Does the fall in the stock market risk amplifying the crisis?

By Christophe Blot and Paul Hubert

The Covid-19 crisis will inevitably plunge the global economy into recession in 2020. The first available indicators – an increase in the unemployment rolls and in partial unemployment – already reveal an unprecedented collapse in activity. In France, the OFCE's assessment suggests a 32% cut in GDP during the lockdown. This fall is due mainly to stopping non-essential activities and to lower consumption. The shock could, however, be amplified by other factors (including rises in some sovereign rates, falling oil prices, and capital and foreign exchange movements) and in particular by the financial panic that has spread to the world's stock exchanges since the end of February.

Since 24 February 2020, the first precipitous one-day fall, the main stock indexes have begun a decline that accentuated markedly in the weeks of March 9 and 16, despite announcements from the Federal Reserve and then the European Central Bank (Figure 1). As of 25 April,

France’s CAC-40 index had
fallen by 28% (with a low of -38% in mid-March), -25% for the German index and nearly
-27% for the European Eurostoxx index. This stock market crash could revive
fears of a new financial crisis, only a few years after the subprime crisis. The
fall in the CAC-40 in the first few weeks was in fact steeper than that
observed in the months following the collapse of Lehman Brothers in September
2008 (Figure 2).

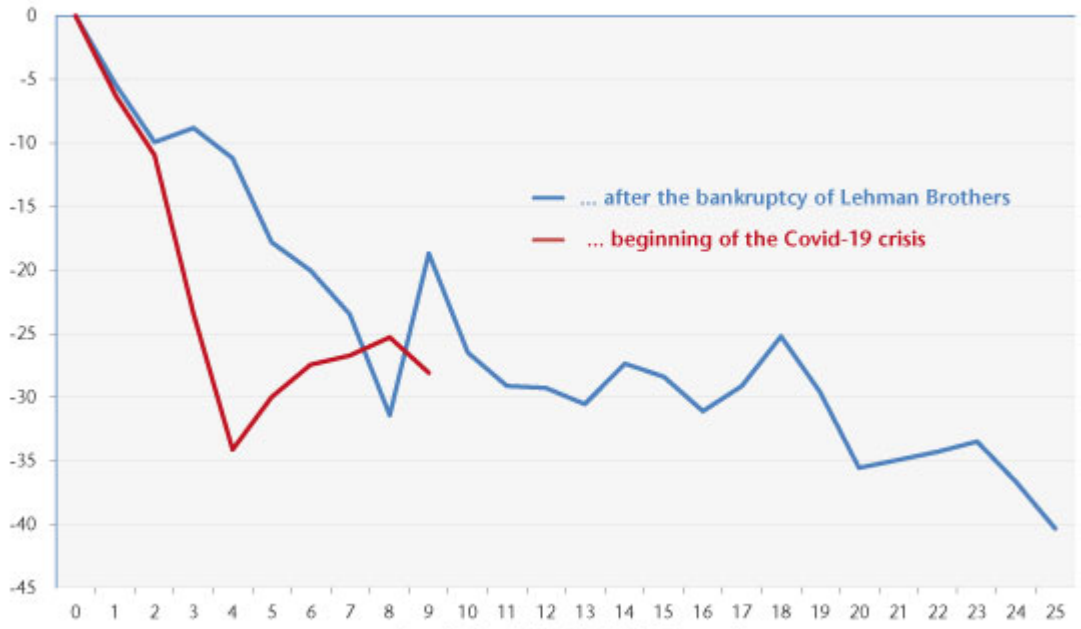
Figure 1. Changes in the main stock market indexes

Source: Eikon Datastream. Base 100: average for the year 2019.

While the short-term impact
of the Covid-19 crisis could prove to be more severe than that of the 2008
financial crisis, the origin of the crisis is very different – hence the need
to reconsider the impact of the stock market panic. In the financial crisis,
the origin was in fact a banking crisis, fuelled by a specific segment of the

US real estate market, the subprime market. This financial crisis then caused a drop-off in demand and a recession through a variety of channels: higher risk premiums, credit rationing, financial and real estate wealth effects, uncertainty, and so on. While some of these elements can be found today, they are now being interpreted as the consequence of a health crisis. But if there is no doubt that this is at the outset a health and economic crisis, can it trigger a stock market crash?

Figure 2. Fall in France's CAC-40 index in the Covid-19 crisis compared with the post-Lehman Brothers collapse



Source: Eikon Datastream.

Another way of posing the question is to ask ourselves whether the current stock market fall is due entirely to the economic crisis. Share prices are in fact supposed to reflect future changes in a company's profits. Therefore, expectations of a recession, as demand – consumption and investment – and supply are constrained, must

result in a reduction in turnover and future profits, and therefore a fall in share prices.

However, the financial shock could be magnified if the fall in stock prices is greater than that caused by the decline in corporate profits. This is a thorny issue, but it is possible to make an assessment of a possible over-adjustment of the stock market, and thus of a possible financial amplification of the crisis. The method we have used is to compare changes in profit expectations (by financial analysts) since the beginning of the Covid-19 crisis with the fall in equities.
Focusing on CAC-40 companies, profit expectations for next year have been cut in the last three months by 13.4% [1]. This reduction should therefore be fully reflected in the change in the index. In fact, the fall there was much larger: -28%. This would result in an amplification of the financial shock by just under 15 percentage points.

This over-adjustment by the stock market can be explained by, among other things, the current prevailing uncertainty about the way lockdowns around the world will be eased, and thus about an economic recovery, as well as uncertainty about the oil shock that is unfolding concomitantly, with determinants that are both economic and geopolitical. This over-adjustment may therefore not be wholly

irrational (with regard to the supposed efficiency of financial markets), but the fact remains that it has led to major variations in the financial assets of consumers and business.

Variations like these are not neutral for economic growth. On the consumer side, they contribute to what are called the wealth effects on consumption: additions to a household's assets give it a sense of wealth that drives it to increase its consumption [2]. This effect is all the greater in countries where household assets are in the main financialized. If a large portion of household wealth is made up of equities, then changes in share prices strongly influence this wealth effect. The portion of shares (or of investment funds) in financial assets is quite similar in France and the United States, respectively 27% and 29%. However, these assets account for a much larger share of the disposable income of American households: 156%, compared to 99.5% in France. As a result, French households are less exposed to changes in share prices. Empirical studies generally suggest a greater wealth effect in the United States than in France [3].

As for business, these changes in stock market valuations have an effect on investment decisions through collateral constraints. When a company takes on debt to finance an

investment project, the bank demands assets as collateral. These assets can be
either physical or financial. In the event of an increase in equity markets, a
company’s financial assets increase in value and allow it greater access to credit
[4]. This mechanism is potentially important today. At
a time when companies have very large cash requirements to cope with the brutal
shutdown of the economy, the sharp decline in their financial assets is restricting
their access to lines of credit. While the financial amplification factors are
not reducible to the financial shock, the recent changes in the prices of these
assets are nevertheless giving an initial indication of how the financial
system is responding to the ongoing health and economic crises.

