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'Efficiency without Sacrifice': A Novel Way to Fund Mitigation?

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Financing the new 1.5°C limit “without sacrifice” through the use of existing but idle economic resources and through the capabilities of central banks

- A heterodox approach –

Dr. Matthias Kroll, World Future Council

Abstract:

The International Energy Agency (IEA) has established that US\$1,000 Billion p.a. of renewable energy (RE) investments would be needed to stay within the 2°C limit. To achieve the new 1.5°C limit agreed in Paris, investments between an estimated US\$1,500 to 2,000 Billion would be required. Achieving this new goal will require significantly more than the US\$100 Billion p.a. promised to the Green Climate Fund by 2020. Realistically, these resources will need to be interest and repayment free. Only thus will sufficient RE projects become financially viable and of interest for private co-investors. However, what is the likelihood of receiving significantly more than \$100bn each year in the form of non-repayable grants? Previous experience with financing commitments from tax or semi-public funds – such as revenues from emissions trading – indicates that the sums which will actually be disbursed will regularly fall short of the ones promised.

An alternative way of financing and providing sums larger than \$100bn to the GCF could be the involvement of central banks. These can never become insolvent in their own currency due to their monopoly on issuing the legal tender – even if they purchase non-performing assets. The economic potential of central banks was witnessed during the bank bailout, leaving no apparent reason why they should not contribute to saving the climate with a fraction of the funds previously used. In order to do this, central banks would continue doing what most of them are currently doing to combat the effects of the financial crisis: Buying bonds to create new liquidity. To finance the Green Climate Fund, central banks would need to buy "Green Climate Bonds" (with virtual infinite maturity) issued by the GCF and finance concrete investment projects, rather than investing in government or corporate bonds. So, instead of talking about "QE for the banks" we should focus on "QE for the climate".

When central banks buy new Green Climate Bonds, and record this in their balance sheets, they also gain a new monetary policy tool. The advantage of this new tool is that it leads directly to the purchase of new goods and services. The real economy is thus stimulated without a need for the usual detour of credit creation by private banks. This means that no new debtors and creditors need be found. The new money is created, debt-free. No country would need to burden its national budget.

This new global demand faces an "Output Gap" in the industrialised countries. The industrial capacities in the USA as well as Europe are in the long-term average only operating at approximately 80 percent capacity (Fed, ECB). This leads us to the assumption that firms adjust their capacities even before they reach full utilisation. Similarly the amount of new money to be created is still tiny in relation to total worldwide GDP of \$80,000bn. Given the current under-utilisation of global production capacity, no significant inflationary impulse is to be anticipated from the new demand.

Due to the use of idle capacities, no other production of goods and services is displaced by the additional investments in renewable energy and no sacrifices are necessary.

Introduction

Combating climate change and meeting the new 1.5°C limit requires annual expenditures on a very large scale. The International Energy Agency (IEA) has established that US\$1 trillion p.a. of renewable energy (RE) investments would be needed to stay within the 2°C limit.¹ To achieve the new 1.5°C limit agreed in Paris, no exact figures have been calculated yet. However, referring to the IEA sum it seems a realistic first estimation to put the new annual financial needs for climate investments between \$1.5 to 2 trillion.

Due to this seemingly huge figure, many observers assume that the realisation of such large scale expenditures would require an abandonment of other consumer and investment spending. But, this sacrifice is only necessary if we presume that economic resources are fully utilised and that a dollar which is spent for investment in renewable energy would require a reduction in investments in education or health care or in other reasonable obligations. Unfortunately the latter is – more or less – the presupposition of the majority of (microeconomic guided) mainstream economists.

However, in the existing capitalist world, real capital resources as well as the workforce are continuously underutilised. Furthermore, the money supply is not an external constraint but endogenously determined through the financial needs of the economy. The financial constraints for climate investments are therefore not a result of a lack of (private) credit, but a result of a lack of profitable climate investment opportunities. And the question of profitability depends on the financial framework which is widely defined by governments.

The aim of this paper is to explain what an endogenously determined money supply means for an additional large scale financing – inclusive of the involvement of central banks – for combating climate change. It strives to give an example of how central banks could contribute to improve the financial frameworks. Additionally, using the ideas of Keynes as well as Hayek, it aims to discuss why in a capitalistic economy industrial capacities are regularly underutilised.

