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ECB HELICOPTER MONEY: ECONOMIC AND POLITICAL ECONOMY ARITHMETICS

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Abstract

We have helicopter money when there is a one-shot creation of irredeemable fiat money through intended central bank capital losses and/or a permanent monetary base change. This extraordinary monetary policy option appears whenever there is a significant economic crisis. But then the helicopter never flies. This article shows that political reasons can explain such as outcome. An independent central bank can credibly define a social optimal helicopter money. But as the redistributive effects of helicopter money increase, the risk of citizen hostility towards the central bank policy increases and helicopter money becomes unlikely. Such situation is more likely to occur if the government in charge is made up of career-concerned politicians and citizens are heterogeneous. The framework is applied in discussing the possibility of having the European Central Bank as buyer of Perpetual Bonds.

JEL Classification: D72, D78, E31, E52, E58, E62

Keywords: helicopter money, monetary policy, fiscal policy, political economy, central bank independence, modern monetary theory, populism, European Central Bank

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)

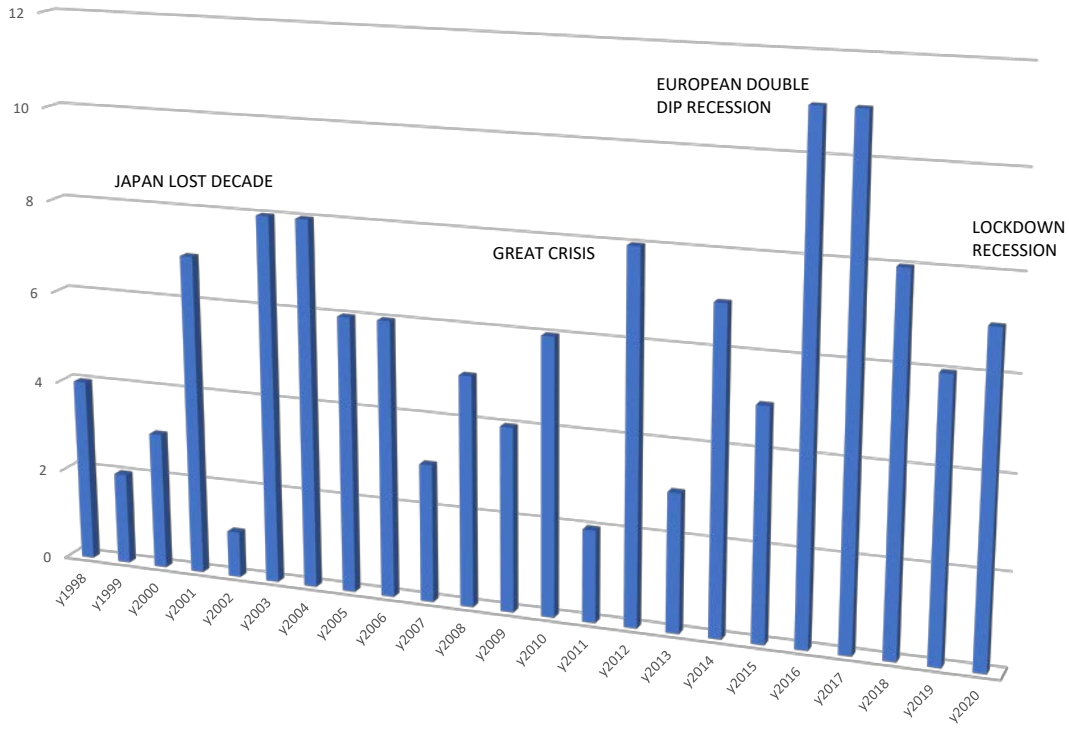
The spread of the coronavirus (COVID-19) in early 2020 led to some of the most significant reactions in stock prices (Baker et al. 2020a, Cahn and March 2020, Croce et al. 2020, Ding et al. 2020, Ibikunle et al. 2020, Ramelli and Wagner 2020), contractions of real economic activities (Leiva-Leon et al. 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 (Alfani 2020, Benmelech and Frydman 2020, Jorda et at. 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 2020a, 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), without mentioning the fact that what we today call "unprecedented monetary policies" can have historical precedents (Ugolini 2020).

