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COVID-19 HELICOPTER MONEY, MONETARY POLICY AND CENTRAL BANK INDEPENDENCE: ECONOMICS AND POLITICS

Donato Masciandaro

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Abstract

This article discusses a form of fiscal monetization that produces losses in the central bank's balance sheet, without a permanent increase in the money base. If an independent central bank acts as a long-sighted policymaker, an optimal helicopter monetary policy can be identified. At the same time, if the government in charge is made up of career-concerned politicians and citizens are heterogenous, then the policy mix will produce distributional effects, and conflicts between politicians and central bankers will be likely. Political pressures will arise and the helicopter money option will be less likely. The framework is applied in a discussion of the economics and politics of issuing COVID-19 perpetual bonds with the European Central Bank as the buyer.

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1. Introduction

Let us suppose now that one day a helicopter flies over this community and drops an additional $1,000 in bills from the sky, which is, of course, hastily collected by members of the community. Let us suppose further that everyone is convinced that this is a unique event which will never be repeated. (Milton Friedman, 1968)

The spread of the new coronavirus (COVID-19) in early 2020 led to some of the most significant declines in stock prices (Baker et al. 2020, Cahn and March 2020, Ramelli and Wagner 2020), contractions of real economic activities (Leiva-Leon et al. 2020) and deteriorations in expectations (Gormsen and Koijen 2020) seen in recent human experience (Barro et al. 2020, Breitenfellner and Ramskogler 2020, Danielsson et al. 2020), without mentioning the long-run macroeconomic effects of global pandemics (Jorda et at. 2020, Alfani 2020).

In economic thinking, the COVID-19 pandemic forces swept away many of the conventional taboos, such as the radical idea of a helicopter drop – that is, printing money and handing it out to people with no strings attached (Financial Times 2020, Yashiv 2020). The term uses the fanciful imagery that was originally invented by Milton Friedman (1968). Also the head of the French central bank Francois Villeroy de Galhau has floated the idea of printing money and giving it directly to companies (Financial Times 2020b).

Moreover over the past months media attention has zoomed on a new approach to macroeconomics, dubbed Modern Monetary Theory, whose proponents claim that governments can always print money without intertemporal budget constraints (Mankiw 2019), which implies that helicopter money is always a viable option. However, what we today call "unprecedented monetary policies" have historical precedents (Ugolini 2020).

The debate about helicopter money involves two separate policy issues. The first is how to create a financial backstop for households and firms through monetary cash transfers. The second is whether and how to involve the central bank in financing this backstop through direct monetization.

Direct cash handouts have already happened in two instances. In February 2020, the government of Hong Kong transferred HKD 10,000 (USD 1,270) to all residents financially affected by the virus as part of its overall policy response (Quah 2020). Similarly, the

government of Singapore provided small cash payments to all adult Singaporeans (Financial Times 2020). Other direct cash handouts have also been announced (Table 1). Moreover, in 2009, the Australian government implemented a similar policy when it sent cheques to most taxpayers (Grenville 2013). However, fiscal cash handouts are not automatically helicopter money, and the same is true for any general mix of monetary and fiscal policies under which expansionary fiscal measures are financed by creating a monetary base (Carter and Mendes 2020). As such, we need a definition to avoid ambiguities (Blanchard and Pisani-Ferry 2020).

Table 1: Announced Fiscal Backstops

COUNTRY	FISCAL BACKSTOP
Canada	CAD 35 billion in direct fiscal stimulus for those affected by the virus
United States	USD 2 trillion in cash for individuals and loans to companies (directly or via local governments)
Germany	Support for businesses that keep employees on their payrolls rather than laying them off
Italy	Support for individuals and companies
France	EUR 10.5 billion for unemployment benefits and small businesses, compensation for employees on reduced hours
Spain	€ 12 billion in direct stimulus, backstop pay for sick employees, cash grants for small businesses
Japan	JPY 1.3 trillion in special financing for SMEs hit by the virus, subsidies for those unable to work
China	USD 79 billion support package for companies hurt by virus

Source: Bank of Canada, 2020

Given that the state and the central bank have separate balance sheets, we assume that helicopter money is in action when there is an outright money-financed fiscal transfer that produces losses in the central bank's balance sheet (Gali 2020). Our definition implies that a direct central bank money transfer is neither a necessary nor a sufficient condition for a helicopter money action, while some proposals suggested that a direct channel is more likely to be effective due to both higher consumer spending and higher inflation expectations (Muellbauer 2014). This is true even though some analyses cast doubt on whether it makes any difference that transfers come from the central bank or the government (Van Rooij and De Haan

2016). Needless to say that any central bank role as public debt manager does not imply any helicopter money, provided that – as in the case of the Bundesbank (Deutshe Bundesbank 2018) – the central bank does not grant any loan nor does it takes any state security into its own portfolio acting as publtic deb agent.