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[1] The data comes from Eikon Datastream, which for each
company provides analysts’ consensus on the earnings per share (EPS) for the
coming year and the following year. We then calculated the weighted average using
the weight of each CAC-40 company in the index of the change in these
expectations over the past three months. The fact that a 13.4% decline in
profit expectations for the next year will give rise to a 13.4% decline in the
stock price is made on the assumption that profits beyond the next year are not
taken into account, or, in other words, that their current net value is zero,

which is to say that investors' preference for the present is very strong
today.

[2] More formally, we can speak of a propensity to
consume that increases as wealth increases. Wealth effects can be
distinguishable according to whether they are purely financial assets or also
include property assets.

[3] See Antonin, Plane and Sampognaro (2017) for a summary of these estimates.

[4] See Ehrmann and Fratzscher (2004) and Chaney, Sraer and Thesmar (2012) for empirical assessments of this transmission channel
via share prices or property prices, respectively.

The Covid-19 passport and the risk of voluntary infection

By Gregory Verdugo

Covid-19 has made it
risky to have a job that cannot be done remotely and requires contact with the
public. Given the danger of infection facing frontline workers, employers confront
the risk of legal consequences in the event of insufficient protection. This
new risk could lead to changes in the characteristics of the workers being hired,

as the threat of lawsuits creates an incentive to discriminate by choosing workers who are least at risk for these positions. As long as the Covid-19 virus is in circulation, we could therefore witness the rise of a powerful new source of discrimination in the labour market based on the risk of serious infection. But according to some epidemiologists, the virus could be circulating and creating episodic outbreaks for 18 to 24 months [1], with the result that Covid-19 could leave a lasting imprint on the job market.

Which workers are least at risk? First, there are those with no apparent co-morbidities, which means that individuals who are obese may face even more pronounced discrimination on the labour market [2]. However, the main easily identifiable group at lower risk are the young, since the under-30s face a very low risk of developing a serious form of Covid-19 [3]. This situation is unprecedented – for the first time, we're experiencing a recession where young people are less affected than more senior employees!

But while the young are less at risk, there is one group of individuals for whom the risk could be even lower. Experience with other viruses suggests that individuals who have previously contracted Covid-19 gain at least temporary

immunity from future infection [4]. Although such immunity remains uncertain and controversial [5], some employers may want to test their employees, especially those in at-risk positions, to rule out the danger of infection attributable to their professional activity.

Information on the state of an employee's immunity could therefore be very valuable for an employer – so much so, in fact, that it could lead to the development of low-quality private tests and a risk that false immunity certificates could proliferate. To avoid these risks, many countries are considering creating immunity passports certifying that a worker has already contracted Covid-19 and is, at least in the short term, safe from the risk of infection [6]. Chile has announced that it is implementing such a policy, and it is under discussion in various European countries.

An immunity passport is expected to provide high wages in labour markets wracked by Covid-19, particularly in high-risk jobs, including those requiring close contact with infected people, such as in hospitals. In turn, in an economy in crisis, an immunity passport guaranteeing well-paid employment could generate high demand for voluntary infection among those in direst need.

This possibility of self-infection when immunity is socially valued

or economically profitable is not merely a theoretical question. In an article published in 2019, historian Kathryn Olivarius of Stanford University showed that there are numerous historical precedents [7]. Being recognized as having immunity was in particular an essential condition for economic integration during the colonization of tropical zones, where infectious diseases were decimating the colonists. In the early 19th century, immigrants recently arriving in New Orleans were said to be “non-acclimated”, and sought to quickly suffer and survive yellow fever, which at that time had an estimated mortality rate of about 50%, which is well above that of Covid-19, currently estimated at between 0.3% and 1%. To integrate, you had to prove that you survived the infection and thus became “acclimated”. Only after becoming “acclimated”, with the risk of early death being ruled out, did it become possible to have access to the best jobs in the local labor market, to get married and to access credit from local banks.

If a Covid-19 immunity passport is developed, it will in a similar manner foster a dangerous temptation to become infected in order to gain access to jobs where the risk of infection is high but wages are also high. The temptation to self-infect would be even stronger in the case of Covid-19, the consequences of infection are usually benign. But voluntary infection could lead to risky behaviour:

one can imagine
individuals trying to get infected, and in doing so spreading the disease
around them, especially if they remain asymptomatic.

Alex Tabarok, a professor
of economics at George Mason University, argues that the issue of immunity
passports by the public authorities would also imply the need to regulate the demand
for voluntary infection that this would give rise to. So the public authorities
should offer the possibility of infection in moderate doses, in a medical
setting and by ensuring medical follow-up during a period of quarantine
following voluntary infection.[8]

The supervision of a
voluntary infection motivated by the desire to obtain an immunity passport clearly
poses ethical problems. First, it would be individuals in the most precarious
situations, especially those most affected by the recession, who would volunteer.
Furthermore, it is not certain that medical supervision reduces the risk of
death or serious sequelae. Above all, voluntary infection contradicts the apparent
policy goal today, which is to curb the epidemic as much as possible, as the
possibility of achieving collective immunity seems distant. So such an approach
is for the moment dangerous.

To be consistent with
the goal of suppressing the epidemic, it therefore appears necessary to discard

the policy of immunity passports, which give value to having been infected. As is set out in the French protocol for lifting the lockdown [9], it is also necessary to ensure that the private market does not fuel this demand and that companies don't create their own immunity passports or try to acquire information about immunity through other means. While a rule like this might seem paradoxical, the risk of self-infection can be eliminated only if a non-discrimination rule is imposed that prohibits employers from using or requesting the results of serological tests to employ workers in high-risk positions and that also bars employees from revealing their immunity status.

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The essential, the useless and the harmful (part 3)

By Éloi Laurent

Is humanity a pest?
For the other beings of Nature who find it increasingly difficult to coexist
with humans on the planet, the answer is unambiguous: without a doubt.

Life on earth, 3.5
billion years old, can be estimated in different ways. One way is to assess the respective biomass of its components. It can then be seen that the total biomass on
Earth weighs around 550 Gt C (giga tonnes of carbon), of which 450 Gt C (or
80%) are plants, 70 Gt C (or 15%) are bacteria and only 0.3% are animals.
Within this last category, humans represent only 0.06 Gt C. And yet, the 7.6
billion people accounting for only 0.01% of life on the globe are on their own responsible
for the disappearance of more than 80% of all wild mammals and half of all plants.

This colossal crisis
in biodiversity caused by humanity, with premises dating back to the extermination of megafauna in the
prehistoric age
(Pleistocene), started with the entry into the regime of industrial growth in
the 1950s, with the onset of the "great acceleration".

