

CEPR/EAERE Webinar on Climate Policy: Pandemic Stimulus Spending and the Fight Against Climate Change

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Climate change is a long-term threat to human society with expected huge impacts on health, economies, and welfare. Even more than the fight against Covid-19, climate change control is a difficult and complex task, which requires well-designed policies and important financial resources. The post-pandemic recovery period could be an important opportunity if policies to address the current pandemic are designed to achieve stronger, sustainable, and low carbon economic growth. The Covid-19 pandemic has indeed triggered the deepest global economic contraction since World War II. While most economies are expected to rebound in 2021-2022, the impact of the pandemic on many aspects of the economy and emission drivers may last far longer. Therefore, a strong alignment of Covid-19 recovery packages with climate targets has the potential to address two important objectives: economic recovery and decarbonisation. The speakers of this Second CEPR/EAERE Webinar on Climate Policy, hosted by **Carlo Carraro** (Università Ca' Foscari di Venezia, CEPR & Climate Change RPN Member) were **Massimo Tavoni** (European Institute on Economics and Environment & School of Management of Politecnico di Milano) & **Ioana Petrescu** (Harvard Kennedy School). Their presentations were followed by a roundtable discussion and Q&A session with the audience moderated by **Andrea Tilche** (NTNU & UiT) and **Danielle Arostegui** (Environmental Defense Fund).

Panellists:



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Moderators:



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Key Points of the Webinar

- **In and out of pandemics: sustainability lessons from the recent past**

Covid19 shares a lot of genetic similarities with other pandemic events that took place in the recent past: H1N1, Ebola, SARS-COV and MERS COV, with the 2 latest both being coronaviruses. The H1N1 pandemic in 2009 constitutes the largest pandemic event by far, with almost 7 million people affected and 20,000 deaths, while also having an important geographic coverage of 149 countries. Its mortality rate (0,29%) was relatively low compared to Ebola (35,34%) which concerned 6 countries in total. In terms of the history of cases per thousand of inhabitants, COVID-19 has an intensity of about 10 on average, a factor on ten compared to previous pandemic. Finally, SARS- and MERS-COV predominated in Asia, while Ebola mostly affected Africa and Zika the Americas.

In a Working Paper entitled *Will the economic impact of COVID-19 persist? Prognosis from the 21st Century pandemics*¹, authors empirically measure to what extent these previous events constituted economic disruptions and reverberated on some variables of the environment. Despite the differences in intensity and geographical coverage, these 5 events together can indeed say something about COVID-19 and, most importantly, help provide projections.

- **Measuring the incidence of pandemics**

In terms of empirical methodology, the measure of the incidence of the pandemic is a conservative log scale measure of confirmed cases in terms of population. Using local projections, estimates of a series of variables are measured on different series of times (up to five years) using several controls, time and year fixed effects and other robustness checks. Based on these estimates, the main measure is then built: the impulse response function corresponding to the expected values of different variables of interest. The functions are measured for the average intensity rate of past pandemics, which will then be used to project forward to COVID-19 on macroeconomic, environmental & energy variables.

Results show a significant drop of economic activity in terms of income per capita significant in terms of size effect, with almost 2 percent of GDP per capita loss after one year. After around 3/4 years, the effect is not statically significant anymore. The unemployment rate increases over time by almost one percentage point and levels off after a few years. Income Inequality - measured through an index of Gini - is shown to have increased throughout average sized pandemic events of the past five years, not in the first two years, but over time. Finally, an increase in government debt is also observed.

Regarding energy and environmental variables, authors found a drop in energy usage, as measured by final energy consumption, and a related drop in CO₂ emissions persistent over time. To understand if these evolutions were driven by structural changes in the energy system, the paper looks at energy intensity of GDP and finds very small changes in energy efficiency. Looking at the emission intensity of

¹ Emmerling Johannes, Furceri Davide, Líbano Monteiro Francisco, Loungani Prakash, Ostry Jonathan David, Pizzuto Pietro, Tavoni Massimo, *Will the economic impact of COVID-19 persist? Prognosis from the 21st Century pandemics*, International Monetary Fund, Working Paper No. 2021/119, 30 Avril 2021.

energy - or how CO₂ intensive the energy produced is - authors found some reduction in the intensity of emissions energy towards greener sources (especially solar PV). However, compared to previous CO₂ emission drops, this contribution is about a third of the total CO₂ emissions, meaning that most of the reductions from past pandemics came from economic downturn rather than actual structural adjustments to the energy system.

