}. \tag{16}$$

A strict price-level target could be captured as $\phi_\pi = \phi_\pi^a$ in which policymakers fully offset any inflation fluctuations to target a constant price level. The intermediate case of $0 < \phi_\pi^a < \phi_\pi$ captures a more flexible average inflation targeting framework. Since we assume this rule only holds in period 3, the outcomes in period 4 remain the same as the single mandate ($x_4 = \pi_4 = 0$). In period 3, however, the presence of the average inflation targeting links the outcomes in period 3 to the outcomes in the previous period:

$$x_3 = -\frac{\phi_\pi^a}{1 + \phi_\pi \kappa} \pi_2 \qquad \qquad \pi_3 = -\kappa \frac{\phi_\pi^a}{1 + \phi_\pi \kappa} \pi_2. \tag{17}$$

If monetary policy targets a weighted average of inflation over time, households and firms understand that policymakers offset shocks that occur in period 2 in the following period. If the economy experiences a downturn, then policymakers will be more accommodative to help ensure that inflation runs closer to its objective on average.

This mechanism parallels our results from the dual mandate case. Firms understand that a contractionary shock that lowers inflation today will be offset with more accommodative policy in the future. Expectations of this more accommodative policy induce them to moderate the decline in inflation in a downturn. Thus, average inflation targeting also produces a flatter reduced-form Phillips curve:

$$\pi_2^\Delta = \Psi^{AIT} \kappa x_2^\Delta \qquad \qquad \pi_2^{-\Delta} = \Psi^{AIT} \kappa x_2^{-\Delta}, \tag{18}$$

where we define $\Psi^{AIT} \equiv \left(\dfrac{1 + \phi_\pi \kappa}{1 + \phi_\pi \kappa + \phi_\pi^a \beta \kappa} \right)$ which is less than 1 if $\phi_\pi^a > 0$.

Expectations of more accommodative policy also help stabilize output in the face of a contractionary shock as households expect higher consumption in the future.[6]

$$x_2^{\Delta} = \frac{1}{1 + \kappa\, \Psi^{AIT} \left(\phi_\pi + \phi_\pi^a \left(\frac{1+\kappa}{1+\phi_\pi \kappa} \right) \right)} \Delta \qquad x_2^{-\Delta} = -\frac{1}{1 + \kappa\, \Psi^{AIT} \left(\phi_\pi + \phi_\pi^a \left(\frac{1+\kappa}{1+\phi_\pi \kappa} \right) \right)} \Delta$$

The reduced-form Phillips curves in Equations (14) and (18) illustrate the observational equivalence between average inflation targeting and the dual mandate. In this simple setting of only demand fluctuations, we can show that setting:

$$\Psi^D = \Psi^{AIT} \qquad \Rightarrow \qquad \phi_\pi^a = \left(\frac{1+\phi_\pi \kappa}{\kappa} \right) \left(\frac{\phi_x}{1 + \phi_\pi \kappa - \beta \phi_x} \right) \tag{19}$$

Thus, for a given response to the labor market under the dual mandate ϕ_x, we can find a value for ϕ_π^a under average inflation targeting that produces identical fluctuations for inflation given a movement in the output gap. Moreover, if we choose ϕ_π^a to equate $\Psi^D = \Psi^{AIT}$, then the results for the output gap as a function of the shock and model primitives in period 2 under average inflation targeting will also be identical to those presented under the dual mandate in Equation (15).

In practice, a dual mandate and a flexible average inflation targeting framework would obviously involve very different communication strategies for policymakers. However, because of the presence of a Phillips curve linking the labor market and inflation, this simple framework shows that the history dependence implied by a dual mandate can be identical to an average inflation targeting framework in this setting. This history-dependence is especially important in stabilizing inflation when the central bank encounters the zero lower bound, which we illustrate in the next section.

2.4 Stabilizing the Economy at the Zero Lower Bound

As Eggertsson and Woodford (2003) and Reifschneider and Williams (2000) highlight, history dependence in monetary policy becomes an important stabilizing feature when the central bank encounters the zero lower bound. To illustrate how the dual mandate helps stabilize inflation at the zero lower bound, we now alter the shock process in our simple 4-period example. The natural rate still takes a value of 0 in periods 1, 3, and 4 but the economy

[6] While increasing ϕ_π^a also decreases Ψ^{AIT}, the coefficient on ϕ_π^a of $(1+\kappa)(1+\phi_\pi\kappa)^{-1}$ will dominate for conventional calibrations of ϕ_π and κ, leading to a smaller output gap under an average inflation target when compared with the single mandate results.

now experiences a large negative demand shock in period 2 that takes the economy to the zero lower bound with certainty. Specifically, we assume $r_2^n = -i - \Delta^{ZLB}$ where $\Delta^{ZLB} > 0$. Since the model in Equations (1) and (2) is linearized around its non-stochastic steady state, the zero lower bound on the nominal policy rate binds whenever deviations of the nominal rate i_t fall below the negative of its steady-state value $(-i)$.

Beginning first with the outcomes under a single mandate, we incorporate the zero lower bound constraint as follows:

$$i_t = \max\left(\phi_\pi\, \pi_t,\, -i\right) \tag{20}$$

As before, we solve backwards to determine economic outcomes. Since no shocks occur in periods 3 and 4 and the single-mandate economy only depends on current outcomes, the output gap and inflation are zero in periods 3 and 4. However, the economy experiences adverse outcomes in period 2 when the zero lower bound constrains the central bank:

$$x_2^{-\Delta^{ZLB}} = -\Delta^{ZLB} \qquad \pi_2^{-\Delta^{ZLB}} = -\kappa\Delta^{ZLB} \tag{21}$$

Under a single mandate that only responds to current inflation (and hence lacks any history-dependence), the inability to offset the negative shock results in a large negative output gap and below-target inflation.

Under the dual mandate, we assume as before that the central bank implements the following rule in period 3 but is now subject to the zero lower bound constraint:

$$i_t = \max\left(\phi_\pi\, \pi_t + \phi_u\, u_t,\, -i\right) \quad \Rightarrow \quad i_t = \max\left(\phi_\pi\, \pi_t + \phi_x\, x_{t-1},\, -i\right) \tag{22}$$

Solving backward, we find the outcomes in period 3 are identical to Equation (12). At the zero lower bound, however, the dual mandate policy rule leads to the following outcomes in period 2:

$$x_2^{-\Delta^{ZLB}} = -\Phi^D\Delta^{ZLB} \qquad \pi_2^{-\Delta^{ZLB}} = -\Phi^D\Psi^D\kappa\Delta^{ZLB} \tag{23}$$

where we define $\Phi^D \equiv \left(\dfrac{1+\phi_\pi\kappa}{1+\phi_\pi\kappa+\phi_x\,(1+\kappa)}\right)$ which is less than 1 if $\phi_x > 0$.