Moreover, we can have helicopter money without a permanent increase in non-interest-bearing central bank liabilities (Reichlin et al. 2013, Buiter 2014a, Borio et al. 2016, Bernanke 2016, Agarwal and Chakraborty 2019). Finally, this form of helicopter money differs from conventional and unconventional central bank asset purchases financed by issuing central bank reserves, as it represents an intended loss on the central bank's balance sheet. In this case, the corresponding public liabilities are irredeemable.

In other words, they are viewed as a permanent asset by the holder and as a capital liability by the issuer, but without any permanent change in the overall money base.Intended central bank losses are more likely to be interpreted as a credible one-shoot monetary action than a change in the money base growth. Table 2 summarizes the different options.

Table 2 : Monetary Policy Options, Money Base Growth and Central Bank's Balance Sheet

MONETARY POLICIES	PERMANENT MONEY BASE GROWTH	CENTRAL BANK'S BALANCE SHEET LOSSES
Central Bank Asset Purchases	NO	Random and Unintended Effect
Hard Helicopter Money	YES	NO
Soft Helicopter Money	NO	Systematic and Intended Effect

Source: Masciandaro, 2020

However, the economics of a helicopter money option do not address crucial political issues that such an option involves. Extant research (Turner 2015, Bernanke 2016) emphasizes that, in general, political concerns are perhaps the most important reason for viewing helicopter money as a last-resort policy – it represents a source of risk to the central bank's independence.

Before the 2008 financial crisis, the independence of central banks had become the benchmark for evaluating the effectiveness of monetary institutions around the world. This institutional design was supported by a broad consensus (Cecchetti 2013, Bayoumi et al. 2014,

Goodhart and Lastra 2017, Issing 2018). When the financial crisis emerged, the boundaries between monetary, banking and fiscal policies became blurred, triggering a debate on the shape of central bank regimes (Nier 2009, Cecchetti et al. 2011), especially with regard to central bank independence (Alesina and Stella 2010, Cukierman 2008 and 2013, Cecchetti 2013, Stiglitz 2013, Taylor 2013, Buiter 2014b, Balls et al. 2016, Sims 2016, Blinder et al. 2017, De Haan and Eijffinger 2017, Issing 2018, Rogoff 2019).

The mixing of a fiscal backstop and helicopter monetization is a case of policy blurring that can affect the relationship between politicians and central bankers. Therefore, we analyse the possible effects of a helicopter money option on central bank independence using the concept of political pressure (Binder 2018). We use this concept as a proxy for potential demand for reforming the current institutional setting. In general, we share the perspective that political cost-benefit analyses eventually shape central bank governance. Such drivers create dynamic institutional cycles with ups and downs (Masciandaro and Romelli 2015) during which the central bank's independence can exhibit different degrees of resilience in terms of how difficult is to change constitutions and laws (Alesina and Grilli 1992, Blinder 2010).

The remainder of this article is organised as follows. Section two presents the theoretical framework (Masciandaro 2020) with its interactions among the relevant macro players - citizens, the government and an independent central bank - after which the optimal helicopter monetary policy is defined. Section three examines the importance of heterogeneity among citizens when politicians are in charge. Monetary policy can produce inequalities that trigger political pressures on the central bank. In both sections, the framework is applied in a discussion of European perpetual bonds with the European Central Bank acting as the buyer. The conclusions are presented in section four.

2. Pandemic Recession, Fiscal Backstop and Central Bank Independence: The Optimal Helicopter Money

In a given country, the economy consists of a population of citizens, a government and a central bank. The citizens are risk neutral, and they draw utility from consumption and disutility from labour. They use their net labour income and their assets to buy consumption

goods. We focus on the special case of the policy mix between a fiscal backdrop and a helicopter monetization in a general economic setting where heterogeneity in the composition of citizen assets is coupled with homogeneity in labour income (Masciandaro and Passarelli 2019). These assumptions enable us to zoom in on the macroeconomic consequences of implementing an extraordinary fiscal policy using cash monetary transfers.