- **Projections of COVID-19 paths**

These estimates have been used to project different COVID-19 paths up to 2024, using intensity measures at the country level: a projected path prior to COVID-19 (using October 2019 forecasts from the International Monetary Fund (IMF) and the International Energy Agency (IEA)) ; a projected path after the onset of covid (using the October 2020 forecasts from the IMF and the IEA for benchmarks) ; and a projected path based on the empirical estimates of effects of past pandemics, scaled by incidence of COVID (as of 2020 data from the World Health Agency (WHO)).

Regarding the GDP per capita, the IMF projection is assuming a relatively fast recovery. A slower process is highlighted when accounting for the estimates of past pandemics. Projections also put forward a rise in inequality compared to a baseline extrapolation of the historical trends of the Gini Index. Projections based on empirical estimates and from agencies are relatively similar when it comes to government debt and unemployment rates. Finally, in terms of poverty rate projections, an increase in the poverty rate is estimated in 2020 and 2021, with around 75 billion people below the poverty line.

The picture is quite similar regarding variables related to energy and the environment. Pandemics events are found to scale up, based on previous estimates, a lower energy demand and a reduction in CO₂ emissions in a stronger way than projected by agencies. Furthermore, a relation is found on green technologies picking up a little bit more than fossil fuel technologies after past pandemics, which leads to higher decarbonization of the energy system than was projected by the IEA and historical trends. Energy intensities, however, are relatively similar.

As a result, evidence from effects of pandemics suggest a persistent impact on economic sustainability measured broadly in terms of economic activity and especially in terms of inequality and employment. Furthermore, energy and emission reductions are mostly observed through economic contraction rather than structural change. The remaining question is to determine to what extent the COVID-19 pandemic is different from previous ones. Considering CO₂ emissions variations between the first five months before and after the beginning of the pandemic, some regions' emissions - mostly industrialized ones - are still below what they used to be before the pandemic. On the other hand, emissions are already higher compared to before the pandemic in some sectors and countries, such as China, indicating rebound effects. Finally, one may wonder to what extent stimulus packages will change the landscape. Taking the examples of the United Kingdom (UK) and Germany, what has been spent so far has mostly been balanced between green and fossil fuel activities, with packages not only titled towards green technologies.

- **Pandemic Stimulus Spending: A glimpse into a greener future?**

- **Green Stimulus Package: the examples of France and Germany**

At the beginning of the pandemic and its early aftermath, we have been able to observe different countries taking relatively unusual green measures. One example in this regard is the decision of the French government in 2020 to support the airline Air France with stringent environmental conditions, including the reduction of domestic trips.

Germany adopted a US\$1.4 trillion in fiscal stimulus in 2020. Additional stimulus packages included the US\$45 billion *Package for the Future*, which provides financing for green initiatives of different kinds and represents a small share of the total fiscal plan. In 2021, Germany submitted its *Recovery and Resilience Plan* - a plan to be submitted by European Union (EU) countries to the EU in order to access the Next Generation EU (NGEU) grants. The six main areas of the German Plan were the following: Environmental and digital advancement; a long term and inclusive way of growing (notably including digital economy); a geographical and societal convergence (including health and social participation), structural and socio-economic adaptability (also including digital governance and data) ; & a focus on the role of youth. In concrete terms, the plan importantly focuses on climate-friendly retrofitting in the building sector, with a EU2.5 billion investment, while EUR 4.7 will be dedicated to the development and promotion of environmentally friendly modes of transport, and EUR 3.3 billion will be made available for carbon reduction and hydrogen research.