Comparing with the outcomes under the single mandate in Equation (21), the terms in blue (which are both less than one) highlight the additional stabilization in inflation and economic activity the central bank achieves under a dual mandate. Based on the intuition developed in Equation (12), households and firms understand that a central bank with a dual mandate will need to stabilize the labor market in the periods following the adverse contraction. These expectations of more accommodative policy lead to better outcomes during the downturn. Unlike optimal policy in Eggertsson and Woodford (2003), which arises from commitment to a state-contingent plan, the mechanism here operates through the labor market. Since unemployment is predetermined, a dual mandate central bank will respond to past conditions without needing to commit to a state-contingent plan.

In addition, the observational equivalence introduced by the dual mandate and average inflation targeting also extends to this zero lower bound scenario. Incorporating the zero lower bound constraint into Equation (16) implies the following outcomes in period 2:

$$x_2^{-\Delta^{ZLB}} = -\Phi^{AIT}\Delta^{ZLB} \qquad \pi_2^{-\Delta^{ZLB}} = -\Phi^{AIT}\Psi^{AIT}\kappa\Delta^{ZLB} \tag{24}$$

where $\Phi^{AIT} \equiv \left(\frac{1+\phi_\pi\kappa}{1+\phi_\pi\kappa+\phi_\pi^a\kappa\Psi^{AIT}(1+\kappa)}\right)$ which is less than 1 if $\phi_\pi^a > 0$ under typical calibrations. As Mertens and Williams (2019) and Amano et al. (2020) also discuss, implementing a flexible average inflation targeting framework can also help stabilize the economy at the zero lower bound. Comparing the terms highlighted in blue under the dual mandate to the red terms under average inflation targeting, we again see that they can produce similar macroeconomic outcomes. Thus, the history-dependence implied by the dual mandate can provide similar stabilization benefits to an average inflation target at the zero lower bound when facing shocks to aggregate demand.

Result 2. *The Dual Mandate and Average Inflation Targeting are Observationally Equivalent in Response to Demand Shocks.* Both away from and at the zero lower bound, the two frameworks can produce identical outcomes for inflation and the output gap (for a given calibration). However, the dual mandate achieves its stabilization benefits through the labor market rather than through an explicit backward-looking inflation target.

To take stock on the results presented thus far, Table 1 presents a summary of our key analytical findings. The dual mandate (1) implies history-dependent behavior in monetary policy which helps stabilize inflation in response to shocks, (2) plays an important stabilizing role at the zero lower bound, and (3) can produce outcomes similar to an average-inflation targeting framework in response to demand shocks. In this simplified framework, the history dependence operates through expectations: agents internalize that the central bank will respond to the labor market consequences of today's shocks. In the quantitative model of Section 3, search frictions generate endogenous persistence in unemployment which provides a formal link between today's shocks and expectations of future policy. However, before turning to those results, we highlight a situation in which a dual mandate would not be observationally equivalent to average inflation targeting.

2.5 Supply Shocks Break the Observational Equivalence

Most notably, the observational equivalence between a dual mandate and average inflation targeting breaks down when the economy faces inefficient supply shocks. To illustrate this idea, we now abstract from demand shocks in the model ($r_t^n = 0$ at all times) but instead consider an inefficient supply shock to the Phillips curve:

$$x_t = E_t\, x_{t+1} - \Big(i_t - E_t\, \pi_{t+1}\Big), \tag{25}$$

$$\pi_t = \beta\, E_t\, \pi_{t+1} + \kappa\, x_t + s_t, \tag{26}$$

where s_t captures fluctuations in firms' desired markups or other inefficient changes on the production side of the economy.[7] We use the same timing setup as before to solve for the economic outcomes under this alternative supply shock. The shock s_t takes a value of 0 in periods 1, 3, and 4. In period 2, s_t takes either a positive value ε or a negative value $-\varepsilon$ in which both outcomes occur with a probability of 1/2. We solve backward for the outcomes and assume that the economy remains away from the zero lower bound.

If $s_2 = \varepsilon$ occurs, a single inflation mandate implies the following outcomes in period 2:

$$\pi_2^\varepsilon = \frac{1}{1+\phi_\pi \kappa}\,\varepsilon \qquad\qquad x_2^\varepsilon = -\frac{\phi_\pi}{1+\phi_\pi\kappa}\,\varepsilon. \tag{27}$$

The supply shock leads to higher inflation but the inefficient nature of the shock causes output to run below its potential level (a negative output gap). A larger policy reaction to inflation ϕ_π leads to smaller fluctuations in inflation and larger negative effects on the real economy.

Alternatively, if policymakers instead follow a dual mandate in period 3, outcomes in period 2 in response to a positive supply shock now become:

$$\pi_2^\varepsilon = \frac{1}{1+\ \Psi^D\, \Phi^D \phi_\pi \kappa}\,\varepsilon \qquad\qquad x_2^\varepsilon = -\frac{\Phi^D \phi_\pi}{1+\Psi^D\, \Phi^D \phi_\pi\kappa}\,\varepsilon, \tag{28}$$

where recall that the terms in blue are less than one if $\phi_x > 0$. Unlike a demand shock, a supply shock creates a trade-off between higher inflation and lower output. Because the dual

[7] See Clarida, Gali and Gertler (1999) and Ireland (2003) for further discussion and motivation for these "cost-push" supply shocks.

Table 1: Summary of Key Analytical Results After a Demand Shock

	Phillips Curve Slope	Output Gap x_2 Away from ZLB	At ZLB
Single Mandate	κ	$-\dfrac{\Delta}{1+\phi_\pi\kappa}$	$-\Delta^{ZLB}$
Dual Mandate	$\Psi^D\,\kappa$	$-\widetilde{\Psi}^D\,\dfrac{\Delta}{1+\phi_\pi\kappa}$	$-\Phi^D\,\Delta^{ZLB}$
Average Inflation Targeting	$\Psi^{AIT}\,\kappa$	$-\widetilde{\Psi}^{AIT}\,\dfrac{\Delta}{1+\phi_\pi\kappa}$	$-\Phi^{AIT}\,\Delta^{ZLB}$

Notes: AIT denotes average inflation targeting and ZLB denotes the zero lower bound. Columns 2 and 3 report the output gap in period 2 when the natural rate $r_2^n = -\Delta$ or $r_2^n = -i - \Delta^{ZLB}$. Each blue or red colored term is less than one, implying stabilization relative to the single mandate case if $\phi_x > 0$ or $\phi_\pi^a > 0$:

$$\Psi^D \equiv 1 - \frac{\beta\,\phi_x}{1+\phi_\pi\kappa} < 1 \qquad \text{[Flattening of Reduced-Form Phillips Curve]}$$

$$\widetilde{\Psi}^D \equiv \frac{1+\phi_\pi\kappa}{1+\Psi^D\phi_\pi\kappa+\phi_x\frac{1+\kappa}{1+\phi_\pi\kappa}} < 1 \qquad \text{[Output Gap Stabilization Away from ZLB]}$$

$$\Phi^D \equiv \frac{1+\phi_\pi\kappa}{1+\phi_\pi\kappa+\phi_x(1+\kappa)} < 1 \qquad \text{[Output Gap Stabilization at ZLB]}$$