Starting with labour income, let individual utility from labour be:

$$l(1-\tau)-U(l)\,. \tag{1}$$

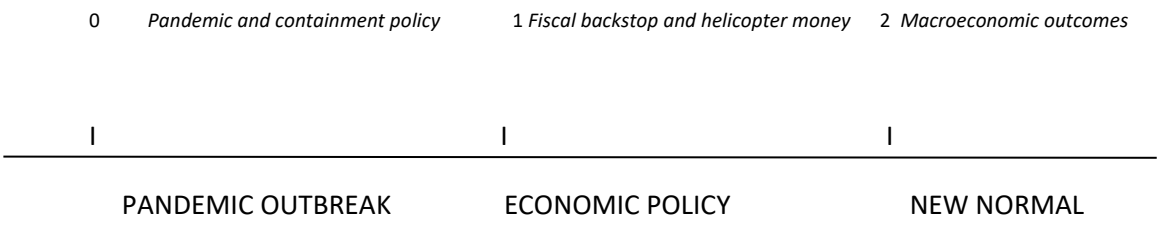
Labour productivity is normalized to one. Then $l(1-\tau)$ is the after-tax (net) labour income. $U(l)$ is an increasing and convex effort function. After knowing τ, each citizen chooses how much to work in order to maximize his or her welfare. The optimality condition yields each individual's labour-supply function:

$$L(\tau)=U_l^{-1}(1-\tau)\,. \tag{2}$$

Labour supply $L(\tau)$ is decreasing in the tax rate, $L_T<0$, which is the same for all citizens. Given the above-mentioned productivity and a population size of one, the labour supply represents the total income: $y=L(\tau)$. Therefore, in normal times, output growth in equilibrium depends on the tax policy. Moreover, each citizen can have assets with a market value of π. The citizens can used those assets as collateral in building up loans using competitive financial and banking markets. Let $\lambda\pi$ be the total amount of financial liabilities, where λ is the liability to asset ratio that parameterizes the citizen's financial leverage. The financial leverage is a proxy for the citizens' creditworthiness, which influences their welfare.

If a pandemic occurs, policymakers have to react by implementing both fiscal and monetary policies. Those policies will affect the citizens, the labour markets, and the markets for goods and services. The sequence of events is as follows (see Figure 1).

Figure 1: Pandemic, Fiscal Deficit and Helicopter Money



At $t = 0$, a pandemic breaks out and, consequently, the government designs and implements a containment policy. The starting point is the special nature of the pandemic-related recession. As a result of the pandemic, each national government faces an unpleasant dilemma between two public goals (Baldwin and Weder di Mauro 2020).

First, there is a need to protect public health by implementing a containment policy or social-distancing measures with the aim of minimizing the expected loss of life (Atkeson 2020). However, given the interactions between economic decisions and epidemics (Eichenbaum et al. 2020), any containment policy has economic costs that simultaneously affect the three fundamental pillars of a modern market economy: **aggregate supply** (Baldwin 2020a and 2020c, Del Rio-Chanona et al. 2020, Goodhart and Pradan 2020, Koren and Peto 2020), **aggregate demand** (Andersen et al. 2020, Del Rio-Chanona et al. 2020, Fornaro and Wolf 2020), and the **banking** (Acharya and Steffen 2020) and **financial sector** (Alfaro et al. 2020, Baker et al. 2020, Schoenfeld 2020), including the shadow-banking system (Perotti 2020).

Citizens suffer economic and financial losses that dampen their balance sheets. The losses that negatively affect both the asset value and the ability of households and firms (De Vito and Gomez 2020) to remain safe and sound borrowers. We assume that the government can absorb financial losses by implementing a **fiscal backstop** using **cash transfers** with the aim of keeping liquidity running (Baldwin 2020b). Temporary nationalisations can be implemented where needed (Becker et al. 2020). Financial markets and banks become a vehicle for public policy (Draghi 2020), as the historical experience tell us (Horn et al. 2020), where the government interventions are completely different from those used to rescue financial

institutions during the 2008-2009 financial crisis (Igan et al. 2019). In most European countries, governments are facing or will face high expenditures to smooth out the negative recessive effects on households and firms. A high volume of public finance is needed to bridge corporate liquidity shortages and/or financial needs, and to compensate for temporary and/or permanent wage losses (Gnan 2020).

The possible outcomes in terms of losses can take the form of two opposite scenarios. At one extreme, no cash monetary transfers are implemented. In this no-transfer scenario, citizens completely lose their assets and their creditworthiness. At the other extreme, the fiscal backstop expansion that covers the bailout is complete. Therefore, when the pandemic occurs, a fiscal bailout policy can be designed that involves injecting fresh money equal to a proportion, β, of the citizen's value, $\pi(1+\lambda)$. Thus, β is the policy variable that parameterizes the fiscal bailout policy, where $\beta \in [0,1]$, with $\beta\pi$ representing the citizen's asset value after the bailout and $(1-\beta)\pi$ representing the losses due to the pandemic-related recession.

