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## From Zirp, Nirp, QE, and helicopter money to a better monetary system

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- The idea of helicopter money is to avoid the problems associated with money creation by private banks and distribute money directly to the people.
- Helicopter money can be created by the central bank paying reserve money into banks' accounts with the instruction to banks to create book money against it.
- Helicopter money would allow debt reduction and raise aggregate demand.
- Helicopter money would facilitate the change-over from our present credit money system to an alternative money system, in which money is no longer created as private debt but as an asset backed by the reputation of the issuer. Crypto money technology would be well suited for the creation of and payments with reputation money.

A central banker who would have fallen asleep in the 1980s and would awake today would no longer understand his world. He would neither have heard of ZIRP ("Zero Interest Rate Policy") nor NIRP ("Negative Interest Rate Policy") or QE ("Quantitative Easing"). These new instruments were included by the central banks in their armory of monetary policy in the desperate effort to reach their self-imposed inflation targets. As the effort is in danger of failure, the debate about "helicopter money" has made a come-back. This term was coined by Milton Friedman in

1969 to describe a direct increase in the money supply, bypassing banks.<sup>1</sup>

Banks create book money by extending credit. The central bank has a double function in this process: It delivers the necessary central bank money in the form of reserve money and bank notes on demand, and it attempts to steer credit demand by manipulating interest rates. By acting in its first function, the central bank

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<sup>1</sup> „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". Milton Friedman, *The Optimum Quantity of Money*. London 1969.



aims to ensure that the book money created by banks as a private promissory note can be exchanged at any time into legal tender and is hence accepted as substitute for it. By acting in its second function, the central bank aims to control inflation by influencing credit demand and through this economic activity.

### **A way out of the Impossible Trinity of bank policy**

ZIRP, NIRP and QE were employed by central banks with the aim of pushing banks to more credit extension. But the effort is in danger of failing because of misguided banking policy by the governments. The latter want to make banks safer by forcing them to hold more equity capital. At the same time, they want to pass the costs of bank failures from taxpayers to equity owners and creditors of banks. However, when equity investors and creditors have to bear the risk of bank failures, they raise the risk premium on equity and debt capital of the banks. Since banks cannot meet the increased capital costs in the present economic environment, they have great difficulties to raise fresh capital in the markets. The only way for them to achieve higher capital ratios is to cut balance sheets by reducing credit extension. We have called this the Impossible Trinity of bank policy.<sup>2</sup> Neither ZIRP nor NIRP nor QE can resolve this problem.

The idea of helicopter money is to avoid these problems and distribute money directly to people. This is expected to raise aggregate demand and inflation. However, dropping cash from helicopters may not be seen as the most efficient way to achieve this. In the times of Friedman, the distribution of cash may well have created positive feelings. Today, politicians and economists want to abolish cash. So, how can helicopter money be distributed and what are the consequences of this?

### **How to drop the money**

The helicopter is a useful metaphor. In our present reality, however, it seems more plausible to use banks for the distribution of helicopter money. It is conceivable that the central bank pays reserve money into the accounts of public entities with the instruction to banks to create book money against it for the government.<sup>3</sup> The latter could then distribute the money through its budget. This approach would be equivalent to a monetary funding of the budget deficit through the central bank, but with the difference that the deficit would not show up on the government's but on the central bank's accounts. The "helicopter drop" of money through the government budget is discussed primarily in the US and the UK. Because of the strict ban on funding of government deficits and the absence of fiscal policy coordination in the euro area, the ECB would hardly be in a position to inject money through government accounts.