$$\Psi^{AIT} \equiv \frac{1+\phi_\pi\kappa}{1+\phi_\pi\kappa+\beta\phi_\pi^a\kappa} < 1 \qquad \text{[Flattening of Reduced-Form]}$$

$$\widetilde{\Psi}^{AIT} \equiv \frac{1+\phi_\pi\kappa}{1+\Psi^{AIT}\kappa\left(\phi_\pi+\phi_\pi^a\frac{1+\kappa}{1+\phi_\pi\kappa}\right)} < 1 \qquad \text{[Output Gap Stabilization Away from ZLB]}$$

$$\Phi^{AIT} \equiv \frac{1+\phi_\pi\kappa}{1+\phi_\pi\kappa+\phi_\pi^a\kappa\Psi^{AIT}(1+\kappa)} < 1 \qquad \text{[Output Gap Stabilization Away At ZLB]}$$

mandate commits the central bank to partially offset the employment consequences, it does not fight inflation as aggressively as under a single mandate. The result is smaller output losses at the cost of larger inflation fluctuations. In contrast, under flexible average inflation targeting, we instead find:

$$\pi_2^\varepsilon = \frac{1}{1 + \Upsilon^{AIT}\phi_\pi\kappa + \beta\dfrac{\phi_\pi^a\kappa}{1+\phi_\pi\kappa}}\,\varepsilon \qquad x_2^\varepsilon = -\frac{\phi_\pi}{\dfrac{1}{\Upsilon^{AIT}} + \phi_\pi\kappa + \dfrac{\beta}{\Upsilon^{AIT}}\dfrac{\phi_\pi^a\kappa}{1+\phi_\pi\kappa}}\,\varepsilon, \tag{29}$$

where we define $\Upsilon^{AIT} \equiv 1 + \left(\dfrac{\phi_\pi^a}{\phi_\pi}\right)\left(\dfrac{1+\kappa}{1+\phi_\pi\kappa}\right)$ which is greater than 1 if $\phi_\pi^a > 0$.

Comparing these outcomes with the single and dual mandate results, an average inflation targeting framework better stabilizes inflation in the face of adverse supply shocks but at a larger cost to the real economy. Thus, despite being equivalent in a setting with only demand shocks, a dual mandate and average inflation targeting framework do not produce the same outcomes in response to an adverse supply shock. Given that both policies can produce identical outcomes in response to a demand shock (even at the zero lower bound), a policymaker wishing to "look through" the effects of inefficient supply shocks may prefer a dual mandate since it performs better at stabilizing the real economy following a supply shock.

Result 3. *Supply Shocks Break the Observational Equivalence Between a Dual Mandate and Average Inflation Targeting.* Under a supply shock, the dual mandate tolerates more inflation to stabilize real activity, while average inflation targeting further stabilizes inflation at a larger cost to output.

3 A Model of Labor Markets & Nominal Rigidities

Our simple framework in Section 2 illustrates analytically how the presence of dual mandate introduces history-dependence in monetary policy which helps stabilize inflation in the face of adverse shocks. To quantify these inflation-stabilization benefits, we now build and calibrate a micro-founded model of labor search frictions and nominal rigidities. Our model draws from our prior work in Bundick and Petrosky-Nadeau (2026) and features search frictional labor markets, nominal rigidities in price setting, and economic fluctuations driven by shocks to household demand and productivity. To account for the nonlinearities in the model dynamics, we solve the model using a global solution method. In our baseline model, we assume that the central bank has been given a dual mandate which is consistent with the large body of work describing the conduct of FOMC policy over the past few decades. Under this assumed dual mandate rule, we discipline the model's calibration using observed fluctuations in economy over the 25 years immediately preceding COVID-19 pandemic. Then, we compare the macroeconomic outcomes under the dual mandate versus a single mandate inflation targeting rule and an average inflation targeting framework.

3.1 Monetary Policy

Under a dual mandate, monetary policy sets the short-term nominal interest rate to systematically offset adverse fluctuations in inflation and unemployment. In our baseline specification, we assume policymakers follow a *dual mandate* rule:

$$r_t = r + \phi_\pi \Big(\pi_t - \pi^*\Big) + \phi_u \Big(U_t - U^*\Big), \tag{30}$$

where r_t is the central bank's policy rate, $\pi_t = \log(P_t \,/\, P_{t-1})$ denotes inflation, P_t denotes the price level, U_t denotes the unemployment rate, and r denotes the steady-state nominal rate. The parameters $\phi_\pi > 0$ and $\phi_u < 0$ determine the policy reactions to deviations of inflation from the central bank's inflation target π^* and fluctuations of unemployment from its longer-run natural rate U^*.

This rule contrasts with a central bank that has been given a single mandate, which we denote as a *strict inflation targeting* rule:

$$r_t = r + \phi_\pi \Big(\pi_t - \pi^*\Big), \tag{31}$$

Finally, we will also consider macroeconomic outcomes under a single inflation mandate but policymakers instead target an average of recent inflation. We implement this idea using an *average inflation targeting* rule:

$$r_t = r + \phi_\pi \Big(\pi_t - \pi^*\Big) + \phi_\pi^a \Big(\pi_{t-1}^a - \pi^*\Big), \tag{32}$$

where π_t^a tracks the recent average history of inflation. Following the work of Swanson and Rudebusch (2012), we define an exponential moving average of recent inflation:

$$\pi_t^a = \left(\frac{K}{K+1}\right) \pi_{t-1}^a + \left(\frac{1}{K+1}\right) \pi_t, \tag{33}$$

where the parameter K controls the "look-back" period in average inflation which we roughly interpret as the number of lags in the calculation of average inflation.[8]

[8]For instance, setting $K = 18$ roughly corresponds to stabilizing average inflation over the previous 1.5

3.2 Households

The model features a representative household in which a fraction N_t of the unit mass of members are employed, work H_t hours on the job at an hourly wage W_t, and a fraction U_t are unemployed and searching for work. The representative household chooses consumption C_t and holdings of the one-period nominal bond B_t to maximize its lifetime utility J_t:

$$J_t = \max_{C_t, B_t} \left\{ \exp(\gamma_t) \frac{C_t^{1-\sigma}}{1-\sigma} + \nu_0 \frac{(1-H_t)^{1-\nu_1}}{1-\nu_1} N_t + \nu_u U_t + \beta E_t \Big[J_{t+1} \Big] \right\} \tag{34}$$

$$\text{subject to} \quad C_t + T_t + \frac{B_t}{P_t R_t} = \frac{B_{t-1}}{P_t} + W_t H_t N_t + b\, U_t + D_t,$$

where β represents household discount factor over time. The parameters $\sigma > 0$, $\nu_0 > 0$ and $\nu_1 > 0$ affect the utility of consumption and the disutility of hours worked out of a total amount of time available (which is normalized to 1 each period). ν_u affects the utility of non-employment and b denotes unemployment benefits. Finally, $R_t = \exp(r_t)$ denotes the gross nominal interest rate, T_t denotes lump sum taxes to fund unemployment benefits, and D_t denotes dividends from owning all shares in wholesale and retail firms.