How can the cash transfers be financed? The government can **raise taxation** or **issue debt**, where the latter can be purchased by either citizens or the central bank. The government finances its policy by making a simultaneous decision regarding taxation and the issuance of new debt, knowing at the same time the central bank choices. The new debt, in turn, becomes an asset in the portfolios of citizens and the central bank.

The government defines the optimal fiscal bailout policy, β*, recalling that $\beta \in [0,1]$. If the bailout policy, $\beta\pi(1+\lambda)$, is implemented, then the government supports the citizens' balance sheets. It finances this policy by issuing new debt at time 1. At the same time, it charges a linear income tax, τ, for servicing the debt at time 2. The overall government budget constraint is:

$$\beta(1+\lambda)\pi(1+i(1-\delta)) = \tau y, \tag{3}$$

where τ is the tax rate, *y* is the income of the citizens before taxes, i is the interest paid on the government bond and δ is the share of the debt purchased by the central bank, where $\delta \in [0,1]$ (i.e. the **helicopter monetization**).

The interest rate on public bonds is determined according to a no-arbitrage condition with respect to a perfect, long-term, risk-free interest rate, which we normalize to zero for simplicity. For any unit of debt issued in time 1, the government repays $1+i(1-\delta)$ in time 2. The cost of debt, $i(1-\delta)$, is negatively associated with the degree of helicopter monetization. When a central bank is more accommodative (i.e. high δ), a lower portion of debt will be sold to citizens. Given the monetization δ, the government can determine its bailout policy, β, as well as the tax policy, τ. The overall policy design is $\tau = T(\beta, \delta)$.

The design of the economy policy action will influence the citizens' welfare. When the fiscal policy, β, is implemented at time 1, the *average* value of a citizen's portfolio will be affected. Its shape at time 2 will be the following:

$$\beta\lambda(1+\pi) + \beta(1+\lambda)(1-\delta)\pi(1+i) + \left[w - \beta(1+\lambda)(1-\delta)\pi\right]. \quad (6)$$

The first term is the value of the fiscal backstop, the second term is the value of the government bonds inclusive of interest payments, and the third term represents the difference between the initial wealth, *w*, and the value of the purchased bonds. Notably, the fiscal backstop influences welfare through two channels: the direct value of the monetary cash transfers and the indirect effect due to the interest payments on public bonds.

Disposable income and assets finance consumption. Such assumption can be particularly relevant during a pandemic: lockdowns produce material deprivation and households can draw on both income and wealth to address the unexpected shock. Combining income and wealth in a single index of deprivation it is possible to measure across countries how large and similar are the shares of the population that are likely to suffer from the containtment measures (Gambacorta et al. 2020) becoming potential recipients of a fiscal backstop.

Disposable income and assets finance consumption. Citizens draw utility from consumption, *c,* at time 2. The budget constraint of a citizen who owns an average portfolio is then:

$$c = l^*(1 - T(\beta, \delta)) + w + \beta(1+\lambda)\pi(1 + i(1-\delta) \equiv C(\beta, \delta), \quad (7)$$

where *l** is the optimal labour supply, which depends on the selected tax policy, such that $l^* \equiv L(\tau).$

Finally, we need to consider welfare losses that may be caused by financial or monetary externalities. On the one side, the containment dampens the citizens' assets, thereby triggering further **financial externalities**. In the real world, the less the government is involved in supporting the economy, the more private balance sheets are likely to deteriorate. Consequently, failures in the banking and financial sector become more likely, creating a vicious spiral. Let the externality function be:

$$\frac{\varepsilon}{2}\left[(1-\beta)(1+\lambda)\pi\right]^2 \equiv E(\beta)\,. \tag{8}$$

The externalities are increasing and convex in the amount of assets that evaporate, and they depend on the cash transfers, β, that the government implements. We assume that the costs of financial externalities are homogenous among citizens in order to show that it is sufficient to just have heterogeneity in asset composition among citizens to have a multiple equilibria setting.

However, the helicopter money is not a free lunch. In other words, it may create **monetary externalities**. We assume that the backstop monetization is associated with increasing monetary stability risks, such that that the monetary expansion associated with the central bank's losses can threaten the monetary stability goal when the pandemic-related recession ends. For the sake of simplicity, we assume that the costs of monetary instability, $I = I(\beta,\delta)$, are quadratic in the degree of accommodation δ:

$$\frac{\phi}{2}\delta^2\beta(1+\lambda)\pi \equiv I(\beta,\delta)\,. \tag{9}$$

The monetary externalities are homogenous among citizens. This assumption help us to differentiate our helicopter money option from a permanent change in the monetary base. A permanent change implies a higher risk of inflation, which usually acts as a regressive tax.