Moreover, media attention over the past months 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.

This is nothing new: starting from the end of the 1990s the Friedman idea received again attention in academia and policy circles. Figure 1 shows the evolution of the academic papers focused on macroeconomic issues that contain in the title, in the abstract or as keyword the expression "helicopter money". The Figure visually shows that whenever the economic conditions become critical, the radical idea of helicopter money re-emerges (Reichlin et al. 2013, Baldwin 2016).

Figure 1 JSTOR+SSRN Articles and Papers on Helicopter Money (1998-2020)



But then the helicopter never flew. Why? One reason could be the economics of helicopter money: given its potential pros (Caballero 2010, Muellbauer 2014, Buiter et al. 2015), cons are present too (Perotti 2014, Borio et al. 2016). Then this "beyond unconventional policy" (Baldwin 2016) could be just a too risky economic policy lever. The political economy perspective can offer another view: the redistributive effects of a helicopter money minimize its political feasibility. And the today debate can be read in such a way.

The recent discussion 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 some 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 2020a). In March 2020 the US Cares Act directed cash payment to households (Farrokhnia et al. 2020). In April 2020 Prime Minister Shinzo Abe has promised to give a one-off sum equivalent to $930 to every citizen of Japan (Financial Times 2020c). 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).

The starting point is 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), notwithstanding 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). At the same time 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 public debt agent. The same is true when the central bank can provide short term loan that the government can use as overdraft facilities – as in the case of the Bank of England (Vlieghe 2020). The crucial feature of any definition of helicopter money is how the cash transfer impacts on the central bank balance sheets.

In general, we have helicopter money when a one-shot monetary policy creates irredeemable assets for the holders (citizens) that are public liabilities for the issuer (central bank). Then we assume that a net-worth helicopter money is in action when an outright cash transfer produces intended losses in the central bank's balance sheet (Gali 2020), reducing its net worth, or the present value of future seignorage (Buiter 2014a). Moreover, we can have a monetary-base helicopter money with a permanent increase in central bank liabilities (Reichlin et al. 2013, Buiter 2014a, Borio et al. 2016, Bernanke 2016). The difference between net-worth and monetary-base helicopter money is evident if we recall the role of seignorage. Seignorage refers to the difference between the face value of a currency and its costs of production and it can be evaluated using two common measures (Buiter 2007): the change in monetary base; the

revenues earning by investing the monetary base, i.e. the so called central bank revenues. Therefore the net-worth helicopter money is a seignorage loss, given its negative central bank revenues, while the monetary-base helicopter money is a seignorage gain.

Finally, these forms of helicopter money differ from conventional and unconventional central bank asset purchases financed by issuing central bank reserves, that usually do not produce neither intended losses on the central bank's balance sheet nor a permanent change in its money base. On this respect the central bank asset purchases, without any further specifications, are fake helicopter money cases. Table 1 summarizes the three different options.

Table 1: Monetary Policy Options, Money Base Growth and Central Bank's Balance Sheet

MONETARY POLICIES	PERMANENT MONEY BASE GROWTH	CENTRAL BANK'S BALANCE SHEET LOSSES
Fake Helicopter Money = Central Bank Asset Purchases	NO	Random and Unintended Effect
Monetary-Base Helicopter Money (Bernanke 2003, Woodford 2012, Turner 2013, Buiter 2014a, Muellbauer 2014, Borio et al. 2016)	YES	NO
Net-Worth Helicopter Money (Gali 2020)	NO	Intended Effect

In turn the different helicopter money options have been associated with positive and negative macroeconomic performances. Some authors claim that a helicopter money action can produce net macroeconomic benefits (Caballero 2010, Bernanke 2003, Woodford 2012, Turner 2013, Muellbauer 2014, Di Giorgio and Traficante 2018, Gali 2020, Benigno and Nisticò 2020), others are convinced that the opposite is true (Perotti 2014, Borio et al. 2016). Table 2 summarizes the state of the art.