But instead of distributing helicopter money through government bank accounts, it could also be distributed through private bank accounts. To this end, authorities would have to ensure on the basis of resident registries that each resident of the euro area would receive only one "helicopter drop" in one of his or her bank accounts. "Helicopter drops" of money have not been included in the ECB's statutes as an instrument of monetary policy. However, Article 20 of the statutes says that "the Governing Council may, by a majority of two thirds of the votes cast, decide upon the use of such other operational methods of monetary control as it sees fit, respecting Article 2" (i.e., price stability). If each resident in the euro area would receive €3,000 this way, the ECB could create about €1,000bn new money and raise the money aggregate M3 by 9 percent. Table 1 shows the effect of

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<sup>2</sup> See T. Mayer, "Bankenkrise 2.0", Flossbach von Storch Research Institute, 24. Februar 2016.

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<sup>3</sup> Here we define central bank money as the sum of bank notes issued by the central bank and reserve money lent or allocated by the central bank to banks.



**Table 1. Change in assets and liabilities of banks due to a helicopter drop of €1,000bn**

Assets	Liabilities
Reserve money: + €1,000bn	Helicopter deposits: + €1,000bn
Total: + €1,000bn	Total: + €1,000bn

**Table 2. Change in assets and liabilities of banks when helicopter money is being used to pay down bank credit**

Assets	Liabilities
Credit: - €500bn	Ordinary deposits: 0
Reserve money: 0	Helicopter deposits: -€500bn
Total: - €500bn	Total: - €500bn

the “helicopter drop” of €1,000bn on the balance sheet of the banking system.

### How will helicopter money be used?

Friedman thought that people would use the drop to raise their consumption by spending the new money. “To what level will (the recipient of the drop) want ultimately to reduce his cash balances?” he asked. And he answered: “Since the appearance of the helicopter did not change his real income or any other basic condition, we can answer this unambiguously: to their former level.” This is clearly also what today’s advocates of helicopter money want to achieve. As consumers trade the newly created helicopter deposits against goods and services offered by suppliers, aggregate demand and supply increases. The effects are “real” when suppliers can meet increased demand by selling from inventories or producing new goods and services by employing idle resources. But what if people used the money to pay down bank credits or to increase their money savings?

Use of the money to pay down bank debt would ultimately also raise aggregate demand. Table 2 shows how the accounting would work for the banking sector. Suppose, people use half of the drop to spend and the other half to pay down their bank debt. When people return €500bn of helicopter deposits to cancel €500bn of credit they took out earlier, both credit and helicopter deposits decline by this amount. As a result, the balance sheet of the banking sector and with

it the volume of total deposits declines by the same amount. This creates room for the central bank to drop another €500bn of helicopter money by paying reserve money to banks to fill up again the helicopter deposits of each resident. If again half of the drop were used to pay down debt, room for a further €250bn drop would be created that the central bank could now fill.

Theoretically, the process can be repeated until the debt of non-banks is eliminated and bank credit to non-banks is replaced completely by reserve money on the asset side of banks. Thus, when people always use part of the helicopter drop to repay debt, credit to the non-bank sector would be replaced by central bank money as cover for deposits. This is what Irving Fisher in the 1930s called a “100% Money” regime, also known as full reserve banking or “positive money”.<sup>4</sup> The debt relief triggered by the helicopter drops would itself most likely raise spending by the non-bank sector, leaving aside the other half assumed to be spent directly.

If people neither spent the helicopter money immediately after the drop nor used it to pay down debt but simply left it on the deposits, their monetary assets would increase and their net debt (instead of gross debt) would decline. From the point of view of non-banks, outstanding monetary liabilities could be netted with monetary assets created by the helicopter drop. Net debt relief would at some

<sup>4</sup> Irving Fisher, 100% Money. 1935.



**Table 3. Change in the ECB’s balance sheet due to a helicopter drop of €1,000bn**

Assets	Liabilities
Equity and reserves: + €656bn	Reserve money deposits: +€1,000bn
Other assets: 0	Equity and reserves: - €444bn
Total: + €656bn	Total: + €656bn

point also induce more spending when helicopter drops are repeated often enough.

### Accounting for helicopter money

The government budget would be an indirect beneficiary from the helicopter drops as the tax base would increase with more aggregate demand. The central bank would be a loser, but only in accounting terms. Since the helicopter money would be created by the ECB “out of nothing” without acquiring an asset, the money injection would have to be financed by a reduction of capital and reserves.