This is now well
documented: while nearly 2.5 million species (1.9 million animals and 400,000
plants) have been identified and named, convergent studies suggest that their
rate of extinction is currently 100 to 1000 times faster than

the rhythms known on Earth during the last 500 million years. This could mean that, due to human expansion, biodiversity is on the brink of a sixth mass extinction. Whether we observe these dynamics in section or longitudinally, at the level of certain key species in certain regions or by turning to more or less convincing hypotheses on the total potential biodiversity sheltered by the Biosphere (which could amount to 8 million species), the conclusion is obvious: while humans are thriving, the other species are withering away, with the exception of those that are directly useful to people.

But this destruction of biodiversity is of course also an existential problem for humans themselves. According to a causal chain formalized two decades ago during an evaluation of ecosystems for the millennium, biodiversity underpins the proper functioning of ecosystems, which provide humans with “ecosystem services” that support their well-being (recent literature evokes in a broader and less instrumental way “the contributions of Nature“). This logic naturally also holds in reverse: when humans destroy biodiversity, as they are massively doing today through their agricultural systems, they degrade ecosystem services and, at the end of the chain, undermine their own living conditions. The case of mangroves is one of the most telling: these maritime ecosystems promote animal reproduction, store carbon and constitute

powerful natural barriers against tidal waves. By destroying them, human communities are becoming poorer and weaker.

The start of the 2020 decade, the first three months of which were marked by huge fires in Australia and the Covid-19 pandemic, is clearly showing that destroying Nature is beyond our means. The most intuitive definition of the unsustainability of current economic systems can therefore be summed up in just a few words: human well-being destroys human well-being.

How do we get out of this vicious spiral as quickly as possible? One common sense solution, known since Malthus and constantly updated since then, is to suppress humanity, in whole or in part. Some commentators are taking note of how much the Biosphere, freed from the burden of humans, is doing better since they have been mostly confined. If we turn off the source of human greenhouse gas emissions, it is of course likely that they will fall sharply. Likewise, if the sources of local pollution in urban spaces, for example in Paris, are turned off, the air there will be restored to a remarkable quality. It is also likely that we will see an improvement in the lot of animal and plant species during this period, much as in areas like the Chernobyl region that humans were forced to abandon. But what good is clean air when we are deprived of the right to breathe it for more than a few moments a day?

In reality, even if

confinement has led to a constrained and temporary sobriety, its long-term impact is working fully against the ecological transition. All the mechanisms of social cooperation that are essential to transition policies are now at a standstill, except for market transactions. To take simply the example of climate policy, the very strategic COP 26 gathering has already been postponed to 2021, the next IPCC Assessment Report has been slowed down, the full, comprehensive outcome of the efforts of the Citizen climate convention has been compromised, and so on. And a heat wave under lockdown cannot be excluded!

The point is that it is not a matter of neutralizing or even freezing social systems to "save" natural systems, but of working over the long-term on their social-ecological articulation, which is still a blind spot in contemporary economic analysis.

The fact remains that the current social emergency is forcing governments around the world to work here and now to protect their populations, particularly the most vulnerable, from the colossal shock that is simultaneously hitting economic systems around the world. The notion of essential well-being can rightly serve as a compass guiding these efforts, which could focus on sectors vital to the whole population in the months and years to come, subject to the imperative of not further accelerating the ecological crisis. Essential well-being and

non-harmful
well-being could converge to meet the present urgency and the needs of the
future. How, precisely?

Let us briefly return
to the different dimensions of essential well-being outlined in the first post
in this series. Public health and the care sector are clearly at the centre of
essential well-being, understood as human well-being which works for its
perpetuation rather than for its loss. The medical journal *The Lancet*
has highlighted in recent years the increasingly tangible links between health and
climate, health and various pollutants, health and biodiversity, and health and
ecosystems. Care for ecosystems and care for humanity are two sides of the same
coin. But the issue of environmental health must be fully integrated, including
here in France, with the new priority on health. Investing in public services
beyond the health system is also a guarantee that essential well-being is shared
most equitably.

This temporal coherence
is complicated by the necessary reinvestment in essential infrastructure. Food
supply systems in France and beyond, from agricultural production to retail
distribution, are today far too polluting and destructive to both human health
and ecosystems. Food systems already engaged in the ecological transition

should be given priority in order to promote their generalization. Likewise, the energy required for infrastructure, particularly urban infrastructure (water, electricity, waste, mobility, etc.) is still largely fossil-fuelled, even though in just five years a global metropolis like Copenhagen has given itself the means to obtain supplies from 100% renewable energy. We must therefore accelerate the move for energy and carbon sobriety – we have all the means needed. Finally, the issue of the growing ecological footprint of digital networks can no longer be avoided, when essential infrastructures, such as heating networks and waste collection, work very well in a "low-tech" mode.

The notion of essential well-being can therefore be useful for the "end of the crisis", provided that we remain faithful to the motto of those to whom we owe so much: first, do no harm.

The essential, the useless and the harmful (part 2)

By Eloi Laurent

How do we know what we can do without while continuing to live well? To clarify

this sensitive
issue, economic analysis offers a central criterion, that of the useful, which
itself refers to two related notions: use and utility.

First of all, and
faithfully to the etymology, what is useful is what actually serves people to
meet their needs. From the human point of view, then, something is useless that
doesn't serve to meet people's needs. Amazon announced on March 17 that its warehouses would now store only "essential goods" until April 5, and defined these as follows in the context of the
Covid-19 crisis: "household staples, medical supplies and other high-demand
products". The ambiguity of the criterion for the useful is tangible in this
definition, which conflates something of primary necessity and something that
emerges from the interplay of supply and demand. While giving the appearance of
civic behaviour, Amazon is also resolutely in line with a commercial
perspective.

Furthermore, this
first criterion of the useful leads into the oceanic variety of human
preferences that punctuate market movements. As Aristotle recalls in the first
chapter of the Nicomachean ethics,
the founding text of the economics of happiness written almost two and a half
millennia ago, we find among individuals and groups a

multiplicity of conceptions of what constitutes a good life. But contrary to the thoughts of Aristotle, who erected his own concept of happiness as well-being that is superior to others, it is not legitimate to prioritize the different conceptions of a happy life. Rather, a political regime based on liberty is about ensuring the possibility that the greatest number of “pursuits of happiness” are conceivable and attainable so long as none of them harms others.

But the Aristotelian conception of happiness, which emphasizes study and the culture of books, is no less worthy than any other. Are bookstores, as professionals in the sector argued at the start of the lockdown in France, essential businesses just like earthly food businesses? For some, yes. Can they be considered useless at a time when human existence is forced to retreat to its vital functions? Obviously not.

Hence the importance of the second criterion, that of utility, which not only measures the use of different goods and services but the satisfaction that individuals derive from them. But this criterion turns out to be even more problematic than that of use from the point of view of public policy.