The variable γ_t is an exogenous random process that shifts the level of utility over consumption, generating fluctuations in household demand over time through the household's stochastic discount factor. The law of motion for this preference shock process is as follows:

$$\gamma_t = \rho_\gamma \gamma_{t-1} + \sigma_\gamma \varepsilon_t^\gamma, \tag{35}$$

where $\rho_\gamma \in (0,1)$ and $\sigma_\gamma > 0$ control the persistence and volatility of the demand shocks, and ε_t^γ is an independently and identically-distributed standard normal shock.

Denote λ_t^C as the Lagrange multiplier on the household's budget constraint and denote $\Pi_t = P_t/P_{t-1}$ as the gross inflation rate. The household's first-order condition for bond holdings yields the Euler equation

$$1 = E_t \left\{ M_{t,t+1} \frac{R_t}{\Pi_{t+1}} \right\}, \tag{36}$$

years at a monthly frequency. In the policy rule, we include the lag of π^a rather than its contemporaneous value so that our specification nests the strict contemporaneous inflation targeting rule when $\phi_\pi^a = 0$.

in which the stochastic discount factor, $M_{t,t+1}$, is given by:

$$M_{t,t+1} \equiv \beta \left(\frac{\lambda^C_{t+1}}{\lambda^C_t} \right) = \beta \left(\frac{\exp(\gamma_{t+1})}{\exp(\gamma_t)} \right) \left(\frac{C_{t+1}}{C_t} \right)^{-\sigma}. \tag{37}$$

3.3 The Labor Market

Wholesale sector firms, described below, post a number of job vacancies, V_t, to attract jobs seekers and employed workers are subject to a job separation shock at rate s at the end of a period. Each vacant position costs $\kappa_t = \kappa_0 + \kappa_1 q_t > 0$ units of final output per unit of time. $\kappa_0 > 0$ is a variable cost and κ_1 a fixed cost paid by a representative firm after hiring. q_t is the vacancy filling rate discussed below. Vacancies are filled via a constant returns to scale matching function, $G(U_t, V_t)$. We define labor market tightness as $\theta_t \equiv V_t/U_t$. The probability for a worker searching in the labor market to find a job per unit of time (the job finding rate), denoted $f(\theta_t)$, is:

$$\frac{G(U_t, V_t)}{U_t} = f(\theta_t) \text{ with } f'(\theta_t) > 0. \tag{38}$$

The probability for a vacancy to be filled per unit of time (the vacancy filling rate) is:

$$\frac{G(U_t, V_t)}{V_t} = q(\theta_t) \text{ with } q'(\theta_t) < 0, \tag{39}$$

and such that $q(\theta_t)V_t$ is the number of new hires. Employment, N_t, evolves as

$$N_{t+1} = (1 - s)N_t + q(\theta_t)V_t. \tag{40}$$

The matching function is specified as $G(U_t, V_t) = \frac{U_t V_t}{(U_t^\iota + V_t^\iota)^{1/\iota}}$, in which $\iota > 0$ is a constant parameter. This matching function, specified as in Haan, Ramey and Watson (2000), has the desirable property that matching probabilities fall between zero and one. The job finding and filling rates are given by $f(\theta_t) = \left(1 + \theta_t^{-\iota}\right)^{-1/\iota}$ and $q(\theta_t) = (1 + \theta_t^\iota)^{-1/\iota}$, respectively.

3.4 Aggregating Sector

The aggregating sector produces the aggregate final consumption good Y_t using a basket of differentiated retail goods as inputs. Denote by $y_t(j)$ a type j retail good for $j \in [0, 1]$. We assume that

$$Y_t = \left(\int_0^1 y_t(j)^{\frac{\omega-1}{\omega}} \mathrm{d}j \right)^{\frac{\omega}{\omega-1}}, \tag{41}$$

where $\omega > 1$ denotes the elasticity of substitution between differentiated products. Expenditure minimization implies a demand for type j retail good that is inversely related to the relative price, with the demand schedule given by

$$y_t^d(j) = \left(\frac{p_t(j)}{P_t}\right)^{-\omega} Y_t, \tag{42}$$

where $y_t^d(j)$ and $y_t(j)$ denote the demand for and the price of retail good of type j, respectively. The price index P_t is related to individual prices $p_t(j)$ through

$$P_t = \left(\int_0^1 p_t(j)^{\frac{1}{1-\omega}} \mathrm{d}j\right)^{1-\omega}. \tag{43}$$

3.5 Retail Sector

There is a continuum of retail goods producers each producing a differentiated product using a homogenous intermediate good produced by a wholesale sector as input. The production function of a retail good of type $j \in [0, 1]$ is given by

$$y_t(j) = i_t(j), \tag{44}$$

where $i_t(j)$ is the input of intermediate goods used by retailer j, purchased at the unit price ψ_t on a competitive intermediate goods market.

Retail goods producers are price takers in the input market and monopolistic competitors in the product markets, where they set the price for their goods taking as given the demand schedule in Equation (42) and in the price index in Equation (43). We assume quadratic costs to adjusting prices:

$$\frac{\Omega}{2}\left(\frac{p_t(j)}{\Pi^* P_{t-1}} - 1\right)^2 Y_t \tag{45}$$

where the parameter $\Omega > 0$ measures the cost of price adjustments and $\Pi^* = \exp(\pi^*)$ denotes the deterministic steady state inflation rate which equals the central bank's inflation objective. Price adjustment costs are assumed to be in units of aggregate output.

A retail firm that produces good j maximizes the value of its equity S_t^r by choosing the price $p_t(j)$ for its differentiated good, solving the problem:

$$S_t^r \equiv \max_{p_t(j)} E_t \left[\sum_{i=0}^{\infty} M_{t,t+i} \left[\left(\frac{p_{t+i}(j)}{P_{t+i}} - \psi_{t+i} \right) y_{t+1}^d(j) - \frac{\Omega}{2} \left(\frac{p_{t+i}(j)}{\Pi^* P_{t+i-1}} - 1 \right)^2 Y_{t+i} \right] \right] \tag{46}$$

The optimal price setting decision implies that, in a symmetric equilibrium with $p_t(j) = P_t$ for all j, the input price ψ_t and price inflation Π_t are related through the equilibrium condition:

$$\frac{\Pi_t}{\Pi^*} \left(\frac{\Pi_t}{\Pi^*} - 1 \right) \; = \; \frac{\omega}{\Omega} \left(\psi_t - \frac{\omega - 1}{\omega} \right) \; + \; E_t M_{t,t+1} \frac{Y_{t+1}}{Y_t} \frac{\Pi_{t+1}}{\Pi^*} \left(\frac{\Pi_{t+1}}{\Pi^*} - 1 \right) \tag{47}$$

in which currently inflation is increasing in the input price ψ_t, and in expected future demand (Y_{t+1}) and inflation (Π_{t+1}).