Therefore, the indirect utility function, $V(\beta,\delta)$, of the average citizen at time 2 is:

$$V(\beta,\delta) = C(\beta,\delta) - U(l^*) - E(\beta) - I(\beta,\delta)\,. \tag{10}$$

As the population size is one, $V(\beta,\delta)$ also represents the social-welfare function.

The last step is the identification of the optimal helicopter monetary policy. We assume that as the central bank is **independent** from politics, it acts as a long-sighted social planner. As such, its actions should be consistent with the normative benchmark.

The motivation behind our assumption is well known. The role of central bank design emerged through the application of a game-theoretical approach following the discovery of the general time-inconsistency problems that characterize economic policy (Kydland and Prescott 1977, Calvo 1978). The key feature was the identification of the relationship between the political cost-benefit analysis of any incumbent government and the likelihood of a sub-optimal macroeconomic equilibrium. In this context, possible solutions to the problem of monetary policy effectiveness include an independent central bank (Sargent and Wallace 1981, Barro and Gordon 1983) or a conservative central banker (Rogoff 1985). At the same time, both concepts highlighted the importance of monetary stability in policy makers' goal functions. In this vein, the delegation of monetary policy to non-elected central bankers can be motivated by showing that bureaucrats are preferable to politicians for determining technical policy, while elected politicians retain decisions regarding purely redistributive policies under their direct control in order to please their voters (Alesina and Tabellini 2007).

Therefore, the central bank takes the relationship between the tax policy, τ, and the labour supply into account. It simultaneously sets the policy strategy regarding the fiscal backstop, β^*, and the monetary policy, δ^*, at time 1 in order to maximize the social-welfare function, $V(\beta,\delta)$.

Given the public budget constraint (3) and the labour supply (5), the budget constraint becomes:

$$\beta(1+\lambda)\pi(1+i(1-\delta)) = \tau L(\tau)\,. \tag{11}$$

This gives the relationships among the three economic policies. By differentiating (11) and introducing the labour-supply elasticity, $\eta(\tau) \equiv -\tau L_T / L$, to highlight the tax-distortion effect, we obtain:

$$T_\beta = \frac{(1+\lambda)\pi(1+i(1-\delta)}{l^*(1-\eta(\tau))} > 0 \text{ and} \tag{12}$$

$$T_\delta = \frac{\beta(1+\lambda)\pi i}{l^*(1-\eta(\tau))} < 0\,, \tag{13}$$

where the tax policy and the helicopter money are inversely associated given that monetization lowers the debt-servicing costs and, consequently, the tax distortions. Then, using the overall social-welfare function (10), the two optimality conditions are:

$$V_\beta = C_\beta(\beta,\delta) - E_\beta(\beta) - I_\beta(\beta,\delta) \le 0 \text{ and} \tag{14}$$

$$V_\delta = C_\delta(\beta,\delta) - I_\delta(\beta,\delta) \le 0\,, \tag{15}$$

where strict inequality implies the corner solution (i.e. $\beta^* = 0$ or $\delta^* = 0$). In other words, if the social planner only considers "yes/no" decisions, the decisions are simple – the fiscal backstop must be implemented if the social benefits are greater than the social costs. The same is true for helicopter money. The optimal economy policy design addresses the trade-off between two public goals: externality smoothing and tax-distortion minimization. By solving the FOC system (14-15) and using (7-9), we obtain the socially optimal choices:

$$\beta^* = 1 - \frac{1}{\varepsilon(1+\lambda)\pi}\left[\frac{\eta}{1-\eta}(1+i(1-\delta^*)) + \frac{\phi}{2}\delta^{*2}\right] \text{ and} \tag{16}$$

$$\delta^* = \frac{\eta}{1-\eta}\frac{i}{\phi}\,. \tag{17}$$

If we focus on the central bank's decisions, the **optimal level**, δ^*, of helicopter money has well-defined properties. It increases: a) if the **labour supply** is relatively **elastic**, given that the corresponding tax-distortion risk is high; b) if the **cost of debt servicing** is **high** and c) if the **monetary instability** risks are **low**.

In the European Union setting, one example could be a special application of the Common European Debt option (Bruegel 2020). In light of the COVID19 pandemic, a European Transfer Plan could be designed in which all national needs related to the pandemic recession are aggregated (Bènassy-Quèrè et al. 2020a, Biancotti et al. 2020). Such a fiscal backstop could be financed through European Union assets (Garicano 2020) by issuing COVID Perpetual Bonds (Giavazzi and Tabellini 2020) via a specific vehicle (Amato et al. 2020) or, alternatively, the ESM (Bènassy-Quère et al. 2020b), with the European Central Bank (**ECB**) acting as buyer of these bonds. The ECB could credit the governments' accounts with a reduction in its capital (Gali 2020).