In this paper several fundamental problems of economic theory will be discussed in a very brief manner which is capable of describing only the core of the problems. A deepening of the discussion is surely needed. However, for clarifying the question of whether an annual climate investment of up to \$2 trillion needs any sacrifice, this brief approach should be sufficient.

1. What does ‘sacrifice’ mean in relation to the necessary climate finance?

The term ‘sacrifice’ in relation to climate finance investments of \$1.5 to 2 trillion could be interpreted in two ways. First there could be a need for a sacrifice because there is not enough real capital or workforce to simultaneously realise both the production of regularly needed consumer and investment goods as well as the additional climate investments. And second it could be assumed that there is a need for a sacrifice because there is not enough money in the economic system to finance both.

One reason why the ‘sacrifice’ issue is widely discussed could be the typical neoclassical interpretation of the economy. To explain this in a simplified way: Most economic models in neoclassic economics deal with fully employed capacities and companies which will increase their production only if the prices for the related products also increased.

¹ Figueres, Christina; in: The Guardian of 14.1.2014, <http://www.theguardian.com/environment/2014/jan/14/un-climate-chief-tripling-clean-energy-investment-christina-figueres>

These assumptions have led the discussions to the conclusion that there is a need for a sacrifice because there are no free capacities and prices would have to go up for any additional production.

In this paper a heterodox theoretical approach is used which matches the empirical findings.

2. Is there a sacrifice needed because of a lack of real capital?

If we want to examine the question whether the existing real capital is large enough for immediate and additional climate investments of up to \$2 trillion, we have to consider that the new demand will be distributed worldwide and will encounter economic capacities which are currently capable of producing a global GDP of about \$80 trillion. If we assume further that the global economy was able to grow in the near past at a rate of roughly four to five percent without any problems, the figure of additional \$2 trillion climate investments does not seem too big. These investments will lead to a global increase in demand: First, in respect of industrial goods in the renewable energy sector, a demand which will presumably fall mainly upon the industrialised nations; and, second, in respect of services for the construction and operation of the new installations in the developing nations.

Even if the primary impetus of the new demand is concentrated on a few branches in the industrial nations, it can be expected that primarily an expansion of production will be observed rather than an increase in prices. Should production shortages nevertheless be experienced in some sub-sectors with corresponding price increases following, this will not be sufficient to create an echo in the overall inflation rate. At the same time, such demand increases will signal to the industry in question the need to increase its production capacity.² By contrast, the equally foreseeable secondary demand effect, resulting from the expenditure of additionally earned wages and profits, will be distributed across the entire production potential of the impacted national economies; thus, here as well excessive demand is only to be expected in few, if any, areas.

However, the most important issue is the question of whether there is enough free real capital available.