Classical analysis, as founded for example by John Stuart Mill following on from Jeremy Bentham, supposes a social welfare function, aggregating all individual

utilities, which
it is up to the public authorities to maximize in the name of collective
efficiency, understood here as the optimization of the sum of all utilities. Being
socially useful means maximizing the common well-being thus defined. But, as we
know, from the beginning of the 20th century, neoclassical analysis called into
question the validity of comparisons of interpersonal utility, favouring the
ordinal over the cardinal and rendering the measure of collective utility
largely ineffective, since, in the words of Lionel Robbins (1938), “every
spirit is impenetrable for every other, and no common denominator of feelings
is possible”.

This difficulty with
comparison, which necessitates the recourse to ethical judgment criteria to
aggregate preferences, in particular greatly weakens the use of the statistical
value of a human life (“value of statistical life”, or VSL) in efforts to base
collective choices on a cost-benefit monetary analysis, for example in the area
of environmental policy. Do we imagine that we could decently assess the “human
cost” of the Covid-19 crisis for the different countries affected by crossing the VSL values calculated, for example by the OECD,
with the mortality data compiled by John Hopkins University? The economic analysis of environmental issues
cannot in reality be limited to the criterion of efficiency, which is itself

based on that of utility, and must be able to be informed by considerations of justice.

Another substantial problem with the utilitarian approach is its treatment of natural resources, reources that have never been as greatly consumed by economic systems as they are today – far from the promise of the dematerialization of the digital transition underway for at least the last three decades.

The economic analysis of natural resources provides of course various criteria that allow us to understand the plurality of values □□of natural resources. But when it comes to decision-making, it is the instrumental value □□of these resources that prevails, because these are both more immediate in terms of human satisfaction and easier to calculate. This myopia leads to monumental errors in economic choices.

This is particularly the case for the trade in live animals in China, which was at the root of the Covid-19 health crisis. The economic utility of the bat or the pangolin can certainly be assessed through the prism of food consumption alone. But it turns out both that bats serve as storehouses of coronavirus and that pangolins can act as intermediary hosts between bats and humans. So the disutility of the consumption of these animals (measured by the economic consequences of global or regional pandemics caused by coronaviruses) is infinitely greater than the

utility provided by their ingestion. It is ironic that the bat is precisely the animal chosen by Thomas Nagel in a classic article from 1974 aimed at tracing the human-animal border, which wondered what the effect was, from the point of view of the bat, of being a bat.

Finally, there appears, halfway between the useless and the harmful, a criterion other than the useful: that of "artificial" human needs, recently highlighted by the sociologist Razmig Keucheyan. Artificial is understood here in the dual sense that these needs are created from scratch (especially by the digital industry) rather than spontaneously, and that they lead to the destruction of the natural world. They contrast with collectively defined "authentic" needs, with a concern for preserving the human habitat.

At the end of this brief exploration, while it may seem rather difficult to determine the question of useful (and useless) well-being, it nevertheless seems… essential to better understand the issue of harmful well-being. This will be the subject of the last post in this series.

The essential, the useless and the harmful (part 1)

Éloi Laurent

The Covid-19 crisis
is still in its infancy, but it seems difficult to imagine that it will lead to
a "return to normal" economically. In fact, confinement-fuelled reflections
are already multiplying about the new world that could emerge from the
unprecedented conjunction of a global pandemic, the freezing of half of
humanity, and the brutal drying up of global flows and the economic activity.
Among these reflections, many of which were initiated well before this crisis,
the need to define what is really essential to human well-being stands out:
what do we really need? What can we actually do without?

Let us first reason
by the absurd, as Saint-Simon invited us to do back in 1819. "Suppose that
France suddenly loses … the essential French producers, those who are
responsible for the most important products, those who direct the works most useful
to the nation and who render the sciences, the fine arts and the crafts
fruitful, they are really the flower of French society, they are of all the

French the most useful to their country, those who procure the most glory, who add most to its civilization and its prosperity: the nation would become a lifeless corpse as it lost them… It would require at least a generation for France to repair this misfortune…". It is in the mode of the parable that Saint-Simon thus tried to explain the hierarchical reversal that the new world of the industrial revolution implied for the country's prosperity, which could henceforth do without the monarchical classes, in his view, whereas "Science and the arts and crafts" had become essential.

Adapting Saint-Simon's parable to the current situation amounts to recognizing that we cannot do without those who provide the care, guarantee the food supply, maintain the rule of law and the supply of public services in times of crisis, and operate the infrastructure (water, electricity, digital networks). This implies that in normal times all these professions must be valued in line with their vital importance. The resulting definition of human well-being resembles the dashboard formed by putting together the different boxes in the pandemic travel certificates that every French person must fill out in order to be able to move out of their confinement.

But it is possible to flesh out this basic reflection by using the numerous studies carried out over

the decades on the measurement of human well-being, work which has greatly accelerated in the last ten years in the wake of the “great recession”. We can start by considering what is essential in the eyes of those questioned about the sources of their well-being. Two priorities have emerged: health and social connections. In this respect, the current situation offers a striking “well-being paradox”: drastic measures of confinement are sometimes being taken to preserve health, but they in turn lead to the deterioration of social connections due to the imposed isolation.

But how better to begin to positively identify the different factors in “essential well-being” that should now be the focus of public policy? Measuring poverty can help here in measuring wealth. The pioneering empirical work of Amartya Sen and Mahbub ul Haq in the late 1980s resulted in a definition of human development that the Human Development Indicator, first published by the United Nations in 1990, reflects only in part: “Human development is a process of enlarging people’s choices. The most critical of these wide-ranging choices are to live a long and healthy life, to be educated and to have access to resources needed for a decent standard of living. Additional choices include political freedom, guaranteed human rights and personal self-respect.”
More specifically, in the French case, the work undertaken in 2015 by the

National Observatory of Poverty and Social Exclusion (Onpes) on reference budgets, and extended in particular by INSEE with its "indicator of poverty in living conditions", has led to defining the essential components of an "acceptable" life (we could also speak of "decency").

But let's suppose that these measurement instruments contribute, upon recovery from the crisis, to defining an essential well-being (which key workers would maintain in the crisis situations that are sure to be repeated under the impact of ecological shocks); expertise alone would not be enough to trace its contours. A citizens' convention needs to take up the matter.

This is all the more so as the definition of essential well-being naturally evokes two other categories that are even more difficult to define, to which this blog will return in the coming days: useless (or artificial) well-being, that which can be dispensed with harmlessly; and harmful well-being, which we must do without in the future because in addition to being ancillary it harms essential well-being, in particular because it undermines the foundations for well-being by leading to the worsening of ecosystems (this is the debate taking place in Europe on whether it is necessary to save the airlines). The debate over essential well-being has just begun…

The transmission of monetary policy: The constraints on real estate loans are significant!

