For the EU's 'Green Deal' to succeed, economic theory must take into account qualitative growth

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The Bełchatów Power Station in Poland is one of Europe's largest coal-fired plants and highest emitters of CO_2. Credit: Morgre/Wikimedia, CC BY

The goal of the EU's ambitious new "Green Deal" is to put Europe on a path toward zero emissions and sustainable growth decoupled from resource use.

The plan marks a sharp departure from traditional ecological approaches that have typically called for reduction of consumption and, therefore, de-growth. Despite abundant warnings from scientists about the danger of climate change, fear of de-growth is why many governments and much of the business community have long shunned ecological issues. There was a widespread belief that ecological constraints, however meritorious, would necessarily limit consumption and thus cut corporate profits. At the same time, there was the widespread belief that technology would solve the problem of scarcity of natural resources.

Now, concern about climate change and other ecological issues have captured the attention of business and political leaders. There is a change of attitude of business and political leaders who look at mitigating climate change as a profitable technology change and look at sustainable growth as a realistic alternative to de-growth.

Going green

At the end of 2019, Ursula von der Leyen, president of the European Union, presented the European Green Deal, an ambitious plan to make Europe an economy where:

- there are no net emissions of greenhouse gases by 2050,
- economic growth is decoupled from resource use,
- no person and no place is left behind.

The EU has committed 1 trillion euros to the plan. In the United States, in a dramatic reversal from the previous administration, President Joe Biden has declared that climate change is a defining priority and has launched a $4 trillion plan for "Clean Energy Revolution and Environmental Justice".

Under the Green Deal, Europe's economy would progressively reduce to zero emissions of greenhouse gases and grow without causing depletion of natural resources. But how can these goals be achieved?

The progressive reduction of greenhouse-gase emissions is an immense technology-change program, replacing fossil fuels with energy based on clean sources. However, growth de-coupled from resource use is a conceptually more complex problem. A partial answer, explicitly mentioned in the Green Deal, is provided by implementing a circular economy where human artifacts are continuously reused and redesigned. But only a fraction of a modern economy can become circular. Moreover, due to negative entropy flow, circularity requires large amounts of energy.

Quality, not quantity

Under the Green Deal's ecological constraints, economic growth can be achieved by increasing the quality of products and services—but only if it's taken into account. Qualitative growth is essentially a process of increasing information and complexity of an economy without use of natural resources.

What is the likely path to qualitative growth? Under the Green Deal, sources of energy based on fossil fuels will be replaced by a new generation of clean energy. We also need to reduce and possibly eliminate both biological and industrial pollution and avoid depletion of natural resources.

Under such constraints, firms will find it difficult to grow in the classical sense by manufacturing more products. They must therefore seek to innovate and create products of higher quality and, ultimately, complexity. Simply put, firms will create information and complexity—for example, the aesthetic dimension of artifacts, including buildings and cities, art, culture, health care and medicine, food, intelligent travel. It will be the creative effort of firms and governments that will produce qualitative growth.

An important consequence is that both economic theory and economic decision-making need to be able to measure and model qualitative growth and to recognize that qualitative growth is genuine growth. If economics does not understand and measure quality, the Green Deal risks to be perceived as de-growth.

Current macroeconomic models are not able to model qualitative changes. They attempt to model the quantity of output, with the very strong assumption that an economy produces only one final good or, equivalently, a composite good. But in reality, economies produce a large number of heterogeneous products and services subject to a process of innovation and change. All these cannot be aggregated by any physical measure and therefore one cannot measure the quantity of output. It would be tempting to create an index considering the rates of change of each variable, but indexing does not work in the presence of change and innovation.

The only possible aggregation is aggregation by price. This is what is done in practice in the political and economic discourse to measure economic output. All advanced economies compute their gross domestic product (GDP), which is the sum of the value of all domestic consumption transactions. But the GDP is subject to a fundamental issue : As prices are only relative prices, how do we compare GDP in different moments? How do we separate real growth from inflation?

Measuring economic complexity

We compare GDP in different moments by computing the consumer price index (CPI), which is used to compute inflation rates. The nominal

GDP, which is the sum of all domestic consumption transactions at current prices, is deflated by the CPI to yield the real GDP. The CPI is an index computed selecting a basket of goods and services and computing its price change over a given period. But this procedure completely misses changes of prices due to qualitative changes.

This is a well-known problem. The Boskin commission, created in 1995 by the US government to study possible improvement to the measurement of inflation, concluded that inflation is largely overstated because if does not consider qualitative changes. This opinion is shared by eminent economists such as the late Martin Feldstein.

To measure sustainable economic growth, we need a generalized notion of inflation that takes into account both quality and quantity. There are several ways to achieve this goal. The simplest consists in stipulating that the most innovative segments of the economy have zero inflation. Other solutions include the adoption of measures of economic complexity.

These are not academic theoretical issues. If we continue to discount nominal GDP by CPI as it is currently computed, we risk that, under the Green Deal constraints, the European economy will appear to be in recession as its innovation efforts without using natural resources will be ignored. If economic theory fails to understand quality and to promote its measurement, then it will lose its role in supporting decision-making. Major efforts for arriving at a sustainable economy will be frustrated by naively, and falsely, concluding that an otherwise flourishing, highly qualitative economy be in recession.

If we want to achieve sustainable growth under the constraint that consumption is independent from the use of natural resources, we should move along the path of qualitative growth. This implies that quality improvement be considered genuine growth. If economics has to play a role in supporting decision-making, it must understand qualitative development and be able to measure qualitative growth.

In a February 17 webinar organized by the Taylor Institute of the Franklin University, Lugano, Switzerland and by the CFA society, Milan, Italy, one of the authors of this article, Sergio Focardi, outlined how future growth respectful of ecological constraints will be qualitative growth. Focardi also discusses how qualitative growth requires economic theory to gain the ability to understand and model qualitative growth.

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