2.1. Empirical findings regarding free real capital

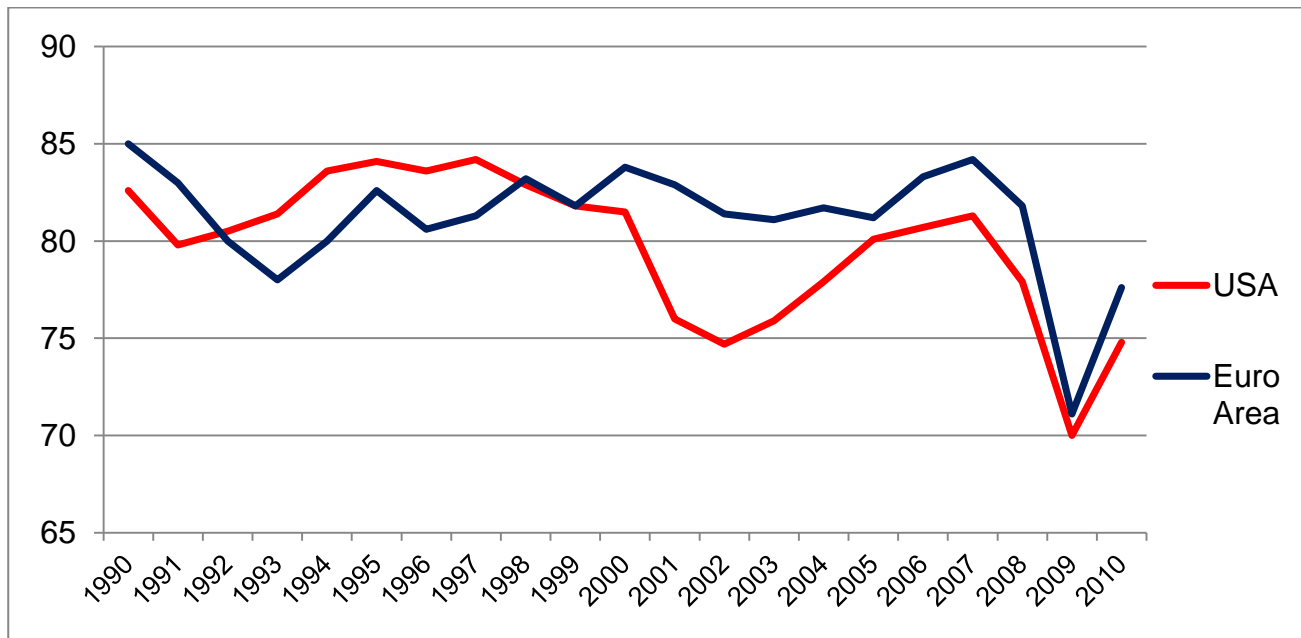
The central bank of the United States (Fed), as well as the European Central Bank (ECB) have established data on the degree of utilisation of industrial production capacities.³ Respectively, they find long-term average degrees of capacity utilisation of around 80% (Fed) and 81% (ECB). It should be noted that the degree of capacity utilisation even under boom conditions has never risen above 85%. This leads us to the assumption that firms adjust their capacities even before they reach full utilisation to be prepared to meet an increasing demand in the future.

² Even neo-liberal economists would be hard-pressed to criticise such an argument. Hayek, in particular, repeatedly explored and developed this connection (e.g. Hayek, 1969).

³ See FED, Board of Governors of the Federal Reserve System:
<http://www.federalreserve.gov/releases/G17/Current/default.htm>

ECB figures can be found at ECB, Monthly Bulletin, Euro Area Statistics, Euro Area Overview, Capacity utilisation in manufacturing (various years).

Figure 1. Capacity Utilization in the Euro Area and the USA (in percent)



(Source: Fed, Statistical Release G.17, ECB, Monthly Bulletins)

Industry usually has free capacity to react to sudden demand increases.

The FED and ECB valuations for the degree of capacity utilisation in the industrial sector can be approximately viewed as representative of the service sector as well, as service providers are subject to similar market characteristics and profit-maximisation strategies. The same applies to country comparisons. It can be assumed that other industrialised countries and emerging economies behave similarly to the United States and the Eurozone. Uncertainty arises with the assessment of the degree of capacity utilisation in the less industrialised countries. These uncertainties can be ignored for the purposes of this paper as the GDP of these countries is comparatively small and thus will not critically impact on the results of this paper.

Possible mismatch from a change in the demand structure

There may be a mismatch between the free reserves of real capital, the qualifications of the currently unemployed and the structure of the new demand for climate investments. A market economy, with businesses in competition, is, however, designed to absorb and balance such changes. Therefore, it is to be expected that additional and often new demand structures will emerge, creating a corresponding change in the supply structure. Initial mismatches will thus quickly dissipate.

Is the ‘sacrifice’ of increasing prices inevitable?

By studying observed price-setting dynamics, we can understand the pricing consequences likely to result from the significant output adjustments which will be induced (i.e. demanded) by the implementation of the contemplated climate protection investments. Generally speaking, a “mark-up” process is used. Suppliers estimate the costs of production for a given period of time based on an average utilisation of capacity, and they then add to this figure the desired profit in order to arrive at the demanded price (e.g. Hall/Hitch, 1952; Baßler, 1999, p. 202; Kromphardt, 2006).