By Fergus Cumming (Bank of England) and Paul Hubert (Sciences Po – OFCE, France)

Does the transmission of monetary policy depend on the state of consumers' debt? In this post, we show that changes in interest rates have a greater impact when a large share of households face financial constraints, i.e. when households are close to their borrowing limits. We also find that the overall impact of monetary policy depends in part on the dynamics of real estate prices and may not be symmetrical for increases and decreases in interest rates.

From the micro to the macro

In a recent article, we use home loan data from the United Kingdom to build a detailed measure of the proportion of households that are close to their borrowing limits based on

the ratio of mortgage levels to incomes. This mortgage data allows us to obtain a clear picture of the various factors that motivated people's decisions about real estate loans between 2005 and 2017. After eliminating effects due to regulation, bank behaviour, geography and other macroeconomic developments, we estimate the relative share of highly indebted households to build a measure that can be compared over time. To do this, we combine the information gathered for 11 million mortgages into a single time series, thus allowing us to explore the issue of the transmission of monetary policy.

We use the time variation in this debt variable to explore whether and how the effects of monetary policy depend on the share of people who are financially constrained. We focus on the response of consumption in particular. Intuitively, we know that a restrictive monetary policy leads to a decline in consumption in the short to medium term, which is why central banks raise interest rates when the economy is overheating. The point is to understand whether this result changes according to the share of households that are financially constrained.

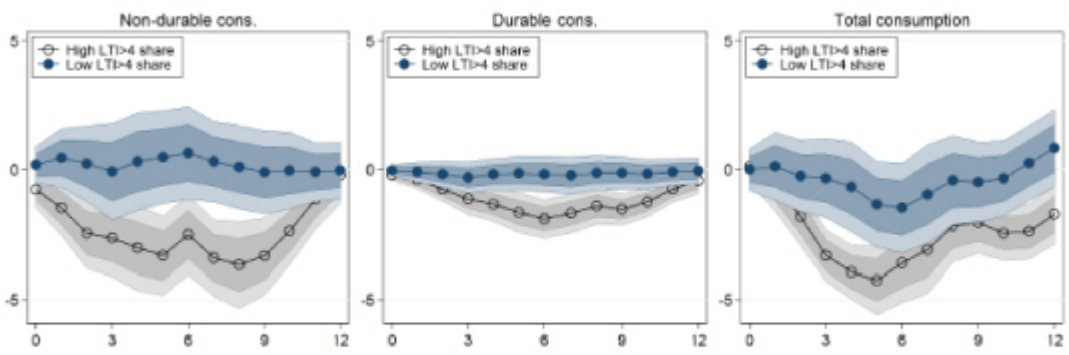
Monetary policy contingent on credit constraints

We find that monetary policy is more effective when a large portion of households

have taken on high levels
of debt. In the graph below, we show how the consumption of non-durable goods, durable
goods and total goods responds to raising the key interest rate by one
percentage point. The grey bands (or blue, respectively) represent the response
of consumption when there is a large (small) proportion of people close to
their borrowing limits. The differences between the blue and grey bands suggest
that monetary policy has greater strength when the share of heavily indebted households
is high.

It is likely that there are at least two mechanisms behind this differentiated effect: first, in an economy where the rates are partly variable[1], when the amount borrowed by households increases relative to their income, the mechanical effect of monetary policy on disposable income is amplified. People with large loans are penalized by the increase in their monthly loan payments in the event of a rate hike, which reduces their purchasing power and thus their consumption! As a result, the greater the share of heavily indebted agents, the greater the aggregate impact on consumption. Second, households close to their borrowing limits are likely to spend a greater proportion of their income (they have a higher marginal propensity to consume). Put another way, the greater the portion of your income you have to spend on paying down your debt, the more your consumption depends on your income. The change in income related to monetary policy will then have a greater impact on your consumption. Interestingly, we find that our results are due more to the distribution of highly indebted households than to an overall increase in borrowing.

Figure. The impact of monetary policy on consumption



Note: The grey line represents the response of the consumption of non-durable goods (on the left) and durable goods (in the centre) as well as of total consumption (on the right) to a one percentage point hike in the central bank's key interest rate when the share of households having a loan to income ratio (LTI) above 4 is high. The blue line represents the same response when the share of households with a loan to income ratio above 4 is low.
Source: Authors' calculations.

Our results also indicate some asymmetry in the transmission of monetary policy. When the share of constrained households is large, interest rate increases have a greater impact (in absolute terms) than interest rate cuts. This is not completely surprising. When your income comes very close to your spending, running out of money is very different from receiving a small additional windfall.

Our results also suggest that changes in real estate prices have significant effects. When house prices rise, homeowners feel richer and are able to refinance their loans more easily in order to free up funds for other spending. This may offset some of the amortization effects of an interest rate rise. On the other hand, when house prices fall, an interest rate hike exacerbates the contractionary impact on the economy, rendering monetary policy very powerful.

Implications

for economic policy

We show that the state of consumers' debt may account for some of the change in the effectiveness of monetary policy during the economic cycle. However, it should be kept in mind that macro-prudential policy makers can influence the distribution of debt in the economy. Our results thus suggest that there is a strong interaction between monetary policy and macro-prudential policy.

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[1] Which is the case in the United Kingdom.

Are our inequality indicators biased?

By Guillaume Allègre

The issue of inequality is once again at the heart of economists' concerns. Trends in inequality and its causes and consequences are being amply discussed and debated. Strangely, there seems to be a relative consensus about how to measure it [1]. Economists working on inequality use in turn the Gini index of disposable income, the share of income held by the

richest 10%, the inter-decile ratio, and so on. All these measures are relative in character: If the income of the population as a whole is multiplied by 10, the indicator doesn't change. What counts is the income ratio between the better off and the less well off. But could inequality and the way it changes be measured differently?

France's inequality monitoring body is currently discussing not only trends in the income ratio between the more and less well-off, but also changes in the income gap: "In one year, the richest 10% receive on average about 57,000 euros, and the poorest 10% 8,400 euros: a difference of 48,800 euros, equivalent to just over 3.5 years of work paid at the minimum wage (*Smic*). This gap rose from 38,000 euros in 1996 to 53,000 euros in 2011, then fell to 48,800 euros in 2017." Measuring changes in the income gap does not seem relevant. Let's take two people with incomes of 500 and 1,000 euros, then multiply their incomes by 10: the income ratio is stable, but the income gap is multiplied by 10. Has inequality increased, is it stable or has it decreased? Using the income gap as a measure, it has increased, but it is stable according to the ratio. We believe it may have actually decreased.

