Should Central Banks Have an Inequality Objective?

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Introduction and Motivation

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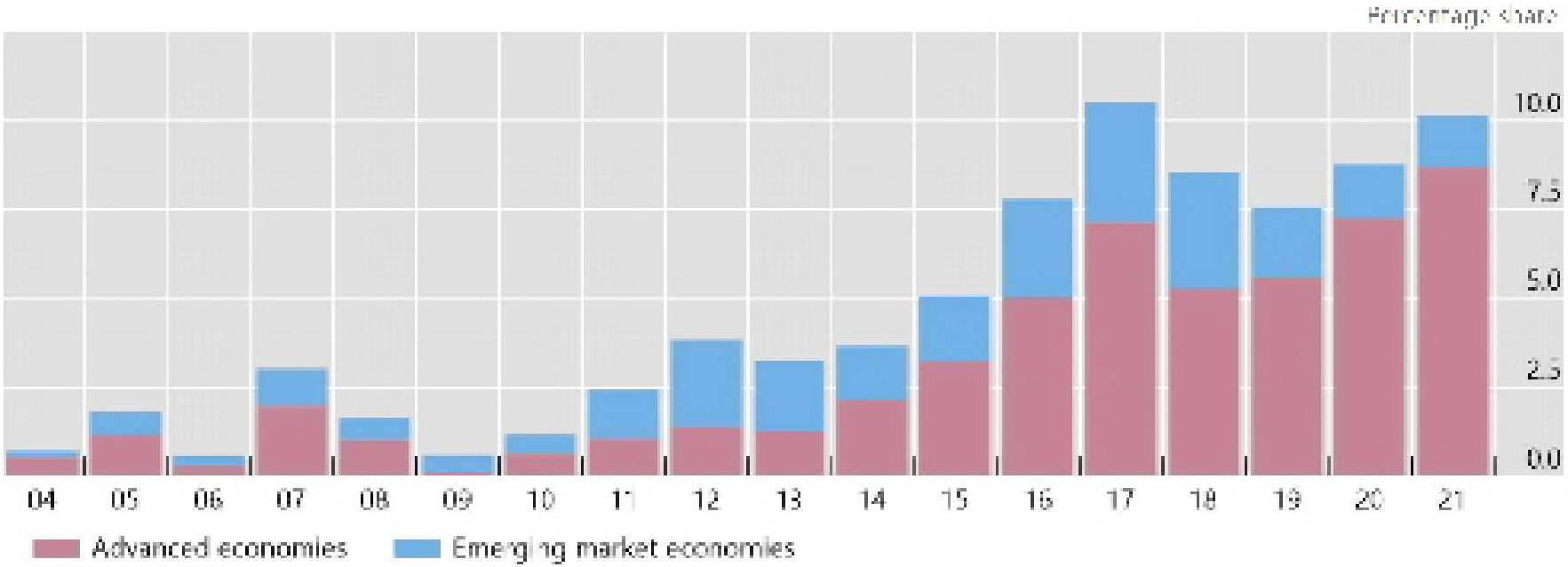
- Pressure on central banks to modify their *mandates* to include redistributional goals

Inequality and Central Bankers' Discourse

References to "inequality" in central bankers' speeches — Graph 2



Speeches of central bankers mentioning the keyword "inequality" and "distributional consequences/impact of monetary policy" expressed as a share of all central bankers' speeches in the BIS database. Data until February 2021.

Sources: BIS; BIS calculations.

Source: Carstens (2021)

US: The Racial and Economic Equity Act

The Federal Reserve Racial and Economic Equity Act will require the Federal Reserve System (Fed) to use its existing authorities to address the ongoing crisis of racial inequality and disparities in economic outcomes. This bill has three primary components:

1. Makes Reducing Inequality Part of the Fed's Mission: This bill adds a new section to the Federal Reserve Act that would require the Fed to carry out its functions in a way that "minimizes and eliminates racial disparities in employment, wages, wealth, and access to affordable credit."

"The Federal Reserve Racial and Economic Equity Act One Pager ", warren.senate.gov

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- But these models do not tell how much weight a central bank (or the whole of society) **should** place on inequality
- Such a question is **normative,** and should be resolved by a society as a whole

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- The question then remains:

Given the social welfare function, should the central bank mandate include distributional goals?

- The answer turns out to be affirmative, if (and only if) there is heterogeneity
- But the details are surprising and instructive

The Role of a Central Bank Mandate

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- Basic idea: the central bank mandate plays a useful role in providing correct **incentives**
- A crucial distortion: **lack of credibility** in monetary policy and **inflation bias**
- This is a key justification for central independence and inflation targeting
- The idea extends to economies with heterogeneity

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4. A more general result: the central bank mandate should be **less** egalitarian than the social welfare function
5. 21st century version of **conservative central banker** (Rogoff 1983)

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- Time Inconsistency: central bank is tempted to engineer surprise inflation
- Unexpected inflation is a tax on nominal wealth
- Therefore, with heterogeneous agents, inflation has a **redistributive** aspect, hurting agents in direct proportion to their nominal wealth
- To provide **offsetting incentives**, the central bank mandate should assign higher relative weight to agents with higher nominal wealth

Related Literature

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3. Distributional Goals and Time Inconsistency: Rogers (1986)
4. Monetary models with heterogeneous agents: Kaplan-Moll-Violante (2018), Dávila-Schaab (2022)

A Simple Monetary Policy Problem

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- Extension of Persson-Tabellini (1991)
- Agents i in $[0, 1]$.
- Two periods, $t = 1, 2$.
- In period $t = 1$, each agent i receives endowment $e^i > 0$ of only good. (e^i increases with i.)