The ECB has presently about €444bn in capital, general reserves, and revaluation reserves, which would turn into a negative position of €656bn to cover the €1,000bn of additional money. The accounting of the helicopter drop of money is illustrated in Table 3. On the liability side of the balance sheet, reserve money deposits increase by €1,000bn while equity and reserves are reduced by €444bn. In order to account for the €656bn net balance sheet expansion, this amount appears as equity and reserves on the asset side.

Any other company would of course be bankrupt when its liabilities exceed its assets. But a central bank is different, because it does not have to repay its liabilities in the form of central bank money. Hence, it can operate with a negative equity position without much difficulty. The only risk is that people would lose faith in money that is not covered by claims on other assets. But as long as inflation is low, a loss of confidence is unlikely. In order to avoid the false comparison with a bankrupt company, the central bank could rename

equity and reserves on the asset side to “good will”, or it could classify it as future income from money issuance (seigniorage).<sup>5</sup>

When the central bank issues money on the basis of Good Will, it creates “reputation money”, i.e., money no longer backed by credit but by the reputation of the central bank as an issuer of solid money. Hence, with the introduction of helicopter money the monetary system changes from a pure credit money system to a mixed system with credit and reputation money. The more helicopter money is issued the more is the character of money shifted towards reputation money.

### Helicopter money and the inflation target

Could the ECB reach its inflation target with helicopter money? This is unlikely. To be successful, the central bank would have to know exactly how much of it is spent and which part is used for the acquisition of goods and services, whose prices enter the consumer price index, and which part is used to acquire assets, whose prices are not recorded there. It would have to know how much spare capacity exists in the economy and how prices would respond to a rise in aggregate demand. In short, it would need knowledge that it cannot possibly have.

Hence, it could pursue its inflation target only through trial and error. In doing so, it may well inject more money than is compatible with

<sup>5</sup> Base money of the ECB amounts currently to about €1800bn. With the helicopter drop it would increase to €2800bn. Assuming that the ECB pays no interest on base money and achieves its inflation target of about 2%, annual seigniorage income would amount to €56bn. Hence, €656bn would represent about 12 years of seigniorage.



achieving its inflation target. At this point, people could lose confidence in the purchasing power of money and the rise of inflation could no longer be controlled. Against this background, introduction of helicopter money would have to be accompanied by the end of inflation targeting as a monetary policy strategy.

### **Helicopter money as crypto money**

Table 1 showed the creation of helicopter money as traditional bank deposits backed by reserve money holdings. Since reserve money needed to back helicopter deposits is issued against Good Will of the central bank, we called helicopter money reputation money. Banks were needed to distribute it. However, with crypto money traditional banks would no longer be needed to distribute helicopter money. Crypto money can be distributed by the central bank directly to individuals. In other words, it can be dropped as virtual bank notes from a virtual helicopter.<sup>6</sup>

Crypto money is pure reputation money. It is accepted for payments because it came into existence as a means of payment by social consensus. Users can check the entire history of transactions made with crypto money, because all transactions are recorded in encrypted form in an electronic ledger called Blockchain. Before new transactions are added to the Blockchain, users endowed with big computing capacity check the history of transactions to establish whether the crypto money transferred for payments is the genuine property of the payer. For the proof of ownership, users receive a reward in the form of new crypto money. The most famous and widely used crypto money is Bitcoin. There, the reward for the proof of ownership is allocated on the basis of a fixed algorithm. The Bitcoin algorithm is set such that the sum of additionally created Bitcoin is gradually reduced and no new Bitcoin can be created

when an outstanding amount of 21 million has been reached.