Indeed, in France today, the differences in living conditions, lifestyles and well-being are perhaps

greater between someone with an income of 500 euros, which leaves them in dire poverty, and someone with an income of 1,000 euros, which puts them at the poverty line, than between a person with an income of 5,000 euros, who can be described as well-off, and a person earning 10,000 euros, who can be described as very well-off. These last two people share similar lifestyles, even if the latter probably lives in a slightly larger and better-situated home, and frequents more luxurious restaurants. In other words, subtracting 10% of income from a very wealthy person probably has less impact than subtracting 10% from someone at the poverty line. There is abundant literature on risk aversion showing that people are willing to pay more than 10% of their income when it is high to protect against a 10% drop in income when it is low. This is, moreover, *one* of the justifications for a progressive tax: a greater percentage is taken from the better off, but the sacrifice is supposed to be equal because, according to marginalist theory, contributive capacity grows faster than income (or utility increases less than proportionately compared to income).

If this argument is accepted, we could conclude that at a constant level of relative inequality (Gini index, income ratio between the richest and poorest), *all other things being equal,* a richer society would in practice be more egalitarian, in the sense that its citizens share

a more comparable way of life or well-being. Intuition tells us that this is true for large gaps in wealth (such as the 10-fold increase in earnings in the example above). If this is true, then comparisons of relative inequality made over very long periods of time or between developed and developing countries need to be kept in perspective. When Thomas Piketty shows that the richest 10% captured 50% of income between 1780 and 1910, we could then conclude that inequality has decreased over that period!

Milanovic and Milanovic, Lindert and Williamson have developed concepts that take into account this wealth effect over a very long-term historical perspective: the "inequality frontier" is the maximum inequality possible in a society taking into account the fact that the society must guarantee the livelihoods of its poorest members (the minimum income to live): in an economy with very little surplus (where the average discretionary income is low), the maximum possible inequality will be low [2]; in a very well-off economy, the maximum possible Gini coefficient will be close to 100 percent [3]. The "extraction ratio" is the current Gini divided by the maximum possible Gini. The wealthier a country is, the lower the maximum possible Gini coefficient, and the more – at equal Ginis – the extraction ratio will be low. One could also calculate a "discretionary income Gini" (in the sense of disposable income minus the minimum

subsistence
income) [4].

It can be argued that
when comparing inequality in two societies at different levels of development,
the extraction ratio is a better indicator of inequality than the available
income Gini [5] or other indicators of relative inequality.
One conclusion reached by Milanovic et al.: “Thus, although inequality in historic
preindustrial societies is *equivalent*
to that of industrial societies today, ancient inequality was much larger when
expressed in terms of maximum feasible inequality. Compared to the maximum feasible
inequality, current inequality is much lower than that in ancient societies”.
According to the authors, in the early 2000s, the maximum possible Gini was
55.7 in Nigeria and 98.2 in the US: the comparison of inequality between the
two countries will then be very different depending on whether the indicator
chosen is the income Gini or the extraction ratio. On the other hand, there
will be little difference between the United States and Sweden (maximum
achievable Gini of 97.3) despite an average income difference of 45%. The
effect is in fact saturated since the Swedish income is already 40 times the
subsistence minimum (400 dollars per year in purchasing power parity) and the
American, 58 times. In the authors’ approach, the subsistence minimum is set in
purchasing power parity and is fixed between countries and

over time. But is the subsistence minimum really 400 dollars a year in Sweden today? When comparing inequality in the United States and Sweden today, is this subsistence minimum relevant? Taking a significantly higher minimum level of subsistence could change the comparison of inequality, even in developed countries (for a comparable living standards Gini, is Switzerland really more egalitarian than France?).
The problem then is to establish a minimum subsistence income amount [6].

The choice of an inequality indicator depends on the objective pursued. If the idea is to compare inequalities in living conditions across time or between countries, the discretionary income Gini might be relevant. On the other hand, if there is concern that excessively high incomes present a danger for democracy (a position developed in particular by Stiglitz in The Price of Inequality), the measure of relative inequality as calculated by the share of income captured by the wealthiest 1% seems more relevant.

When comparing countries that are closely related in terms of development, there are other, perhaps more important, limitations to comparing living standard Ginis. Given the same income inequality, a country where public spending on health, housing, education, culture, etc. is higher will (probably) be more egalitarian

(unless public
spending goes disproportionally to the better off). The issue of housing is
also important, as it weighs heavily in household budgets: all other things being
equal, high rents due to a constrained housing supply will increase inequality
(tenants are poorer on average today). But it is difficult to take into account
this effect in comparisons or trends, because the price of housing may reflect an
improvement in quality or better amenities. In addition, inequality between
landlords and tenants is not taken into account in the usual calculation of the
standard of living: with equal income, an owner who has finished repaying the
mortgage is better off than a tenant, but the fictitious rent that the owner receives
does not enter the calculation of their standard of living. Finally, and
without being exhaustive, the issue of hours of work and household production
also complicates the equation: a difference in income can be linked to a
difference in working hours, especially if one of the spouses in a couple (most
often the woman) is inactive or works part-time. However, the inactive spouse
can engage in household production (including childcare) that is not taken into
account in statistics: the difference in standard of living with the bi-active
couple is less than what is implied by the difference in incomes. Statistics do
not usually take this effect into account because it is difficult to assign a

value to household production.

It can be seen that
the measurement of income and the standard of living, and therefore inequality,
is imperfect. The wealth effect (at an equal standard of living Gini, a richer
society is probably more egalitarian, all things being equal) is a limit, among
others, some of which are probably more important when comparing developed
economies. On the other hand, this wealth effect could be relatively significant
if one wants to compare inequalities in living conditions between the France of
1780 and that of 1910 and a fortiori of today.

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[1] Whereas it was prominent from the early 1970s to the end of the
1990s: see in particular the work of Atkinson, Bourguignon, Fleurbaey and Sen.

[2] Milanovic et al.
give the following example: consider a society of 100 individuals, 99 of whom are
in the lower class. The subsistence minimum in this society is 10 units and the
total income 1,050 units. The sole member of the upper class receives 60 units.
The Gini coefficient associated with this distribution (the maximum possible Gini)
is only 4.7 percent.

[3] In fact, the
maximum possible Gini rises quickly: if in the previous country, the income

increases to 2,000 units and the dictator extracts all the surplus (1,010
units), the Gini leaps to 49.5.

[4] The disposable
income Gini, or the extraction ratio, shares some of the characteristics of the
Atkinson
index, including the idea of differentiating among the wealthiest
and the poorest. Nevertheless, the Atkinson index remains a relative indicator
of inequality: if all incomes are multiplied by 10, the indicator remains
constant. The index satisfies average independence, which is generally sought
among inequality indicators, but which we seek to go beyond here.

[5] The two indicators
do not measure the same concepts. First, it may be interesting to use several
indicators, but multiplying the number of indicators raises the problem of
readability, so one must choose. The choice of an indicator is based on a
normative judgment since, at least implicitly, the idea is to reduce inequality
according to the measure chosen (there is a consensus among economists that,
all else being equal, less inequality is preferable).

[6] Especially since
this income must be consistent over time or between countries if the objective
is to capture a trend or make a comparison.

Negative interest rates: Challenge or opportunity for Europe's banks?