3.6 Wholesale Sector

Firms in the wholesale sector produce with labor hired on a labor market subject to search frictions. Output, sold at unit price ψ_t, is produced with a production technology $X_t N_t H_t^{\alpha}$, where H_t are hours of work on the job per worker, $\alpha \in (0, 1)$, and X_t is aggregate productivity in the wholesale sector. The latter follows the law of motion for $x_t \equiv \log(X_t)$:

$$x_t = \rho_x x_{t-1} + \sigma_x \varepsilon_t^x, \tag{48}$$

in which $\rho_x \in (0, 1)$ is the persistence, $\sigma_x > 0$ is the conditional volatility, and ε_t^x is an independently and identically-distributed standard normal shock.

The wage rate W_t and hours of work H_t are determined through bargaining with workers, as discussed below. The firm posts an optimal number of job vacancies to maximize the cum-dividend market value of equity, denoted S_t^w, taking the vacancy filling rate, employment, wage and hours of work as given:

$$S_t^w \equiv \max_{\{V_{t+i}, N_{t+i+1}\}_{i=0}^{\infty}} E_t \left[\sum_{i=0}^{\infty} M_{t,t+i} \left[\psi_{t+i} X_{t+i} N_{t+1} H_{t+i}^{\alpha} - W_{t+i} H_{t+i} N_{t+i} - \kappa_{t+i} V_{t+i} \right] \right], \tag{49}$$

subject to the employment accumulation Equation (40) and a nonnegativity constraint on vacancies:

$$V_t \geq 0. \tag{50}$$

Let λ_t^V denote the multiplier on the non-negativity constraint rewritten as $q(\theta_t) V_t \geq 0$. From the first-order conditions with respect to V_t and N_{t+1}, we obtain the intertemporal job creation condition:

$$\frac{\kappa_t}{q(\theta_t)} - \lambda_t^V = E_t\left[M_{t,t+1}\left[\psi_{t+1}X_{t+1}H_{t+1}^{\alpha} - W_{t+1}H_{t+1} + (1-s)\left[\frac{\kappa_{t+1}}{q(\theta_{t+1})} - \lambda_{t+1}^V\right]\right]\right]. \quad (51)$$

The condition states that the marginal cost of hiring at time t equals the marginal value of an employed worker to the firm, which in turn equals the marginal benefit of hiring at period $t+1$, discounted to t. The marginal benefit at $t+1$ includes the marginal revenue from an employed worker, $\psi_{t+1}X_{t+1}H_{t+1}^{\alpha}$, net of the wage bill, $W_{t+1}H_{t+1}$, plus the marginal value of a retained worker into the next period, which is equal the marginal cost of hiring at $t+1$. Finally, the optimal vacancy policy also satisfies the Kuhn-Tucker conditions:

$$q_tV_t \geq 0, \quad \lambda_t^V \geq 0, \quad \text{and} \quad \lambda_t^V q_t V_t = 0. \quad (52)$$

3.7 Wages and Hours of Work

A common approach, which we follow here, is to assume workers and firms engage in bilateral Nash bargaining over hours and wages. Assuming this takes place at the beginning of each period, after observing the state of the economy, hours and wages are the solution to

$$\Lambda_t = \max_{W_t,H_t}\left(\frac{J_{Nt} - J_{Ut}}{\lambda_t^C}\right)^{\eta}\left(S_{N,t}^w - S_{V,t}^w\right)^{1-\eta}$$

where $\eta \in (0,1)$ is the worker's relative bargaining weight, and $(J_{Nt} - J_{Ut})$ and $(S_{N,t}^w - S_{V,t}^w)$ are the worker's and the firm's respective labor match surpluses. This leads to an equilibrium condition for hours:

$$\frac{\nu_0}{\lambda_t^C}(1-H_t)^{-\nu_1} \;=\; \alpha\psi_t X_t H_t^{\alpha-1} \quad (53)$$

equating the marginal utility of hours of leisure to the marginal revenue product of an additional hour of work.

The Nash bargained wage is most easily expressed as compensation per worker W_tH_t:

$$W_tH_t = \eta\left[\psi_t X_t H_t^{\alpha} + \kappa_t\theta_t\right] + (1-\eta)Z_t, \quad (54)$$

It increases with the marginal revenue product of labor, conditions in the labor market through changes in θ_t, and with the variable $Z_t = b + \nu_u/\lambda_t^C - \nu_0\frac{(1-H_t)^{1-\nu_1}}{1-\nu_1}/\lambda_t^C$. The latter captures the worker's reservation wage, a function of unemployment compensation b and the change in flow utility from employment compared to remaining unemployed.

3.8 Equilibrium

The risk-free asset is in zero net supply in equilibrium and the household holds all the shares of the firms in retail and wholesale sectors. The goods market clearing condition is then given by:

$$C_t + \kappa_t V_t + \frac{\Omega}{2}\left(\frac{\Pi_t}{\Pi^*} - 1\right)^2 Y_t = Y_t. \tag{55}$$

Intermediate goods market clearing implies

$$Y_t = X_t N_t H_t^{\alpha}. \tag{56}$$

3.9 Calibration

In our baseline model, we first assume that policymakers follow a dual mandate framework using Equation (30). Then, we calibrate the parameters of our model to match key first- and second-moments in the labor market as well as inflation and nominal interest rates over the 1995–2019 sample period.[9] Table 2 lists the resulting parameter values for calibration of our model solved at a monthly frequency. After calibrating the model, we then study the implications of moving from a dual mandate rule to a single inflation targeting framework reacting to either current deviations of inflation from target or an average of past inflation.

Turning first to the parameters in the central bank's policy rule, we set the inflation target π^* to be consistent with the Federal Reserve's stated goal for price stability of 2 percent inflation. Following the work of Taylor (1993) and many others, we set the central bank's inflation response to a standard value $\phi_\pi = 1.5$. Our baseline assumes monetary policymakers assess the long-run value of the unemployment rate U^* to be 5 percent, which is close to the average rate of unemployment observed in our sample period for the U.S.

We follow a conservative approach in calibrating the unemployment response parameter ϕ_u under a dual mandate. As we show in Section 2, the quantitative effects of a dual mandate depend on the central bank's response to employment conditions in its policy rule. To be conservative on these effects, we set ϕ_u = -0.04, which is at the smaller (in absolute terms) end of the range of estimates in Kahn and Palmer (2016) and Feroli et al. (2017). When evaluating outcomes under the single inflation mandate that responds to current inflation (Equation 31), we keep all other parameters unchanged but set $\phi_u = 0$. Under the average

[9] We exclude the period of the COVID-19 pandemic during which the FOMC had adopted a new long-run framework with an asymmetric reaction function with respect to its maximum employment mandate. Alves and Violante (2025), Cairó and Lipton (2025), and Bundick and Petrosky-Nadeau (2026) study some of the macroeconomic implications of this strategy.

inflation targeting rule, we set $K = 15$ which roughly corresponds to a look-back period of 15 months. We then choose the reaction coefficient on average inflation ϕ_π^a such that the volatility on inflation under the average inflation targeting rule matches the volatility observed under the dual mandate rule. This procedure results in a calibration of $\phi_\pi^a = 0.25$.