Bitcoin was conceived as decentrally organized money by an anonymous libertarian spirit who called himself Satoshi Nakamoto. The price of decentral organization is an expensive and time-consuming process of proof of ownership of Bitcoin used in transactions as virtually the entire transaction history has to be checked by several users employing substantial computing power. As a consequence, only 7 transactions per second can be verified for the Bitcoin Blockchain with presently available computers. Against this, up to 7,000 transactions per second can be handled with conventional payments systems. Hence, barring a technological miracle boosting computing capacity to stratospheric levels, Bitcoin will not be able to process a significant part of today's payments.

The limitations of Bitcoin have induced the development of alternative crypto currencies, which can handle higher payment volumes but need a central ledger. An example for this is RSCoin that was developed by George Danezis and Sarah Meiklejohn for the Bank of England („Centrally Banked Crypto Currencies“, February 2016). In this system the proof of transactions is given to a set of private companies the authors call “Mintettes”, but the Blockchain itself is maintained by a central authority or central bank. Mintettes are rewarded by the central authority for their proof of transactions through the allocation of RSCoins. Validated transactions are added to the Blockchain by the central authority. As a result, the outstanding money supply increases with the volume of transactions. The central authority can steer the expansion of the money supply by varying rewards for proofing transactions and additionally injecting RSCoins into the system.<sup>7</sup> Hence, the central authority is in full control of the money supply.

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<sup>6</sup> I am grateful to Steven Major, Anton Tonev and Davey Jose of HSBC for pointing out to me the usefulness of crypto money for the issuance of helicopter money.

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<sup>7</sup> Note, however, that crypto money, like gold once it has been mined, cannot be „destroyed“ again.



In the event, the issuance of helicopter money could not only be used to reduce the indebtedness of non-banks and move from the credit money to the reputation money system, but also to build the new reputation money system on crypto money technology. New crypto money can be allocated in two ways: Credit money deposits or banknotes can be exchanged into crypto money or crypto money can be injected directly into the system as described above. When banknotes are exchanged against crypto money of a central bank, the central bank could simply cancel the notes. When credit money deposits are exchanged against crypto money at a credit bank, the latter could use central bank reserves created by the helicopter drop of money to acquire the crypto money from the issuing central bank. Crypto money issued by another entity (e.g. Bitcoin) is of course acquired through an exchange of existing deposits and leaves the existing credit money system untouched.

Crypto money would facilitate monetary control and substantially reduce the costs of payments. Moreover, central authorities issuing crypto money would no longer need to manipulate interest rates as crypto money is created without credit extension. However, the role of banks would be fundamentally altered in a reputation crypto money system. Banks could operate as Mintettes validating transactions and as intermediaries between depositors and borrowers of crypto money. Whether existing banks or new financial technology companies would perform these functions is of course an open question.

### **Currency competition**

Competition among different issuers of reputation money would be the best, if not only, way to arrive at sound money. Users of money are interested in its “inner value”, i.e., in its long-term purchasing power. Hence, issuers of reputation crypto money could compete for the best algorithm of money issuance for the stabilization of the “inner value” of their money. As users may have

different views about the optimal algorithm for the preservation of the “inner value” of money, several monies could compete in the market against each other.

The idea of currency competition was introduced by F. A. von Hayek already in 1976.<sup>8</sup> Then, the existence of several currencies in the market for storing wealth and making payments was seen as cumbersome and unrealistic. But with today's payment technology competition of several monies does no longer appear as an insurmountable problem.

### **Next step: Money crisis**

To conclude, helicopter money is a double-edged sword. On the one hand, it could facilitate the change-over from our present credit money system to an alternative money system, in which money is no longer created as private debt but as an asset backed by the reputation of the issuer. Crypto money technology is well suited for the creation of reputation money and payments with it. On the other hand, helicopter money could lead to a loss of confidence in the existing money and a money crisis, if it is used by inflation targeting central banks to force inflation higher. Most likely, we shall first have to pass through a money crisis on our way to a new and better monetary system.

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<sup>8</sup> F.A. von Hayek, *Denationalisation of Money*. London 1976.



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