Green Finance: The Macro Perspective

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Editorial

European governments are striving to meet the ambitious goals of the Paris Climate Agreement of 2015. The German government wants to limit the CO_2 emissions so that the global temperature increase does not exceed 1.5 degrees Celsius. How this aim will be achieved concretely is still an open question. However, concrete steps must be decided upon urgently.

Sustainability Policies

In sustainability policy, two main concepts are under discussion: CO_2 pricing and "green investments." The latter, in turn, could be financed through the issuance of "green government bonds," i.e. bonds issued by the public purse for green investment. The Federal Ministry of Finance in Germany recently pushed forward considerations in this direction. Green bonds are also an essential part of the Green Finance policy of the EU Commission. Duco Claringbould, Martin Koch, and Philip Owen provide in their work, *Sustainable finance: the European Union's approach to increasing sustainable investments and growth – opportunities and challenges*, an overview of the most important current EU initiatives contributing to sustainable finance. The authors outline the need for sustainable finance to achieve EU and international policy goals and to provide a discussion of sustainable finance from a theoretical perspective. They review the most important existing EU initiatives to foster sustainable finance: the Action Plan on financing sustainable growth, the EU Emissions Trading System, and EU financial support contributing to sustainable finance. The Action Plan aims to develop an EU Green Bond Standard, as well as benchmarks for low-carbon investment strategies and climate-related reporting. The authors also provide a discussion of the challenges and political implications of current sustainable finance policies for the EU.

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Financing the Transition

In designing the policy toward decarbonization the relationship between CO_2 pricing and "green investments" as well as the potential added value of their simultaneous use is often ignored. However, in the practice of sustainability policy in some countries and in scientific research, the importance and effectiveness of simultaneous use is long recognized. For example, the International Monetary Fund and the World Bank favor both instruments, as evidenced, for example, by Dirk Heine, Willi Semmler, Mariana Mazzucato, João Paulo Braga, Michael Flaherty, Arkady Gevorkyan, Erin Hayde, and Siavash Radpour in their contribution *Financing Low-Carbon Transitions through Carbon Pricing and Green Bonds*. In their contribution – also published as World Bank Policy Research Working Paper[1] – the authors explain the reasoning behind such policy mixes and the economic interaction effects that result from these different policy instruments. They show that green bonds perform better when they are combined with carbon pricing. They argue that the combination is politically more feasible than a green transition based only on carbon pricing and is more prudent for debt sustainability than a green transition that overly relies on green bonds.

A Mix of Policies Needed

Why is it so important to use a mix of policy instruments, in particular the CO_2 pricing and green investments at the same time? The pricing of CO_2 emissions is now largely undisputed. Disputed, however, is how the pricing should be done. Some advocates favor promoting the trading of certificates and think little of the introduction of a CO_2 tax.

But emissions trading poses some problems: The prices of the certificates traded on the financial markets are subject to extreme fluctuations, so they are very volatile. Studies with older data suggest that certificate prices are many times more volatile than stock prices. The stock markets are anything but low-volatility – they move much more up and down than a country's gross domestic product. Large fluctuations in prices mean high planning uncertainties for green investments. Moreover, a too low CO_2 price, as in the past, would hinder green investment.

By contrast, the CO_2 tax has a much more stable effect and, therefore, complements green investments. It can also be implemented quickly without too long preparation time and is a necessary instrument of sustainability policy so that the private sector can also be involved in the costs of eliminating the consequences of CO_2 emissions.

Taken alone, CO_2 taxes are not effective enough to help sustainability policy achieve much-needed success. Revenues can be used to reduce other taxes that are incompatible with sustainability or to pay a citizen dividend. The latter is a per-capita refund of revenue. For citizens, who themselves cause very low CO_2 emissions, the balance between the CO_2 tax paid and the citizen dividend is positive. This creates a strong incentive to avoid creating CO_2.

However, the CO_2 tax only very slowly initiates substitution processes. In addition, it could be passed through price markups – instead of switching its own production, companies with sufficient

1 http://documents.worldbank.org/curated/en/808771566321852359/Financing-Low-Carbon-Transitions-through-Carbon-Pricing-and-Green-Bonds.

market power could easily raise prices for their customers. The tax must be very high to be effective. The order of magnitude is not between US$20–30 per ton of CO_2, but rather US$80–100, as recently calculated by two researchers from Columbia University (Heal and Schlenker 2019).

A Fair Transition Expected

Moreover, tax increases, especially in sufficient amounts, are politically difficult to enforce if the benefits to those affected are not directly visible. Scientific research also discusses whether a sufficiently high CO_2 tax would cause unequal burdens both within the current generation and between present and future generations. On the other hand, it is justified that not only do present generations benefit from state spending on road and bridge construction, education, infrastructure for energy supply, and digitization, but also future generations. Thus, future beneficiaries should also participate in the financing of investment. Consequently, scientific research must not only look at the intergenerational pressures, but must also consider the intergenerational benefits.

Since a CO_2 tax only has limited effectiveness and does not solve the generational problem, green bonds are also important as an instrument of sustainability policy. The increased focus on green bond issuance is also justified in view of the current financial market conditions with extremely low, if not negative, interest rates. Since the application and effectiveness of the CO_2 tax will be limited, sustainability policy relies on state or government-sponsored green investment.