Holding prices constant during a period of changing demand can be seen as rational since firms operate under the premise of uncertainty, i.e. without knowledge as to what revenue will be generated in the face of repeatedly altered prices. Even F.A. Hayek stated that only prices which would not change as a result of every change in demand could be regarded as real prices.⁴

The “mark-up” price therefore responds very slowly to changes in demand (Bhaduri, 1988, p. 88 ff.). The price determination process works differently, however, as regards homogenous goods that are sold on special markets. Here an increase in demand generally does lead to higher prices. Yet in such an instance, one should take heed of the predictive models according to which higher prices lead to an expansion of production capacity or to the utilisation of alternative products. Both of these responses would, in turn, have a dampening effect on prices.

In a market economy new demand carries a latent potential for effectuating an increase in prices. But this effect is not an inevitable and automatic process. Rather – especially in an economy operating below industrial capacity – it can be expected that the vast majority of new demand will result in output adjustments rather than price adjustments.

2.2. What theoretical explanation can be found for the average utilization of only 80 percent?

In Keynesian theory it is widely accepted that new demand will lead to additional production if capacities are not fully employed. Therefore, the empirical finding of an average capacity utilisation of only 80 percent can be viewed as being in line with the Keynesian theory.

Hayek’s spontaneous order is only possible if there are free capacities

Interestingly, the empirical findings can be also explained with one of the core assumptions of the economic theory of F. A. Hayek: The idea of spontaneous order as the leading impulse for the economy. Although Hayek has seen free capacities as an exception, an economy can only react to a change in demand in a spontaneous way if there are free capacities available. No company could change its offer of goods or services – in way that fulfils the ideas of a spontaneous order – if all capacities in the economy are fully employed. This conclusion of Hayek’s theory was stressed by the German economist C.C. von Weizsäcker in his attempt at achieving a synthesis of Keynes and Hayek. Weizsäcker refers here to an article from Hayek in which he indicates an implicitness of our seeing the availability of all goods as being natural.⁵ In an economy which works under the conditions of spontaneous order, it is a rational behaviour of companies to use free capacities to react to changes in demand to maximise sales volume and profits.⁶

⁴ See Weizsäcker, Carl Christian (2005); loc cit, p. 8 ff.

⁵ See Hayek, Friedrich August von; Rechtsordnung und Handelsordnung, in: Hayek; Freiburger Studien, Gesammelte Aufsätze, Tübingen, 1969, p.161- 198, here p. 162 f.

⁶ See Kroll, Matthias; Über Hayek und Keynes, spontane Ordnung und die Möglichkeit erfolgreicher Nachfragesteuerung, ZÖSS Discussion Paper, No.37, University of Hamburg 2013

3. Is there a sacrifice needed because a lack of workforce?

The production of consumer and investment goods requires not only real capital but also human labour. It needs to be clarified whether additional workforce is available in an adequate amount. According to the International Labour Organisation (ILO), the official worldwide unemployment figure is about 200 million.⁷ So, it can be assumed that there is no serious lack of labour which could hinder an additional production of \$2 trillion. But the methodological assumption of this paper is only valid if it can be shown that those not in paid employment are out of work due to a lack of demand – and not because their wage demands are too high in relation to their productivity.

Explanation of unemployment and productivity in neoclassical theory

Under the theoretical assumptions of neoclassical economics, people are in principle always unemployed because their wage demands are higher than their personal productivity. The assumption of this theory is that unemployment is a voluntary act as everyone would be able to find a job if he or she lowered her wage demand. As achieving increased productivity in most cases takes time, the short-term solution of neoclassical theory to the problem of unemployment is a lowering of wages.

This assumed voluntary unemployment also leads to the assumption that more people can only be absorbed into the workforce (e.g. for the production of climate investments) if employers are willing to pay higher wages. With a set productivity rate this would, however, lead to a rise in prices.

A heterodox approach

The approach advocated in this paper orientates itself on the real behaviour of actors in the labour market. The approach assumes that people offer their labour to earn wages which secure their existence and provide them with a living standard that allows them to live a life integrated in their community. Therefore it can be supposed that the workforce needed for the additional climate investment goods at a scale of up to \$2 trillion is adequately available. No other production must be abandoned because of a lack of labour.