In order to apply our analysis, the ECB's action must be motivated by an independent evaluation of its Board that a decision to hold or permanently keep such Perpetual Bonds on its balance sheet (and the corresponding losses) will not harm its capacity to pursue its **monetary-stability** goal in the medium term. It must also believe that this will be an effective European economic tool. In so doing, the ECB will consider the constraints in increasing the tax revenues as well as the costs of debt issuance for the different European Union members with its likely domino effects. In this respect, it would be prudent to avoid triggering the fifth wave of rapid **global debt** accumulation and the consequent Euro **redenomination risk**, as the four previous waves ended with widespread financial crisis (Kose and al. 2020). In parallel, the COVID-19 pandemic represents an unprecedented shock for the **labour market** (Boeri et al. 2020, Fujita et al. 2020), which will deter any policymaker from financing a fiscal backstop through income **taxes** and/or value-added taxes; either a wealth-tax option (Landais et al. 2020) or a levy on financial assets (Gros 2020) cannot be excluded a priori, notwithstanding their consistency with a fiscal backstop cannot be taken for granted.

This could be a case of a European helicopter money, but would this European policy mix be politically feasible? In this regard, the cost/benefit analyses of the national governments are crucial.

3. Heterogenous Citizens and Their Politicians: One Type of Helicopter Money Doesn't Fit All

In general, what is the fiscal backstop that a government can design? All else equal, including the uncertainty that stems from the policy hesitation in addressing the epidemic (Muller 2020) as well as the failure to prepare in advance to address rare events (Mackowiak and Wiederholt 2018), two situations can arise. Theoretically, if the government is a standard **benevolent policymaker**, its choices will be consistent with the social-planner decisions described in the previous section that aim to maximize economic efficiency. In other words,

fiscal backstop and helicopter monetary policies will be both coordinated and optimal levers. The same is true if politicians are in charge but the citizens are completely homogeneous. However, even if the Economic and Monetary Union has efficient policymakers, the coordination outcome is not a given, as the Union does not yet have a device to achieve it (Reichlin and Shoenmaker 2020).

If **politicians** are in charge and **citizens** are **heterogenous**, different economic policies have relevant redistributive effects. In fact, the net transfers implied by efficient policies can be positive for some and negative for others. Cash money transfers and bond remuneration can influence the welfare of individual citizens differently when they are heterogeneous. However, as we noted before, if a policy task has distributional effects, the politicians would like to control those effects (Alesina and Tabellini 2007).

The **distributional effects** enter the picture because the mix of a fiscal backstop and helicopter money produces the "three D" (distributional, directional, duration) effects (Goodhart and Lastra 2017). The distributional effects result from changes in **interest rates**. The directional effect captures the impact of public policy on a certain **sector and/or constituency** of the economy (Brunnermeir and Sannikov 2013). The duration effect measures the monetary policy's effect on overall public-sector liabilities, including the **central bank's balance sheet**. The duration effect is associated with the dimensions and risk profile of the central bank's balance sheet with its increasing relevance in the perimeter of monetary policy (Curdia and Woodford 2011, Reis 2013).

Helicopter monetization is associated with changes in the central bank's balance sheet. At the same time, a fiscal backstop produces directional effects depending on how the concrete cash monetary policy is designed, while the distributional effect is associated with the corresponding debt policy. All in all, the overall economic policy strategy has redistributive consequences for citizens as well as political spillovers.

The redistributive effects are relevant as long as the policies are chosen through the political process (i.e. when the citizens are voters). In this regard, we consider **majority voting** with voter preferences that are associated with the economic consequences of a fiscal backstop financed via a helicopter monetary policy.

Given a voter *j*, let $\pi + \pi^j$ be the amount of assets in *j*'s portfolio at time 0. Specifically, depending on $\pi^j > 0$ or < 0, voter *j* will be a *leveraged citizen* relative to the average. Let $F(\pi^j)$ be the distribution of the leverage across the population. The leverage of the median voter will represent the extent to which the bank's ownership is concentrated.

Given a voter *j, l*et $\lambda + \lambda^j$ be the amount of his or her leverage at time 0. Depending on $\lambda\pi^j > 0$ or < 0, voter *j* will be a subsidized citizen relative to the average. Let $L(\lambda^j)$ be the distribution of the subsidized citizens across the population. The leverage of the median voter will tell us whether the subsidized citizens represent the majority or a minority of the population.