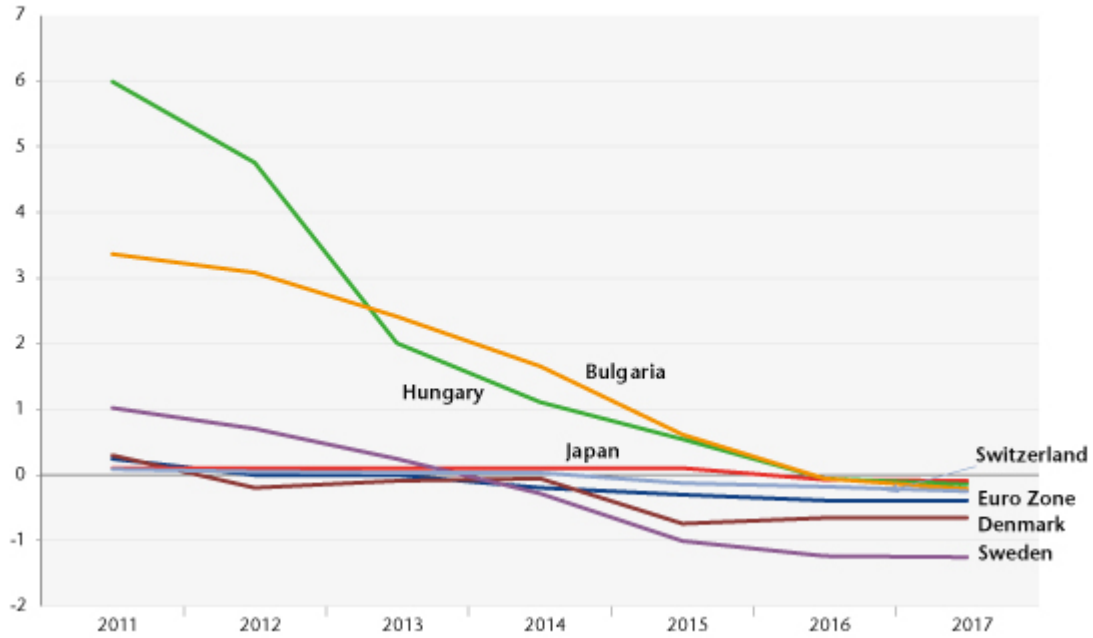
By Whelsy Boungou

It has been five years since commercial banks, in particular those in the euro zone, have faced a new challenge, that of continuing to generate profit in an environment marked by negative interest rates.

At the onset of the 2007-2008 global financial crisis, several central banks implemented new "unconventional" monetary policies. These consisted mainly of massive asset purchase programmes (commonly known as Quantitative Easing, QE) and forward guidance on interest rates. They aimed to lift the economies out of crisis by promoting better economic growth while avoiding a low level of inflation (or even deflation). Since 2012, six central banks in Europe (Bulgaria, Denmark, Hungary, Sweden, Switzerland and the European Central Bank) and the Bank of Japan have gradually introduced negative interest rates on bank deposits and reserves, in addition to the unconventional measures already in force. For example, the ECB's deposit facility rate now stands at -0.40% (see Figure 1). Indeed, as indicated by Benoît Cœuré

[1], the
implementation of negative rates aim to tax banks' excess reserves to encourage
them to use these to boost the credit supply.

Figure 1. Changes in central bank deposit rates



However, the implementation of negative rates has
raised at least two concerns about the potential effects on bank profitability
and risk-taking. First, the introduction of negative rates could hinder the
transmission of monetary policy if this reduces banks' interest margins and
thus bank profitability. In addition, the lowering of credit rates for new
loans and the revaluation of outstanding loans (mainly at variable rates)
reduces banks' net interest margin when the deposit rate cannot fall below the Zero
Lower Bound. Second, in response to the impact on margins, the banks could
either reduce the share of nonperforming loans on their balance sheets or look
for other assets that are more profitable than loans ("Search-

for-yield”).

In a recent article [2], we used panel data from 2442 banks from the 28 member countries of the European Union over the period 2011-2017 to analyse the effects of negative rates on bank behaviour with respect to profitability and risk-taking. Specifically, we asked ourselves three questions: (1) What is the impact of negative rates on banks’ profitability? (2) Would negative rates encourage banks to take more risks? (3) Would the pressure on net interest margins from negative rates encourage banks to take more risk?

At the conclusion of our analysis, we highlight the presence of a threshold effect when interest rates fall below the zero bar. As can be seen in Figure 2, a 1% reduction in the central bank deposit rate reduced banks’ net interest margins by 0.429% when rates are positive, and by 1.023% when they are negative. Thus, negative rates have a greater impact on banks’ net interest margins than do positive rates. This result points to the presence of a threshold effect at zero. In addition, in response to this negative effect on margins (and in order to offset losses), the banks responded by expanding their non-interest rate activities (account management fees, commissions, etc.). As a result, in the short and medium term there was no indication that the banks resorted to riskier positions. However, the

issue of risk-taking
may eventually arise if negative rates persist for a long time and the banks
continue to suffer losses on net interest margins.

Figure 2. The impact of central bank deposit rates on banks' interest margins

Note: This figure presents the results of our analysis of the impact of interest rates on the margins of 2442 banks operating in the European Union over the period 2011-2017. The element "positive rates" refers to the impact on the banks' interest margins of a reduction in the central bank deposit rate when this is positive. "Negative rates" refers to the impact on the banks' interest margins of a reduction in the central bank deposit rate when it is negative.

[1] Coeuré B.
(2016). Assessing the implication of negative interest rates. Speech at the Yale Financial Crisis Forum in New Haven.
July 28, 2016.

[2] Boungou W. (2019). Negative Interest Rates, Bank Profitability and
Risk-taking. Sciences Po OFCE Working Paper no. 10/2019.

The impact on redistribution

of the ECB's monetary policy

By Jérôme Creel and Mehdi El Herradi

A few weeks before Christine Lagarde assumes the presidency of the European Central Bank (ECB), it may be useful to examine the balance sheet of her predecessors, not only on macroeconomic and financial matters but also with respect to inequality. In recent years, the problem of the redistributive effects of monetary policy has become an important issue, both academically and at the level of economic policy discussions.

Interest in this subject has grown in a context marked by the conjunction of two factors. First there has been a persistent level of inequality in wealth and income, which has been hard to reduce. Then there are the activities of the central banks in the advanced economies following the 2008 crisis to support growth, particularly through the implementation of so-called "unconventional" measures [1]. These measures, mainly manifested in quantitative easing (QE) programmes, are suspected to have increased the prices of financial assets and, as a result, favoured wealthier households. At the same time, the low interest rate policy could have resulted in a reduction in interest income on assets with fixed yields, most of which are held by low-income households. On the other hand, the real effects of monetary policy, particularly on changes in

the unemployment rate, could help keep low-income households in employment. The ensuing debate, which initially broke out in the United States, also erupted at the level of the euro zone after the ECB launched its QE programme.