The level of productivity⁸ is a product of the professional qualification of the workforce and the technical equipment of the workplace. Both aspects are interdependent: No business would invest in production technology that no employee or prospectively trained employee would be able to use. But even the most qualified of employees cannot reach high productivity levels without the necessary technical equipment.

Additionally, in industrialised countries almost all companies produce under the conditions of the division of labour. And here it is methodically impossible to impute a personal productivity to every single employee. It is only possible to quantify the productivity of the whole company.

Other significant pre-conditions for achieving high levels of productivity are infrastructure (energy provision, telecommunications, transport), as well as administrative and law enforcement capacities. It can be assumed that the potential productivity of a currently unemployed person is in most cases the average individual work productivity of his or her country.

⁷ ILO: World Employment Social Outlook, Trends 2016; http://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_443472.pdf

⁸ Productivity is defined as the work productivity of output of one employee per unit of time.

4. How to finance \$2 trillion in climate investments without sacrifice?

The ‘sacrifice’ question in the monetary area can be addressed on two levels. First it needs to be specified if there could be a lack of credit in the financial system due to the additional demand for money. And secondly, one must discuss how the public spending for climate investments could be financed without sacrifices being made by the taxpayer.

4.1. The meaning of the exogeneity or endogeneity of money issue for large scale climate finance

Is there a shortfall in savings which could hinder the increase of credit?

In a world where the money supply is exogenously determined by the central banks and credit is restrained by the size of the monetary base and the amount that savers deposit in the banks, there could be a shortage of money to finance the new \$2 trillion investments. And if there are not enough savings in the monetary system, there will need to be an increase in the interest rate as an incentive for savers to spend less and save more. These increased interest rates will, in turn, lead to a displacement of other investments, so we could observe a ‘sacrifice’ in the form of lost investments.

But these traditional textbook assumptions of an exogenously determined money supply are not consistent with the existing financial system.⁹ In the real world money is endogenously defined. Due to the importance of the exogenous or endogenous issue for the question of whether or not sacrifice is needed to finance an additional \$2 trillion, the topic should be briefly described.

The explanation of our monetary system under the traditional (exogenous) view

Traditional economists have claimed in their textbooks that an increase in the monetary base is needed for an equivalent increase in the broad money supply as the basis for additional credit creation. But this view is only valid in theory. The most problematic assumptions are about how the money creation process works. The traditional view posits that the money supply is created from the interaction of the money multiplier and the monetary base, whose level is, in turn, set by the central bank. Thus, the monetary base and the money supply are determined by the central bank. If the monetary base were to be increased, commercial banks could increase their loan volume, and the money supply would consequently witness a multiple increase according to the level of the money multiplier (determined by the reserve ratio and the cash ratio). Under this traditional view, the commercial banking system can only extend new loans when it obtains new central bank money. When, however, banks do receive such new money – so the theory – they will use it in its entirety to extend new loans. Accordingly, the impulse for the extension of credit stems from the central bank’s supplemental creation of money. Hence, the chain of causality begins with new central bank money and ends with the creation of new debt money.

The interest rate on the market for money (i.e. the cost of money) is not determined by the central bank, but rather results – for the given amount of money – from the dynamics of supply and demand. As such, the role of the central bank is seen as a quantity setter and price taker. Since from this perspective the supply of money is “externally” injected into the economy by the central bank, one speaks of an exogenous theory of money.

⁹ Boermans and Moore recently showed that the exogenous view is still supported in most international textbooks, see Boermans, Martijn A.; Moore, Basil J.; Locked-in and Sticky Textbooks: Mainstream Teaching and the Money Supply Process, MPRA Paper, No. 14845, 25. April, 2009

If one adheres to the models which form the basis of the exogenous perspective, all measures which increase the monetary base will necessarily result in a manifold increase (commensurate with the value of the money multiplier) in the money supply. Such an increase would entail inflationary potential as soon as the new money was utilised for an equally manifold purchase of goods and services.

The endogenous money view

The existing relations of the real economy, however, are not those assumed under the exogenous model. In the real world the central banks fix the lending rate offered to banks and thus control the interest rate on the money market. In order to achieve the desired market rate, the central banks must consequently satisfy the banking system's demand for liquidity and provide commercial banks with new money at the lending rate they have set. If they were to behave otherwise, the result would be permanent interest rate fluctuations on the money market and correspondingly negative consequences for the economy.