Low Capital Cost for Green Investment

There are a number of sources of finance available for green investment, such as self-financing, bank loans, crowd funding, and stock issuance. Bond finance is by far the most important and effective. It is the best way to accelerate the longer-term transformation of the energy system. As Heine et al, in this issue, show, a number of reasons speak in favor of considering green bonds as an important, if not the most important, instrument of climate policy:

- Government or government-sponsored bonds can reduce the risk of bonds through so-called "de-risking." The state then guarantees all or part of the service and repayment. While the returns on such bonds are also lower than those of privately issued bonds, lower yields also mean lower capital costs for the introduction of new energy. Wealth managers and portfolio managers are currently struggling to find safe investments, but they do not find enough profitable, low-risk investments.
- The reduction in interest rates also means that smaller, mostly credit-constrained, companies operating in the new innovative manufacturing sectors can also receive more favorable financing terms (see also Febi Jensen, Dorothea Schäfer and Andreas Stephan: *Financial constraints of firms with environmental innovation* in the complementary issue Green Finance: Case Studies[2]). Larger companies largely finance themselves through the issuance of shares, but small and medium-sized enterprises largely through bank loans. Their interest rates are also determined by the yields of government bonds.

2 Claudia Kemfert, Dorothea Schäfer, Willi Semmler und Aleksandar Zaklan (Editors), Green Finance: Case Studies, Vierteljahrshefte zur Wirtschaftsforschung/Quarterly Journal of Economic Research, DIW Berlin, German Institute for Economic Research, vol. 88(3), 2019.

- Even very long-term government bonds now have negative interest rates. If the growth rate is greater than the interest rate, the debt ratio, i. e. the ratio between public debt and gross domestic product, decreases. With negative interest rates, future generations will have to repay less than the funds that were originally made available to the state when it took on the debt.

Fiscal Space for countercyclical investments

- Furthermore, countries like Germany – and other Nordic EU countries – have enough fiscal space to pursue such policies, but less so in other countries and emerging economies. According to studies by the World Bank and the IMF, benchmarking, or the assessment of whether or not there is room for fiscal space, can be achieved by comparing the long-term growth and interest rates of a country: if the interest rate is lower, there is sufficient leeway. There will be no sovereign debt problem when issuing green bonds.
- In view of the expected economic downturn and low or negative interest rates, Germany could finally increase public investment and its share in the total public-sector budget. The World Bank, the IMF, and the ECB are also calling for more investment from Germany in order to counteract the predicted economic downturn and reduce export dependency. The favorable financing environment should be used above all for green investments.
- The issuance of green government bonds is also a good strategy for Germany in the medium term. From an international perspective, Germany has extremely low capital costs due to low, if not negative, interest rates. Germany could have a comparative cost advantage in the production of technology for the transformation of the energy system. Low-cost trade credits to other countries, given the low domestic cost of capital, could also help unlock new export sectors.

Therefore, in sum, it can be said that everything speaks in favor of finally giving the urgently needed boost to a combination of CO_2 tax and green bonds.

Low Inflationary Environment and Central Bank Policy

Paul De Grauwe's note, *Green money without inflation,* even strengthens the importance of green bonds. He emphasizes that the ECB could be an active player in developing the market for green government bonds. Within its QE-program, the ECB could replace the old bonds with new "environmental bonds," i. e. bonds specifically issued to finance environmental projects. In doing so, the ECB would not create new money. Given the existential nature of the degradation of the environment, including climate change, the priority should be to use the ECB's money creation capacity toward supporting environmental investments. This can be done without creating inflation.

Andreas Breitenfellner, Wolfgang Pointner, and Helene Schuberth outline *The potential contribution of central banks to green finance*. The authors emphasize that climate change poses severe risks to households, firms, and their financial intermediaries, which tend to be correlated and are difficult to model. On the other hand, there are enormous investment opportunities resulting from the planned decarbonization of the global economy. The authors emphasize that while central

banks can and should contribute to making the economy and the financial system more sustainable, they can only complement, but not substitute for, decisive political action by governments.

The general need to design and implement a policy mix is also emphasized by Francesco Lamperti, Mariana Mazzucato, Andrea Roventini and Gregor Semieniuk in their work *The Green Transition: Public Policy, Finance and the Role of the State*. They reject the view that cost-internalization of environmental externalities would suffice to induce an effective transition, instead arguing in favor of developing a multi-level and cross-sectoral governance of the transition, with a clear direction in terms of the technological trajectory to favor. They submit what an optimal policy mix should encompass: fiscal instruments, targets and standards, public-private co-funding schemes, financial regulation, and disclosure practices.

Katharina Erdmann, Aleksandar Zaklan, and Claudia Kemfert argue in favor of *Linking Cap-and-Trade Systems and Green Finance*. They consider the benefits and challenges of linking conceptually, including its incentives for green financial flows and present some of the main features of the European and North American linked systems as well as preliminary evidence on the workings of each linked system. They conclude that from a green finance perspective, linking should be working as a long-term option.

References

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