To target a steady-state unemployment rate of 5% in the model, we set the separation rate s to 3% based on the underlying labor market flows to take into account the two-state (employed/unemployed) nature of the model (Petrosky-Nadeau and Valletta, 2020). This places a restriction on the average job finding rate f and pins down the value of the worker's bargaining weight in wage setting η given our calibration strategy for the remaining parameters, resulting in a value of $\eta = 0.25$. We set the curvature parameter of the labor market matching function ι to 1.25, the value in the original work of Haan, Ramey and Watson (2000) and applied in Petrosky-Nadeau, Zhang and Kuehn (2018). Silva and Toledo (2009) report that recruiting costs are 14 percent of quarterly pay per hire, or 0.4 months of pay per hire, based on data collected by PriceWaterhouseCoopers. We set $\kappa = \kappa_0 + \kappa_1$ such that, on average, the cost of job creation $\kappa/q(\theta) = 0.4 \times WH$. We then use the volatility of unemployment in the data to determine the relative importance of variable and fixed costs κ_0 and κ_1. A greater fixed relative to variable cost increases the volatility of unemployment (Pissarides, 2009), resulting in $\kappa_0 = 0.04$ and $\kappa_1 = 0.06$. Finally, we set the value of unemployment benefits b such that on average $b/WH = 0.4$, corresponding to the typical earnings replacement rate across U.S. states reported by the Department of Labor (Department of Labor, 2019).

Regarding household preference parameters, we set the time discount factor, β, equal to $\exp(-0.50/1200)$ such that the annualized long-run neutral rate equals 0.5%. This target is informed by estimates of the longer-run equilibrium real rate of interest from a variety of approaches, as well as reported estimates among members of the FOMC found in the SEP during the period to which the model is calibrated.[10] We set the elasticity of substitution between differentiated goods to $\omega = 10$, such that the average markup $1/\psi$ is about 11% and broadly in line with microeconomic evidence presented in Basu and Fernald (1997). We set the coefficient of relative risk aversion to a standard value of $\sigma = 2$. The level parameter in the utility for leisure ν_0 is set such that employed individuals spend on average 20 percent of their time endowment working. The curvature parameter ν_1 is set to 2, for an individual labor supply elasticity of $\nu_1^{-1}\left(\frac{1}{H} - 1\right) = 2$ in line with estimates reviewed and discussed in Hall (2009). Finally, the utility associated with non-employment ν_u is set such that there is

[10] See, for example, Laubach and Williams (2003), Lubik and Matthes (2015), and Christensen and Rudebusch (2019) for empirical estimates of the longer-run real rate of interest.

Table 2: Calibrated Model Parameters

Parameter	Notation	Value	Target/Source
Preferences:			
Discount factor	β	$e^{(-0.5/1200)}$	0.5% annualized real risk free rate
Elast. of subst. btw. goods	ω	10	Average markup over marginal cost
Utility: consumption	σ	2	External
Utility: leisure, level	ν_0	6.4	Average hours worked
Utility: leisure, curvature	ν_1	2	Elasticity of labor supply
Non-employment utility	ν_u	-6.7	Reservation to wage ratio
Firm technology and price setting:			
Production function: curvature	α	0.67	External
Price adjustment cost	Ω	500	Volatility of inflation
Labor market:			
Matching function: curvature	ι	1.25	Den Haan et al (2000)
Worker bargaining weight	η	0.25	Unemployment rate
Vacancy cost	κ_0	0.04	Recruiting costs to monthly wage
Fixed hiring cost	κ_1	0.06	Volatility of unemployment
Job destruction rate	s	0.03	Unemployment flow accounting[1]
Unemployment benefits	b	0.15	Replacement rate
Monetary policy:			
Weight on inflation	ϕ_π	1.50	Estimated on U.S. data[2]
Weight on unemp. gap	ϕ_u	-0.04	Estimated on U.S. data[2]
Inflation target	π^*	$1.02^{(1/12)}$	FOMC target inflation
Unemployment: natural rate	U^*	0.05	Long run rate of unemployment
AIT weight	ϕ_π^a	0.25	Volatility of inflation under dual mandate
AIT look-back	K	15	Approx. 1.25-year look-back at monthly freq.
Shock processes:			
Technology: persistence	ρ_x	0.98	U.S. labor productivity[3]
Technology: standard deviation	σ_x	0.004	U.S. labor productivity[3]
Demand: persistence	ρ_γ	0.98	Ireland (2011)
Demand: standard deviation	σ_γ	0.03	Corr. between unemp. and inflation

Notes: We calibrate the model to monthly frequency. (1) based on the underlying labor market flows to take into account the two state (employed/unemployed) nature of the model (Petrosky-Nadeau and Valletta, 2020); (2) See the discussion in the text; (3) Non-farm business labor productivity, see discussion in text.

a small gap between earnings and the reservation utility $Z/WH = 0.90$. This is close to the value calibrated in Rudanko (2009) and estimated by Christiano, Eichenbaum and Trabandt (2016), resulting in a value of $\nu_u = -6.7$.

On the production side, the parameter α in the production function is set to a common value of two thirds. We choose the nominal price adjustment cost Ω such that the model generates the volatility of inflation observed over the last two decades. To a first-order approximation (in which our quadratic-cost specification is observationally equivalent to a Calvo setting), our monthly calibrated value of $\Omega = 500$ implies that firms adjust prices about every eight months, broadly consistent with the micro evidence in Nakamura and Steinsson (2008).

For the productivity process X_t, we set the persistence, ρ_x to 0.98 and its conditional volatility, $\sigma_x = 0.004$, to match the standard deviation of labor productivity in the data (see Bundick and Petrosky-Nadeau (2026)). For the demand shock process, we also set the persistence $\rho_\gamma = 0.98$, which, at the monthly frequency of our model, is consistent with the quarterly estimated value of Ireland (2011). We calibrate the standard deviation of the demand shock process to match the empirically observed correlation between inflation and unemployment, which results in $\sigma_\gamma = 0.03$.

Table 3 compares the implied quarterly moments under the dual mandate policy rule to their empirical counterparts over the 1995–2019 sample period. Overall, the calibrated model provides a reasonable description of the U.S. economy along the dimensions most relevant for our policy experiments.

Beginning with first moments, the model generates an average unemployment rate of 5.1 percent, somewhat below the 5.7 percent observed in the data but close to the targeted long-run rate $U^* = 5$ percent. Average inflation under the dual mandate is 1.8 percent, matching the data and consistent with the presence of asymmetric fluctuations in the unemployment rate that, on average, push realized inflation below the 2 percent target. The average nominal policy rate closely matches its empirical counterpart.

Turning to second moments, the model closely matches the volatility of inflation: 0.40 in the model compared to 0.44 in the data. The volatility of unemployment is 0.07, below the empirical value of 0.11, reflecting in part our exclusion of the Great Recession when computing data moments. The model generates a somewhat higher volatility of the nominal policy rate (0.63) than observed in the data (0.39).