However, voters can be heterogeneous as financial (bond) holders. Let $(\beta + b^j)(1+\lambda)(1-\delta)\pi$ be the amount of bonds in *j*'s portfolio at time 0. Depending on $b^j > 0$ or < 0, voter *j* will be a *wealthy citizen* relative to the average. Let $G(b^j)$ be the distribution of wealthy citizens in the population. The average of $G(b^j)$ is zero. The financial wealth of the median voter signals whether the wealthy voters represent the majority or a minority of the population.

Given the general individual utility function (10) and the above definitions of π^j, λ^j, b^j, the voter *j*'s utility $V^j(\beta,\delta)$ is:

$$V^j(\beta,\delta) = V(\beta,\delta) + \beta\pi^j(1+\lambda) + b^j(1+\lambda)\pi i(1-\delta), \qquad (18)$$

where the last two terms on the right-hand side account for the two forms of heterogeneity of voter *j* relative to the average. Each voter's preferences can differ from those of the social planner because of these two terms. Now we assume that the economic preferences reflect the voters' policy preferences and are expressed using majority rule through sequential voting on the policy mix.

Zooming on the monetary policy preferences, given $V^j(\beta,\delta)$, the corresponding FOC and the social optimality condition V_δ, the optimal helicopter monetization for the voter *j* is:

$$V_\delta^j = V_\delta - b^j(1+\lambda)\pi i \le 0. \qquad (19)$$

Assuming equation (19) holds as an equality, solving it yields:

$$\delta^j = (\frac{\eta}{1-\eta} - \frac{b^j}{\beta})\frac{i}{\phi}. \quad (20)$$

By comparing equation (20) with the socially optimal monetary policy (17), it is immediately evident that given a fiscal backstop $\beta \neq 0$, wealthy citizens dislike the helicopter monetization. By solving the voting game (Masciandaro and Passarelli 2019) and calling $m\delta$ the median voter, where $b^{m\delta}$ is the median of $G(b^j)$, the helicopter monetization level $\hat{\delta}$ chosen by the majority of voters would be:

$$\hat{\delta} = \delta^* - \frac{b^{m\delta}}{\beta}\frac{i}{\varphi}. \quad (21)$$

The **political distortion** (i.e. $\left|\delta - \hat{\delta}^*\right|$) will reflect four features of the economy. More specifically, given the fiscal backstop, the number of citizens **against** the helicopter money will be higher if: a) the majority of voters are wealthy, b) the interest rate is higher, c) the monetary stability risks are higher.

A perception of an unfair monetary policy can contribute to various forms of resentment and lead to hostility against the central bank. Moreover, the more the politicians in charge accommodate the demand for a level of helicopter monetization that differs from the central bank's optimal level, the greater the likelihood of **political pressure**. Notably, the political pressure can be considered as a proxy for the contingent demand for **central bank reform**. This interpretation can be confirmed by observing that the political pressure seems to be uncorrelated with legal – or *de jure* – central bank independence thus far (Binder 2018).

The motivation is straightforward. Political pressures on the central bank may be relevant in shaping the actual monetary policy decisions, if the government in charge can threaten in some way the central banker role. For example if the institutional setting is such that any incumbent government in extraordinary times can retain the option to override the central banker's decision, the central banker can have the temptation to accommodate the political wishes in order to avoid being overriden (Lohman 1992). Political pressures can trigger

monetary policy uncertainty. Such event could be captured in the simplest way assuming that the actual monetary policy decision δ_A is such that:

$$\delta_A = \lambda \left| \hat{\delta} - \delta^* \right| \tag{22}$$

where $0 < \lambda < 1$ represents the credibility of the political threat.

In the case of the European Union, the hostile sentiments against the ECB's monetary policies can be a factor to consider when explaining the various forms of nationalism, populism and Euroscepticism (Morelli 2020). Some researchers argue that the rise of **populism** may harm the consensus in favour of central bank independence (De Haan and Eijffinger 2017, Goodhart and Lastra 2017, Rajan 2017, Rodrik 2018). From an empirical point of view, the relationship between one aspect commonly attributed to populism – namely nationalism – and central bank independence has been empirically examined (Agur, 2018), while the relationships between both right-hand and left-hand populism and central bank independence have been discussed from a theoretical perspective (Masciandaro and Passarelli 2019).). Moreover if we assume that a correlation holds between the opinions on the so called "Corona Bond" issuing and the hostility against any kind of ECB monetization, the current debate - for example in Germany (Waltenberger 2020) - can offer interesting insights.