France invested US\$611 billion in fiscal measures, including support to the transport sector- notably the EUR 7 billion conditional bailout of Air France. Another EUR 100 billion stimulus package included EUR 30 billion for a specific *Ecological Plan* agreed to in September 2020 to support environmental targets, including energy efficient building renovations, the decarbonization of industry, agricultural transition, green energy, and green transport. France's *Recovery and Resilience Plan* in 2021 considers similar investment areas as Germany. France will receive EUR 40 billion from the joint reconstruction pot to stimulate and financially support the nationally declared 100 EUR billion boost. The budget for the production and further development of renewable energies will be increased by EUR 2,3 billion per year. EUR 6-9 billion is to be made available for the renovation and further development of the building sector.

- **Correlation between stimulus packages and past climate policy**

The *Green Future Index 2021* ranks 76 countries based on their data in 2020 on five pillars: carbon emissions, energy transition, green society (notably including net deforestation, development of green buildings, recycling, and consumption of animal products), clean innovation and climate policy. The latest consists of an aggregate of different sub-scores including sustainable agriculture, carbon finance programmes, policy commitments towards carbon targets and, more importantly, a pandemic pivot. The latest is an assessment of the degree to which Covid-19 recovery packages will accelerate decarbonisation looking at 2 measures: energy transition impact (which scores countries by the proportion of stimulus spending directed at new initiatives versus fossil-fuels projects) and green stimulus initiatives (which scores countries by the percentage of total stimulus spending allocated to sustainable, low-carbon key public infrastructure projects). According to the *Index* analysis, the top 10 countries in terms of pandemic pivot in 2020, which gives us an idea of how green these countries were in 2020, were: New Zealand, Singapore, France, Denmark, Costa Rica, Germany, India, Finland, South Korea, China and Nigeria.

To understand whether countries already doing well in terms of climate policy are also the ones that are actually invested in a lot of green projects in 2020, correlations between pandemic pivot and various environmental measures are calculated. As a result, a negative correlation is observed between pandemic pivot and carbon emission & energy transition for countries with the best pandemic pivot. No relationship is identified between green innovation and pandemic pivot. Innovation levels are not correlated with the greenness of stimulus packages for the countries with the greenest packages. Finally, a positive correlation between climate policy and pandemic pivot is highlighted. This is an expected result considering that pandemic pivot is one of the sub scores in climate policy. In other words, countries that are doing better at energy transition, carbon emissions and green society measures did not put in place strong green stimulus packages and, reversely, countries that had greener stimulus packages scored low and were the laggards regarding these indicators.

- **The EU stimulus package and the creation of a truly impactful climate policy**

With respect to the former pandemics, Covid-19 differs in the mass of people impacted and its system of transmission, which obligated many countries to close most activities. This transformational event generated a very deep economic disruption and change in markets that stimulus packages have been developed to respond to. These plans shall also be designed to tackle the opportunities connected to this crisis.

The EU package is combined with a series of conditional recommendations that are put in place in order to receive loans or grants, which will help their implementation. Another novelty is the plan's connection to an environmental approach of Europe towards climate problems. The EU set very clear guidelines in terms of what percentage should be directly used towards green, the digital economy and reforms. Putting forward its very ambitious climate targets and identifying the role of the EU as a sort of environmental *engineer of the world* is a way to make Europe a leader on the green and no carbon technology market that will become major in the future.

However, despite the will of the European Commission to obtain results, many national plans fall short in respecting, for instance, the boundary for climate related investments that was set at 37%. Indeed, many of the proposed investments that are marketed as climate friendly are not fully climate framed. Furthermore, national plans should use the budget for new investments that promise to boost the transition towards a climate neutral future. In order to do this, plans should work harder on developing lead markets for new technologies so that the given countries can have a good position for entering into high added value segments of the new value chains. National plans should intervene with additional investments where markets would not be able to because of high risks or of the public sphere aspect of the given intervention. A best practice, for example, is to constitute league markets to support this development and boost private markets towards the future. In the U.S plan, for instance, it takes the form of US\$ 35 billion in R&D across federal agencies. A lot of that funding ends up being used in partnerships with private companies to develop technologies that can accelerate into the marketplace. The funding will also go towards some deployment and demonstration projects. There is as well a proposal to capitalize a green or climate bank which would help to leverage private funding to really put these technologies out into leading marketplaces.