Table 3: Empirical and Model-Implied Moments

	Data	Dual mandate	Strict inflation target	
			IT	AIT
Mean:				
U	5.7	5.1	5.1	5.1
π	1.8	1.8	1.6	1.7
R	2.5	2.4	2.2	2.3
Standard deviation:				
$\sigma(U)$	0.11	0.07	0.07	0.07
$\sigma(\pi)$	0.44	0.40	0.54	0.40
$\sigma(R)$	0.39	0.63	0.79	0.62
$\sigma(H)$	0.00	0.03	0.03	0.03
Cross. correlation:				
$corr(U, \pi)$	-0.44	-0.45	-0.61	-0.64
$corr(U, H)$	-0.74	-0.81	-0.81	-0.81
$corr(R, \pi)$	0.49	0.72	0.71	0.72
$corr(R, U)$	-0.83	-0.55	-0.65	-0.65

Notes: Details on the sources and transformations applied to the U.S data are available in Appendix Section B. The empirical sample period is 1995Q1–2019Q4. We exclude the Great Recession when computing the standard deviation of unemployment and its correlations with core PCE inflation. Model moments are computed on 10,000 simulations of 300 periods, equal to the number of months in the data sample and then averaged over three periods for a quarterly frequency. Empirical and model data are converted to proportional deviations and Hodrick-Prescott filtered before computing second moments.

The model also reproduces the key cross-correlations in the data. The correlation between unemployment and inflation is -0.45 in the model, essentially identical to the -0.44 observed in the data indicating that the model captures the slope of the reduced-form Phillips curve. However, the model overstates the correlation between the nominal rate and inflation (0.72 versus 0.49 in the data) and understates the correlation between the nominal rate and unemployment (-0.55 versus -0.83). Taken together, the model provides a quantitatively-disciplined laboratory for evaluating the stabilization properties of alternative monetary policy rules.

4 Stabilizing Effects of an Employment Mandate

We now analyze the qualitative importance of a dual mandate in promoting price stability. Leaving all other parameters unchanged, we compare the implications of a dual mandate rule in Equation (30) versus the outcomes under either a strict inflation targeting rule in Equation (31) or an average inflation targeting rule in Equation (32).

Under either of the three calibrated monetary policy rules, we see quite similar outcomes for the real economy. Panels (a) and (c) of Figure 1 plot the impulse responses of labor market tightness to a one standard deviation innovation to demand and productivity, respectively.[11] In response to either a demand or supply shock, the economy experiences similar paths for labor market tightness under all three policy rules. Table 3 also highlights this similarity of real outcomes for the labor market in which the average and standard deviation of the unemployment rate are nearly identical across the three calibrated rules.[12]

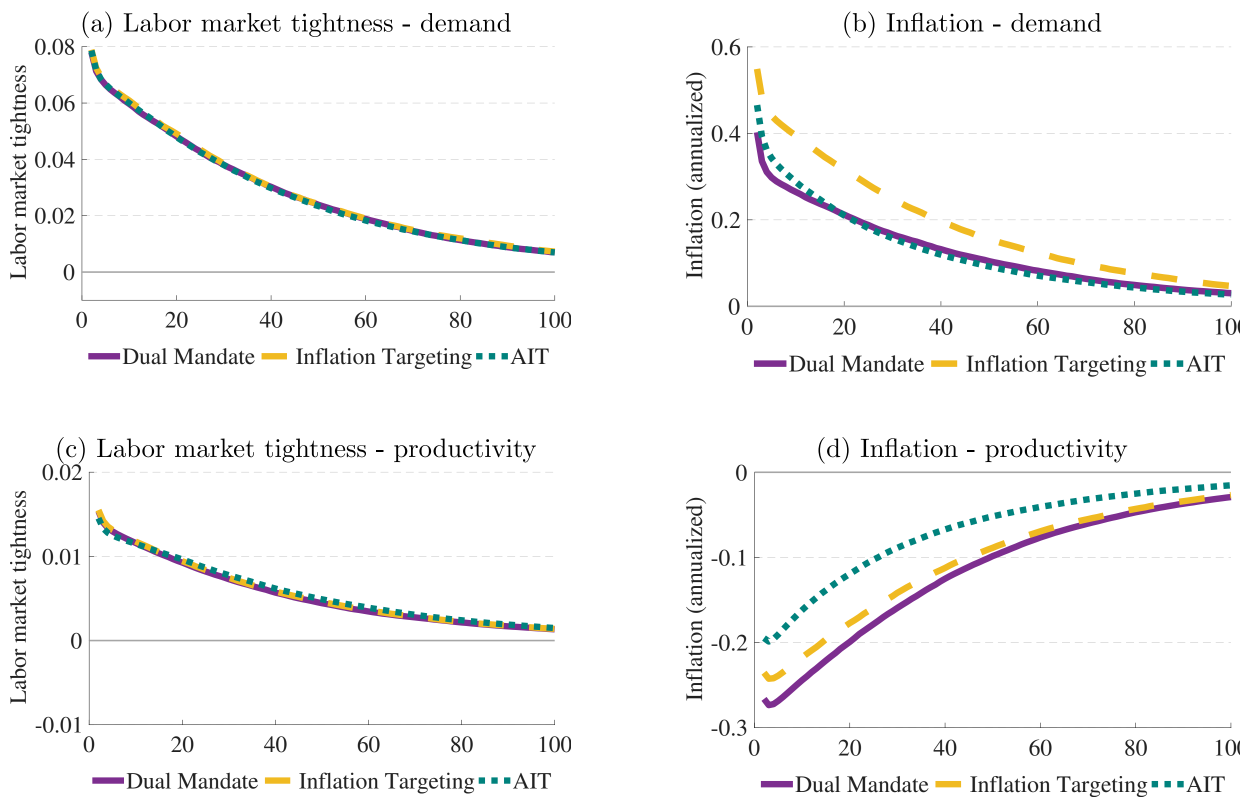
In contrast, the economy experiences different outcomes for inflation depending on policymakers' choice of a dual versus single mandate. Panel (b) of Figure 1 illustrates this result through the impulse response of inflation to a positive demand shock. Despite the *same* real outcomes for labor market tightness, the economy experiences larger fluctuations in inflation under a strict inflation targeting rule that only responds to current inflation. Echoing Result 1 from the simple model in Section 2, the presence of the dual mandate helps stabilize inflation through expectations that policy will help stabilize the stock of employment following adverse shocks.

Table 3 also highlights this stabilization of inflation under a dual mandate. All else equal, the inclusion of a dual mandate lowers the volatility of inflation from 0.54 to 0.40 percentage points relative to strict inflation targeting (a 26 percent reduction). The dual mandate also flattens the model-implied Phillips curve, reducing the correlation between unemployment and inflation from -0.61 to -0.45. These results highlight how the history-dependence introduced by the dual mandate can help stabilize inflation despite generating the same labor market outcomes.

[11] We define impulse response as: $IRF(y)_{t+h} = [y_{t+h}|\Omega'] - [y_{t+h}|\Omega]$ where $[y_{t+h}|\Omega]$ is the path of the variable under a history of shocks Ω while $[y_{t+h}|\Omega']$ the corresponding realizations under the same history of shocks plus a one-time innovation ϵ_t^j, $j = x, \gamma$, at date t. Note that this impulse response method allows for the endogenous variables to converge to different longer-run values.