With the decision to control the market interest rate, the central banks have surrendered their ability to directly control the money supply.¹⁰ This outcome results from their role as lender of last resort, according to which they must always be prepared to provide commercial banks with liquidity consistent with a given interest rate. In contrast to the exogenous perspective, the central banks in fact fix the price (setting the short-term interest rate on the money market) and stay attuned in respect of amount (providing the amount of central bank money that is demanded by the banking system). Since the money supply in this instance is a function of the "internal" financial needs of the various economic institutions, one speaks of an endogenous theory of money (e.g. Moore, 1988).

It is interesting that the majority of economists accept the relationships characterised by the endogenous theory when they discuss real monetary practice and policy, whereas their theoretical studies and textbooks often act on the assumption of an exogenous money supply (cf. Goodhart, 2002, pp. 252-254).

The former senior vice-president of the New York Federal Reserve Bank A. Holmes formulated the core idea of endogenous money as early as 1969:

"... in the real world banks extend credit, creating deposits in the process, and look for the reserves later." (Holmes, 1969, p. 73)

The former president of the Bank of England, Mervyn A. King, has also unequivocally stated:

"In the United Kingdom, money is endogenous – the [central] Bank supplies base money on demand at its prevailing interest rate and broad money is created by the banking system." (King, 1994, p. 264).

And similarly Goodhart stated:

"Virtually every monetary economist believes that the CB (central bank) can control the monetary base ... Almost all those who have worked in a CB believe that this view is totally mistaken" (Goodhart, 1994, S. 1424)

Also the Bank of England has recently criticised the established textbook theory of money and hints at the endogeneity of money as being the economic theory which realistically describes the monetary system.¹¹

¹⁰ Now, it is only through indirect means that the central bank can impact developments in respect of the supply of money, namely by sharply raising the interest rate with the hope that the demand for money (along with business investments) will also decline.

¹¹ BoE: Quarterly Bulletin, 2014 Q1, Vol. 54 No.1

This theory of endogenous money was developed by Basil J. Moore and other post-Keynesian economists. In the post-Keynesian view of economic theory, the endogenous perspective is a generally accepted part of academic theory (e.g. Kaldor, 1982; Moore, 1988; Arestis, 1996; Dalziel, 1996; Howells, 2005; Arestis/Sawyer, 2006, pp. 847-860; Minsky, 2008, p. 271). In new-Keynesian thought as well, the notion has recently been recognised as one of the basic fundamentals in the so-called “new monetary consensus” (Meyer, 2001, pp. 1-15).

We can conclude that in the existing financial system the money supply is endogenous and that, as a result, there are neither restraints on climate finance credits nor a need for “saver sacrifice”.

The climate finance problem is not a lack of credit

But even with no restraints in the credit supply, we are currently witnessing global renewable energy investments of only \$286 billion (2015).¹² Obviously, the problem of scaling up climate investments to \$2 trillion is not a lack of credit but a lack on profitable climate investment opportunities. One possibility to increase these opportunities is to use interest- and repayment-free public grants via the Green Climate Fund (GCF) instead of private credit. Only in this manner will sufficient RE projects become financially viable and of interest for private co-investors. Achieving this new goal of total climate investments of up to \$2 trillion will require significantly more than the \$100 billion p.a. which has currently been promised to the GCF by 2020.

However, what is the likelihood of receiving significantly more than \$100bn each year in the form of non-repayable grants? Previous experience with financing commitments from tax income or semi-public funds – such as revenues from emissions trading – indicates that the sums which will actually be disbursed will regularly fall short of the amounts promised.

4.2. Using “Direct QE” as a new tool for central banks and climate finance

An alternative way of financing and providing sums larger than \$100bn to the GCF without a sacrifice being made by taxpayers could be the involvement of central banks.¹³ These can never become insolvent in their own currency due to their monopoly on the issuing of legal tender – even if they purchase non-performing assets. The economic potential of central banks was witnessed during the bank bailout, leaving no apparent reason why they should not contribute to saving the climate with a fraction of the funds previously used. In order to do this, central banks would continue doing what most of them are presently doing to combat the effects of the financial crisis, namely buying bonds to create new liquidity. To finance the GCF, central banks would need to buy “Green Climate Bonds” (with virtual infinite maturity) issued by the GCF and finance concrete investment projects, rather than investing in government or corporate bonds. So, instead of talking about “QE for the banks”, we should focus on “Direct QE” for the climate.