All in all, the more the citizens are heterogeneous and the more the elected representatives are career-concerned politicians, the more it will be true that the helicopter money that the independent central bank would like to implement will not fit the political preferences. In such situations, political pressures on the central bank are more likely and a helicopter monetary policy becomes **less likely**.

4. Conclusions

This article discussed the design of relationships between a fiscal backstop implemented using cash transfers and a helicopter monetary policy that produces losses in the central bank's balance sheet without a permanent change in the money base. The analysis led to two results. If an independent central bank acts as a long-sighted policymaker, an optimal helicopter monetary

policy can be identified. The features of such a policy can be defined by taking monetary-instability risks, the costs of issuing public debt and overall macroeconomic features into account. However, if the government in charge is made up of career-concerned politicians and citizens are heterogenous, then the policy mix will produce distributional effects. Conflicts between politicians and central bankers will be more likely and these, in turn, may trigger political pressures on the central bank. As such, helicopter money strategies are unlikely in such situations. The framework was applied in a discussion of the economics and politics of perpetual bonds with the European Central Bank as the buyer.

The discussion can be further enriched in many fruitful directions.

a) **Monetary stability** risks and citizen heterogeneity: In this regard, monetary instability is widely assumed to be a negligible social cost that is borne equally by all individuals as an outcome of temporary monetary base growth. If we were to associate monetary instability with specific idiosyncratic risks, we would assume that citizens can be also heterogeneous in their ability to address such risks through hedging, with some individuals bearing – or feeling that they bear – higher costs due to monetary instability (i.e. *inflation-adverse* citizens). Allowing for this kind of heterogeneity would lead to a straightforward prediction: the smaller the mass of risk-adverse citizens, the stronger the political pressure to engage in helicopter monetization.

b) **Income** and citizen heterogeneity: In this regard, labour income is assumed to be the same for all individuals. In the presence of income heterogeneity, the distributional effects are likely to increase. For example, given the decisions regarding monetary cash transfers, richer citizens are likely to have higher tax burden. Thus, all else equal, richer people would prefer smaller fiscal backstops. Similarly, in countries in which the less wealthy citizens are the majority, large monetary cash transfers will be more likely because the minority (i.e. the rich) will bear most of the costs. Moreover, income heterogeneity can be correlated with other forms of asset heterogeneity. This can lead to interesting trade-offs.

c) **Public debt**, tax pressure and interest rates: In the focal context, government debt is only issued to address the pandemic-related recession, taxes are only raised to service that debt and the interest-rate level is consistent with the long-term risk-free interest rate. These are three simplifying assumptions. The insertion of initial taxation and initial debt into the framework would increase its complexity but probably not have any substantial consequences

for the overall rationale. In contrast, interest rate endogeneity depending on the stock of debt is likely to exacerbate the policy trade-offs and, consequently, the relevance of the political distortions.

d) **Central bank**: The central bank's behaviour is assumed to be perfectly consistent with socially optimal planning. However, at least two factors can cast doubt on this assumption. First, modern monetary policy is often conducted by committees. In fact, the majority of central banks use committees (i.e. boards; Lybek and Morris 2004). This feature of central bank governance can deeply affect monetary policy decisions through at least three channels (Favaretto and Masciandaro 2016), which explore how: i) monetary policy committees work; ii) the composition of committees can shape monetary policy outcomes; and iii) psychology (i.e. the impact of cognitive biases). Central bank governance can influence monetary policy strategies in directions that are not automatically consistent with the social planner's choices. On the other hand, it is natural to wonder whether cases of political capture and/or bureaucratic capture could trigger deviations of the concrete monetary policy action from the (supposed) long-sighted perspective, such as those documented in the historical case of political pressure for partisan monetary policies (Abrams 2006).

e) Finally, from a methodological point of view, cognitive biases are not assumed to affect the relevant players: the voters are **rational**, i.e. they vote consistently with the redistributional consequences of every policy strategy, and the policymakers are rational as well. However, **behavioural biases** can influence the preferences of both citizens and political actors. In general, behavioural insights can be used to explain how non-standard agents' choices can shape macroeconomic performance with reference to, for instance, long-standing debates on consumption, intertemporal substitution, the role of prices and wage stickiness. More specifically, behavioural economics can be used to explain the monetary policy mechanism (Molnar and Santoro 2014) by applying insights from prospect theory. Through the use of adaptive learning, reference-dependent preferences can be linked to loss aversion, such that losses in consumption utility resonate more than gains. At the same time, as we already noted below, motivational assumptions can be used to explain individual behaviour in policymaking, which is what behavioural political economics (Schnellenbach and Schubert 2015) is all about. This issue deserves further exploration in future research.

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