Table 2: Helicopter Money Options and Macroeconomic Outcomes

MONETARY POLICY	POTENTIAL POSITIVE MACRO OUTCOMES	POTENTIAL NEGATIVE MACRO OUTCOMES
Helicopter Money Options	Nominal GDP Increase without Debt and Tax Effects through a Credible One-Shot Monetization	Policy Inconsistency, Central Bank Independence Threat

In a nutshell, given a standard macroeconomic model with nominal rigidities, helicopter money is a one-shot monetization that produces a nominal GDP increase without debt and tax effects, and it is effective if simultaneously citizens are rational, such as policy is credible and central bank independence is not questioned (Riechlin et al. 2013, Turner 2015, Bernanke 2016). In a sense, it is the way to translate the original Friedman parable that if "everyone is convinced" – i.e. the agents are rational and they internalize the intertemporal budget constraints - that helicopter money is a "unique event which will never be repeated" - i.e. it is a one-shot monetization that is credible being implemented by an independent central bank - then macroeconomic consequences are likely to occur. The helicopter money can either increase inflation or real output, or both, depending how the economic system works.

It is worth noting that such as extraordinary monetary policy is based on three conditions – agent rationality, policy credibility, central bank independence – which are normally recognizes as robust and intertwined pillars in the recent monetary policy economics (Masciandaro 2020a). The mainstream is well known: elected policymakers tend to use monetary tools with a short-sighted perspective. However, the more the agents are rational, the greater the risk that short-sighted monetary policies are time inconsistent; then the monetary policy delegation to an independent non-elected bureaucracy becomes an effective institutional device.

Therefore, the economics of helicopter money seems to be well founded, as formal analyses has already demonstrated (Buiter 2014, Gali 2020, Benigno and Nisticò 2020). Yet such

a policy is viewed in academic and policymaking circle as unfeasible. Why? So far the explanation has been based on its economics (Gali 2014): if helicopter money is analysed in a "classical" economy with fully flexible prices and wages, it has a limited impact on output growth and employment with a huge effect on inflation. Then this kind of reasoning can have shape the widespread prejudice against the helicopter money option.

Here we add political economy perspective: the redistributive effects of a helicopter money can harm its feasibility. Our aim is exactly to show that it is possible to have rational expectations and an independent central bank which would like to implement a social optimal helicopter money in a credible way; but if redistributive effects exist and such effects are politically relevant, the optimal helicopter money is unlikely to occur.

Moreover, though this political channel it is possible to identify the relationship between helicopter money and central bank independence, using the perspective that political cost-benefit analyses eventually shape central bank governance, creating dynamic institutional cycles with ups and downs (Masciandaro and Romelli 2015). During these cycles 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).

It is worth remembering that 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). But when the Great 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 remainder of this article is organised as follows. Section two presents the theoretical framework (Masciandaro 2020b) 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:

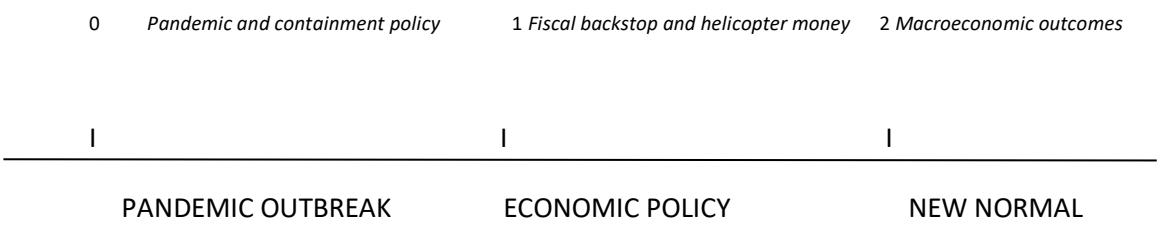
$$L(\tau)=U_l^{-1}(1-\tau)\,. \tag{2}$$

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 use 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 (Ludvigson et al. 2020) 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. 2020a, Schoenfeld 2020), including the shadow-banking system (Perotti 2020). Moreover, the Covid-19 pandemic triggered an enormous increase in uncertainty (Baker et al 2020b) that

harmed real macroeconomic performances. Forecasters counted on a V-shape one-year recession, but their past record is not inspiring (An and Loungani 2020). Regarding consumer prices, demand drops and depressed labour markets suggest low inflation forecasts, while the large increase in fiscal deficits and central bank balance sheet could bring high inflation (Blanchard 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 (Benigno and Nisticò 2020) with the aim of keeping liquidity running (Baldwin 2020 b), avoiding procyclicality (Loayza and Pennings 2020). 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); financial hibernation could preserve the vital relationships between firms, workers suppliers and customers (Didier Brandao et al. 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:

$$\beta(1+\lambda)\pi(1+i(1-\delta)) = \tau y \qquad (3)$$

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:

$$\beta\lambda(1+\pi) + \beta(1+\lambda)(1-\delta)\pi(1+i) + [w - \beta(1+\lambda)(1-\delta)\pi] \qquad (6)$$

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:

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

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:

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

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. The monetary externalities depends on the association between central bank seignorage and monetary stability risks, where the more traditional channel is the relationship between seignorage and inflation tax, which represents the reduction in the real value of the monetary base due to a change in the consumer prices (Buiter 2004).

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:

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

The monetary externalities are homogenous among citizens. This assumption helps 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:

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

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:

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

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

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:

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

$$\delta^* = \frac{\eta}{1-\eta}\frac{i}{\phi}. \quad (17)$$

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.

Here we mimic the helicopter money economics. We are in an economy with nominal rigidities, and an independent central bank designs a one-shot monetization that produces a macroeconomic stabilization, taking into account both debt and tax effects. Citizens are rational and trust the central bank. The optimal helicopter money depends on how the economy works. For example, the more the central bank is operating in a classical economy the lower the optimal helicopter money will be.

More generally the optimal helicopter money will be associated with the central bank capacity to influence both monetary base and expectations. On this respect and regarding helicopter money strategies, we can also distinguish in a simple way the net-worth option from the monetary-base option. For example, if we assume that with the former the monetary stability risks are lower, it will follow that:

$$\delta^* > \delta_{MB}$$

where δ_{MB} is the deficit monetization consistent with a permanent increase in central bank liabilities.

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, Corsetti et al. 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, Coibion 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, becoming just a special case of a more general situation when fiscal and monetary policy can be optimally coordinated (Bianchi et al. 2019), including the degree of fiscal monetization (Gurkaynak and Lucas 2020) . 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). More generally, it has been already shown that the economic measures that governments around the world have taken in response to the recent pandemic were heterogeneous in breadth and scope (Elgin et al. 2020).

If politicians are in charge and citizens are heterogenous, different economic policies have redistributive effects and at the same time such as policies can have political effects if the citizens vote consistently with their economic preferences (Masciandaro and Passarelli 2013). 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:

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

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.

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, helicopter monetary policy becomes less likely, and at the same time central bank's independence can become something under discussion.

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.

4. Conclusions

It also happened with the Covid-19 recession: the helicopter money option appears whenever there is a significant economic crisis. But then the helicopter never flies. This article claims that the reason is not economic, but political. An independent central bank can define a social optimal helicopter money. But as the redistributive effects of helicopter money increase, the risk of hostility towards the central bank increases and helicopter money becomes unlikely.

More precisely 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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