[12] These results also extends beyond the first and second moments of the unemployment rate as Panel (a) of Figure C.2 of the Appendix shows the stationary distribution of unemployment across the three policy rules. The Appendix also contains the model policy functions, which also illustrate similar intuition as the impulse responses.

Figure 1: Model Impulse Responses to a Positive Productivity and Demand Shocks Under A Dual Mandate & Inflation Targeting



Note: Responses to a 1 standard deviation positive shock to log productivity x_t and household preference γ_t, averaged across 1000 simulations.

Comparing the outcomes under a dual mandate versus average inflation targeting, our quantitative model shows that these two policies can be observationally equivalent in response to a demand shock. Similar to Result 2 from Section 2, Panel (b) of Figure 1 shows that the economy experiences similar outcomes for inflation after a positive demand shock. However, Panel (d) of Figure 1 illustrates that the observational equivalence breaks down following a supply shock. The economy experiences smaller fluctuations of inflation following a positive productivity shock under average inflation targeting when compared with dual mandate or a strict contemporaneous inflation objective. However, since fluctuations in demand are the primary driver of fluctuations in our economy (needed to match the negative correlation between unemployment and inflation), Table 3 shows that the dual mandate and average inflation target still achieve lower inflation volatility relative to a single contemporaneous inflation objective.

4.1 Sensitivity of Main Results to Policy Parameters

We develop further intuition for the main results and examine their sensitivity through a series of variations in key parameter values. In particular, we discuss the impact of increasing the monetary policy parameters ϕ_π, ϕ_u, and ϕ_{π^a}, and increasing the look-back period K. In addition, we report on a version of the model in which demand shocks are the only source of business cycle fluctuations. Table 4 reports the volatility and contemporaneous cross-correlations for the unemployment rate, inflation, and the nominal policy rate.[13] The first three rows report the results when the central bank follows a dual mandate, the next set of rows reports results for an inflation targeting central bank, and the final rows those under AIT.

Increasing the weight on current deviations of inflation from target ϕ_π from 1.5 to 2 lowers the volatility of inflation by about the same proportion across each of the rules: from 0.40 to 0.21 under a dual mandate, from 0.40 to 0.23 under AIT, and 0.54 to 0.27 under inflation targeting. There is little to no change in the correlation between inflation and unemployment, or unemployment and the nominal policy rate.

Increasing the weight on the unemployment gap under the dual mandate (ϕ_u) from -0.04 to -0.07 likewise reduces the volatility of inflation (from 0.40 to 0.34). However, greater responsiveness to deviations from the employment goal lowers the correlation between unemployment and inflation (from -0.45 to -0.26). In effect the central bank is leaning harder to offset the impacts of demand shocks to the economy.

Placing greater weight on average inflation under AIT, setting ϕ_{π^a} to 0.30, up from 0.25, also reduces the volatility of inflation (from 0.40 to 0.38). In this sense it is similar to placing a greater weight on deviations from the employment goal under a dual mandate. However, this greater emphasis on average inflation has little effect on the slope of the Phillips curve. The contemporaneous correlation between unemployment and inflation is essentially unchanged (-0.64).

Increasing the look-back period by setting $K = 35$ instead of 15 in the baseline increases the volatility of inflation under AIT (from 0.40 to 0.45). A longer averaging window smooths the average inflation measure, weakening its responsiveness to recent shocks and reducing the stabilizing force of history dependence.

[13] The model means are not affected by the changes in parameter values considered here.

Table 4: Model-Implied Moments

Moment	$\sigma(U)$	$\sigma(\pi)$	$\sigma(R)$	$corr(U,\pi)$	$corr(R,\pi)$	$corr(R,U)$
Dual Mandate						
Baseline	0.07	0.40	0.51	-0.45	0.72	-0.55
$\phi_\pi = 2$	0.07	0.21	0.45	-0.46	0.72	-0.56
$\phi_U = -0.07$	0.07	0.34	0.54	-0.26	0.71	-0.45
Inflation Targeting:						
Baseline	0.07	0.54	0.64	-0.61	0.71	-0.64
$\phi_\pi = 2$	0.07	0.26	0.53	-0.62	0.70	-0.62
$\phi_\pi = 1.66$ (matches DM $\sigma(\pi)$)	0.07	0.41	0.54	-0.61	0.70	-0.64
AIT:						
Baseline	0.07	0.40	0.50	-0.64	0.72	-0.64
$\phi_\pi = 2$	0.07	0.23	0.48	-0.64	0.71	-0.62
$K = 35$	0.07	0.45	0.67	-0.64	0.71	-0.65
$\phi_\pi^A = 0.30$	0.07	0.38	0.59	-0.64	0.72	-0.65
Demand shocks only:						
Dual Mandate	0.07	0.29	0.40	-0.78	0.72	-0.84
Inflation Targeting	0.07	0.46	0.55	-0.81	0.70	-0.85
AIT ($\phi_\pi^A = 0.42$)	0.07	0.29	0.39	-0.84	0.72	-0.84

Notes: Details on the sources and transformations applied to the U.S data are available in Appendix Section B. The empirical sample period is 1995Q1–2019Q4. We exclude the Great Recession when computing the standard deviation of unemployment and its correlations with core PCE inflation. Model moments are computed on 10,000 simulations of 300 periods, equal to the number of months in the data sample and then averaged over three periods for a quarterly frequency. Empirical and model data are converted to proportional deviations and Hodrick-Prescott filtered before computing second moments.

Finally, we consider a version of the model in which demand shocks are the only source of business cycle fluctuations. The dual mandate produces the lowest inflation volatility ($\sigma(\pi) = 0.29$), well below inflation targeting (0.46). Moreover, recalibrating the AIT response parameter to $\phi_{\pi^a} = 0.42$ delivers $\sigma(\pi) = 0.29$ under AIT — identical to the dual mandate. This confirms quantitatively the observational equivalence established in Result 2 of Section 2.3: With only demand shocks, the history dependence inherent in the dual mandate can be exactly replicated by an appropriate average inflation targeting framework. The correlation between unemployment and inflation is strongly negative under all three rules (-0.78 to -0.84), consistent with demand shocks generating co-movement along the Phillips curve.

5 Conclusion

This paper argues that the presence of a dual mandate to promote both maximum employment and price stability can enhance, rather than compromise, the achievement of the price-stability objective. We show analytically and quantitatively that responding to employment conditions under a dual mandate generates history-dependent monetary policy that stabilizes inflation.

The mechanism operates through the persistence of employment inherent in labor markets. When the central bank responds to deviations of unemployment from its natural rate, policy inherits the slow adjustment of the labor market stock, creating expectations of future accommodation following adverse demand shocks. These expectations flatten the reduced-form Phillips curve and reduce the amplitude of inflation fluctuations. We analytically and quantitatively document three main results. First, the dual mandate reduces the volatility of inflation relative to strict inflation targeting. Second, this history dependence produces outcomes observationally equivalent to average inflation targeting for demand shocks. Third, supply shocks break this equivalence because the dual mandate "looks through" part of the fluctuations in inflation relative to average inflation target to help stabilize the labor market.

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