When central banks buy new Green Climate Bonds and record this in their balance sheets, they also gain a new monetary policy tool. The advantage of this new tool is that it leads directly to the purchase of new goods and services. The real economy is thus stimulated without a need for the usual detour of credit creation by private banks. This means that no new debtors and creditors need be found. The new money is created

¹² See: FS-UNEP Collaborating Centre, Global Trends in Renewable Energy Investments 2016, pp. 11; <http://fs-unep-centre.org/publications/global-trends-renewable-energy-investment-2016>

¹³ The following section refers to the World Future Council Proposal “Financing the Green Climate Fund” which was prepared for the COP21.

debt-free. No country would need to burden its national budget and no sacrifice on the part of taxpayers is necessary.

4.3. The possible role of central banks in climate financing

Central banks have the task of providing their currency area with sufficient legal tender. This means that in ordinary times (with a real growth rate of 2% and an inflation rate of 2%, i.e. nominal growth of 4%) they can meet demands for additional money of up to 4%, without this money creation leading to imbalances or speculative bubbles. An expansion of the money supply analogous to the real financing needs of a growing economy is naturally sustainable.¹⁴

To meet additional demand for money and inject it into the economy, central banks give usually very short-term credit to banks or buy government or private bonds of differing maturities from them. During ordinary economic times there is likely to be nominal monetary expansion and growth in central bank assets. Central banks can afford to additionally include very long-term bonds in their balance sheets without it constraining their (monetary) room for manoeuvre. This means that it is possible to integrate the purchase of long-term Green Climate Bonds into the money creation process without it requiring a fundamental change of central bank policy. The current independence of central banks would not be affected by such a new “QE for climate” programme.

Estimation of the possible amount of Green Climate Bonds

If we assume that future, nominal global growth will average 5%, the yearly global growth of the money supply must also be around 5% to avoid restrictive effects on the real economy. The two biggest central banks, the US Federal Reserve and the ECB, could (with \$5tn as their total monetarily effective balance sheet total¹⁵ and a long-term money creation requirement of 5%) potentially create \$250bn per year without causing inflation and use this to finance (i.e. buy) long-term bonds issued by the Green Climate Fund. As the dollar and euro currency zones together account for only 36% of global GDP, the total sustainable money creation potential of all central banks can be estimated at \$700bn.¹⁶

As shown by the massive interventions by central banks during the financial crisis, central banks can expand their balance sheets with one-off purchases of assets of all types – without relevant negative consequences. This means that a one-off purchase of Green Climate Bonds, exceeding the usual extent of monetary expansion, would be possible. This money could be used as start-up financing for many climate protection projects.

What distinguishes the new Green Climate Bonds from ordinary bonds?

An ordinary bank or an institutional investor who buys a bond wants to earn interest and be repaid the capital in full at maturity. The business model using ordinary bonds can work in a market economy only if the issuer of bonds can generate that interest and the repayments due in the real economy. Because Green Climate Bonds are not actually repaid and do not yield interest, the only feasible buyers are central banks. Due to

¹⁴ It was unsustainable to provide for the financial sector’s enormous demand for money for speculative purposes following the deregulation of the financial sector. But central banks could not stem excess demand for credit without simultaneously throttling growth given that the setting of lending rates was their sole policy tool.

¹⁵ Thanks to the various measures used by central banks to manage the financial crisis, their balance sheets became unsteady. The figure of \$5tn is to be seen as a rough average. Cf. the current amounts in the ECB’s monthly review and the Federal Reserve’s Statistical Release, H6.