One shall note that not all countries have the experts and institutions to build good climate policies. These abilities must be boosted to see the European Green Deal succeed. The will also depend on political orientation and the need of national governments to respond to their own voters. Countries also have a different mix of resources and stakeholders. In other words, one needs to take EU countries differences into consideration in order to raise everybody to the desired level.

- **The U.S recovery Plan**

- **The importance of a climate focus recovery**

The U.S is currently the world's largest historical emitter of greenhouse gases (GHGs), which gives the country a moral responsibility to lead the transition and meet its National Determined Contribution (NDC) of reducing emissions by 50-52% by 2030. The plan is designed to jump-start the transition to a clean energy economy. It does not only focus on creating jobs and reaching climate goals, but also on doing so while improving environmental equity and justice, increasing the power of U.S workers and helping to deliver a just transition to fuel workers in their communities. These aspects are important to consider given that inequality tends to rise during pandemic events. This bill, which will be negotiated with Congress, offers an integrated approach to address the most pressing problems, while also making sure that we do not create new ones at the same time. This perspective appears as a new way of looking at things in American climate politics, when compared to other recovery bills responding to COVID-19, which focused primarily on keeping families and businesses afloat during the worst of the pandemic.

Looking at this climate change package from an economic perspective, some of the key pieces in the document include roughly US\$ 2 trillion in total stimulus related spending, with somewhere in the ballpark of a trillion going directly towards combatting climate change and its impacts. It is nearly two orders of magnitude larger than the US\$ 90 billion in clean energy funding that was included in President Obama's recovery plan in the 2009 recession.

- **Electricity and transportation**

The transition to clean electricity and zero carbon transportation are crucial sectors for the US' success in fighting climate change.

The electricity sector is indeed going to be both the backbone of the clean economy and the source of the vast majority of the near-term emissions reductions. The plan recognizes the need for significant investment into cleaning up the sector, notably through subsidies for clean electricity generation, investment incentives to build new transmission infrastructure, as well as new funding for research and development improving the needed technologies and reducing their costs. Most critically, it also includes a proposal for an enforceable requirement upon utilities for clean electricity standard, which would be designed to achieve 100 clean electricity by 2035. In terms of recovery policy, investments in the electricity sector could result in a net gain of more than 600 000 jobs annually in the US over the next decade.

Electricity for transportation, transportation and particularly road transportation, is the largest source of climate pollution in the US and a major cause of air pollution. This is particularly true for communities

living close to highways, ports and freight centers, which are more likely to be in low-income communities or communities of color. On-road transportation is another technological sector that needs to be tackled. However, it does take time to roll out Electric Vehicles (EV) and charging stations across the country, and even longer for the vehicle fleet to turn over, which makes it critical for the U.S to get started today in putting these trends in motion. The plan proposes hundreds of billions of dollars of investment in clean transportation, including US\$ 174 billion specifically to build 500 000 EV charging stations and boost EV manufacturing and sales. Additional billions will focus on expanding and electrifying the country's public transportation. However, unlike in the electricity sector, there are no enforceable mechanisms within the plan, and there are some gaps in investment. For instance, medium and heavy-duty vehicles do not receive nearly as much investment as what is needed to really electrify this high pollution sector.

Looking at the package as a whole, it is not sufficient to meet the NBC, but it does set the economy up to move in the right direction as a highly strategic plan to simultaneously address the need for equity and justice, to fight for stronger protections for workers and for a just transition for fossil dependent communities. To stand the test of time, a solution needs broad support and to bring together stakeholders from all sides in order to tackle climate change from multiple different perspectives, not just an environmental one.