- Money is only asset.
- In $t = 1$, each agent i can consume endowment or sell part of it for money at price P_1, obtaining M_1^i
- In last period, price level is P_2, so the real value of money falls to

$$\frac{M_1^i}{P_2} = \frac{M_1^i}{P_1}\frac{P_1}{P_2} = m_1^i(1-\pi)$$

where $m_1^i = M_1^i / P_1$ and

$$\pi = 1 - \frac{P_1}{P_2} = \frac{P_2 - P_1}{P_2}$$

- Budget constraint at $t = 1$:

$$c_1^i + m_1^i \leq e^i$$

- At $t = 2$, agents can work and produce with linear technology
- There is a tax on labor income
- Budget constraint at $t = 2$:

$$c_2^i + m_2^i \leq (1 - \tau) l^i + (1 - \pi) m_1^i$$

Individual Decisions

Agent i's utility:

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Optimal Decisions:

$$U'(e^i - m_1^i) = 1 - \pi$$

$$V'(l^i) = 1 - \tau$$

Policy

Government finances a given expenditure g with labor taxes and inflation:

$$g \leq \tau l + \pi m_1 + m_2$$

where

$$\begin{aligned} l &= \int l^i di \\ m_t &= \int m_t^i di \end{aligned}$$

Classic Case: The Representative Agent

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Análisis con un Agente Representativo

- With a representative agent ($e^i = e$) we have Kydland-Prescott-Calvo
- The social welfare function is the only agent's utility
- Central bank chooses tax rates τ and π to maximize that function
- Two cases: **commitment vs discretion**

Commitment Case: The Ramsey Outcome

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- The Ramsey solution balances tax distortions **ex ante**:

$$\frac{1-U'(c_1^*)}{(e_1-c_1^*)U''(c_1^*)}=\frac{V'(I^*)-1}{I^*V''(I^*)}$$

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- In equilibrium the representative agent anticipates high inflation at $t = 1$ and reduces money demand
- Result: inflation higher than π^* (**inflation bias)**, leading to a social welfare loss

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- First question: what is the appropriate social welfare function?
- We sidestep that question, and assume that there is a well defined social welfare function
- And we start assuming that it is given by the **average** of individual utilities:

$$\int W^i di$$

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- Intuition:

1. Social welfare is linear in individual utility
2. Individual utility linear in second periods
3. Hence one can write problem in aggregate terms

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- Agent i pays more of the inflación tax if monetary wealth is higher

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- But **not under discretion**!

Key Result

Proposition. Under discretion, a mandate of the form $\int \phi^i W^i di$ implements the Ramsey solution if and only if

$$Cov(\phi^i, e^i) = \int \phi^i (e^i - e) di = \Delta^*$$

$$\text{where } \Delta^* = -\frac{\pi^*(1+\lambda^*)}{U''(c_1^*)} > 0$$

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Corollary (XXI Century Conservative Central Banker): The **socially optimal** central bank mandate is **less egalitarian** than the social welfare function

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- Stress that, with a less egalitarian mandate than society, the central bank ends up implementing the **socially best** outcome
- The most fundamental message: the objectives assigned to the central bank play a role in providing correct incentives

Implementation

For a specific implementation, consider

$$\phi^i = \phi(e^i - e)$$

where ϕ is a constant to be chosen

Then, from the Proposition,

$$\begin{aligned} \Delta^* &= \int \phi^i (e^i - e) di \\ &= \Delta^* \int (e^i - e)^2 di \end{aligned}$$

so that

$$\phi = \frac{\Delta^*}{Var(e_i)} > 0$$

Generalizing: Egalitarian Social Objectives

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Suppose that the social welfare function is

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with $\Gamma(.)$ increasing and concave.

$===>$ Concavity in Γ embodies social preferences for equality

The Ramsey Problem

Now the Ramsey outcome must satisfy

$$\frac{l^* V''(l^*)}{1 - V'(l^*)} = \left[e_1 - c_1^* - \frac{\Delta^*}{(\lambda^* - 1)} \right] \frac{(e_1 - c_1^*) U''(c_1^*)}{U'(c_1^*) - 1}$$

where

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- Time inconsistency problem is worse, **if** central bank maximizes the social objective function

The Optimal Central Bank Mandate

Proposición. With the social welfare function $\int \Gamma(W^i)di$, a mandate for the central bank of the form $\int \phi^i \Gamma(W^i)di$ implements the Ramsey outcome if and only if

$$Cov(\phi^i, e^i) = Cov(\Gamma'(W^{i*}), e_i) + \mu^*$$

where $\mu^* > 0$ is given by

$$\mu^* = \int (q_i^* - p_i^*)(e^i - e)di$$

$$q_i^* = \frac{\phi^i \Gamma'(W^{i*})}{\int \phi^i \Gamma'(W^{i*})di}$$

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- Again: the conservative central banker implements the socially optimal policy (optimal from the viewpoint of society)

Implementation

With

$$q^i = p_i^* + \phi(e_i - e)$$

where ϕ is a constant, the optimal choice is

$$\phi = \frac{\mu^*}{Var(e_i)}$$

so that

$$q^i = p_i^* + \mu^* \frac{e_i - e}{Var(e_i)}$$

This implies:

$$(\phi^i - 1)\Gamma'(W^{i*}) = \mu^* \frac{e_i - e}{Var(e_i)}$$

Concluding Remarks

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  3. There is heterogeneity which allow the central bank mandate to be tailored to offset inflationary bias
- Hence the argument seems quite general and should extend to many settings
- In particular, to dynamic monetary models with heterogeneity, including HANK
- Hard questions and implications: what exactly is the meaning of "optimal policy" in such models?

MUCHAS GRACIAS!!