¹⁶ For a preliminary estimate of the sum involved, it is assumed that the balance sheets of other central banks are structurally similar to those of the ECB and the Federal Reserve.

their right to issue legal tender (in their own currency), central banks cannot become insolvent and they remain capable of acting even if they have negative capital.¹⁷ When a central bank purchases bonds, it does not do that to earn interest,¹⁸ but to provide the seller of the bond with money and thus boost liquidity in the economy. Thereby, the central bank fulfils the function as issuer of legal tender.

A central bank relies neither on interest payments nor on the bond being repaid at a certain date. It can absorb bonds with unlimited terms into its balance sheet. As long as it keeps enough stocks and bonds with short terms and/or those it can sell on the market, it can again reduce the newly created money at any time. From a monetary policy perspective, the central bank remains fully capable of acting.

The Green Climate Finance System: How do the new financial streams flow?

To involve the central banks in the financing of significantly more than the promised \$100bn, a new Green Climate Finance System is needed. This entails the participating member states of the UNFCCC allowing their central banks to invest in GCF bonds on a long-term basis. It is unnecessary that all member states of the UNFCCC take part. To ensure the fundamental functioning of the system, it would suffice if Annex 1 nations and well-performing Annex 2 nations (that have an internationally recognised currency and/or a positive current account) take part. That might not immediately enable the issuing of the fully required amounts, but it would provide tens of billions annually to fund climate protection investments. The more states that take part in the Green Climate Finance System, the larger the sum available. An important incentive for UNFCCC members taking part would be that the bonds (purchased by their central banks) would be recorded as funding for the GCF. A government taking part in this system could therefore fund the GCF without using its own budget.

It would also be sensible to have an agreement (between central banks taking part in the system) to recognise GCF Bonds as tender between them. In that way, exchange rate fluctuations could be reduced whenever demand for specific currencies and correspondingly buying central banks do not coincide.

The Green Climate Finance System at work

Before the GCF sells these new Green Climate Bonds to central banks, it needs to determine which climate protection projects are to be funded – and to what extent. Only then can it be known which currencies will be needed. When this is established, the GCF sells new Green Climate Bonds of this amount to the respective central banks. The central banks record the new bonds in their balance sheets and issue the new currency to the GCF. The funding of projects will normally be distributed among several central banks.

Most Green Climate Bonds are likely to be bought by central banks of Annex 1 countries. But central banks of Annex 2 countries (that have a surplus in their current account and/or large currency reserves) could also buy new Green Climate Bonds. Where a direct purchase of Green Climate Bonds is legally tenuous because of the central bank's mandate – as is probably the case with the ECB – an investment bank can be used as intermediary. For the ECB, the European Investment Bank (EIB) could be used. The GCF would then sell the new Green Climate Bonds to the EIB, which would sell them on to the ECB.

¹⁷ Jordan, Thomas; Braucht die Schweizerische Nationalbank Eigenkapital; Rede vor der Statistisch Volkswirtschaftliche Gesellschaft, Basel, 28. September 2011

http://www.snb.ch/de/mmr/speeches/id/ref_20110928_tjn/source/ref_20110928_tjn.de.pdf

¹⁸ When a central bank buys bonds from ordinary banks in order to inject liquidity, it naturally earns respective interest. That is also a large part of the contribution of profitably for central banks. It is, however, not the proper job of a central bank.

Summary

Based on (i) the fact that additional climate investments of up to \$2 trillion amount to only 2.5 percent of the global GDP of \$80 trillion, (ii) the empirical findings that industrial capacities are usually utilised at a rate of only 80 percent, and (iii) global unemployment of 200 million people, there is no identifiable reason for any sacrifice on the real economy side. At the financial level, no shortage in the supply of credit can be diagnosed because the money supply is endogenously determined. An increase in the interest rate is not needed to expand the credit supply. If the necessary public grants for climate investments were to be financed through the usually money creation process of the central banks, national budgets would not be burdened and no sacrifice on the part of taxpayers would be necessary.

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Contacts:

World Future Council
Head Office
Lilienstraße 5-9
20095 Hamburg, Germany
+49 (0) 40 3070914-0

UK Office, World Future Council
100 Pall Mall
London SW1Y 5NQ, UK
+44 (0) 20 7321 3810

Dr. Matthias Kroll
Economist Future Finance
+49 (0) 40 3070914-25
matthias.kroll@worldfuturecouncil.org