In a recent study focusing on 10 euro zone countries between 2000 and 2015, we analysed the impact of the ECB's monetary policy measures – both conventional and unconventional – on income inequality. To do this, we drew on three key indicators: the Gini coefficient, both before and after redistribution, and an interdecile ratio (the ratio between the richest 20% and the poorest 20%).

Three main results emerge from our study. On the one hand, a restrictive monetary policy has a modest impact on income inequality, regardless of the indicator of inequality used. On the other hand, this effect is mainly due to the southern European countries, especially in the period of conventional monetary policy. Finally, we found that the redistributive effects of conventional and unconventional monetary policies do not differ significantly.

These results thus suggest that the monetary policies pursued by the ECB since the crisis have probably had an insignificant and possibly even favourable impact on income inequality. The forthcoming

normalization of the euro zone's monetary policy could, on the contrary,
increase inequality. Although this increase may be limited, it is important
that decision-makers anticipate it.

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[1] For an analysis of the expected impact of the ECB's unconventional policies, see Blot *et al.* (2015).

The OFCE optimistic about growth – "As usual"?

By Magali Dauvin and Hervé Péléraux

In the spring of 2019, the OFCE forecast real GDP growth of 1.5% for 2019 and 1.4% for 2020 (i.e. cumulative growth of 2.9%). At the same time, the average forecast for the two years compiled by Consensus Forecasts[1] was 1.3% each year (i.e. 2.6% cumulative), with a standard deviation around the average of 0.2 points. This difference has led some observers to describe the OFCE forecasts as "optimistic as usual", with the forecasts of the Consensus or institutes with less favourable projections being considered more "realistic" in the current economic cycle.

A growth forecast is the result of a research exercise and is based on an assessment of general trends in the economy together with the impact of economic policies (including budget, fiscal and monetary policies) and exogenous shocks (such as changes in oil prices, social disturbances, poor weather, geopolitical tensions, etc.). These evaluations are

themselves based on econometric estimations of the behaviour of economic agents that are used to quantify their response to these shocks. It is therefore difficult to comment on or compare the growth figures issued by different institutes without clearly presenting their analytical underpinnings or going into the main assumptions about the trends and mechanisms at work in the economy.

However, even if the rigour of the approach underlying the OFCE's forecasts cannot be called into question, it is legitimate to ask whether the OFCE has indeed produced chronic overestimations in its evaluations. If such were the case, the forecasts published in spring 2019 would be tainted by an optimistic bias that needs to be tempered, and the OFCE should readjust its tools to a new context in order to regain precision in its forecasts.

No systematic overestimation

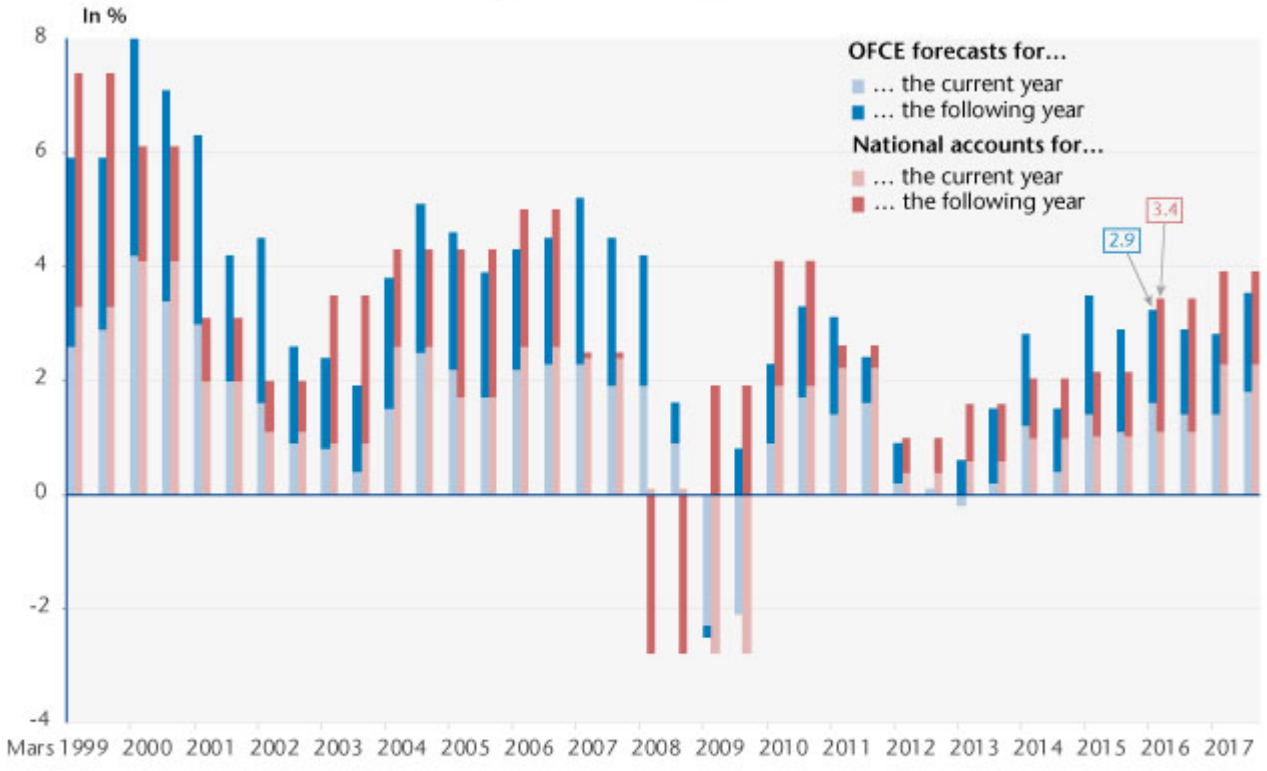
Figure 1 shows the cumulative forecasts of French GDP by the OFCE for the current year and the following year and then compares these with the cumulative results of the national accounts for the two years. In light of these results, it can be seen that the OFCE's forecasts do not suffer from a systematic bias of optimism. For the forecasts conducted in 2016 and 2017, the growth measured by the national accounts is higher than that anticipated by the OFCE, which, while revealing an error in forecasting, does not constitute an overly optimistic view of the recovery.

The opposite can be seen in the forecasts in 2015 for 2015 and 2016; the favourable impact of the oil counter-shock and of the euro's depreciation against the dollar during the second half of 2014 was indeed slower to materialize than the OFCE expected. The year 2016 was also marked by one-off factors such as spring floods, strikes in refineries, the tense environment created by the wave of terrorist attacks and the announcement that certain tax depreciation allowances for

industrial investments would end.

In general, there is no systematic overestimation of growth by the OFCE, although some periods are worth noting, such as the years 2007 and 2008 when the negative repercussions of the financial crisis on real activity were not anticipated by our models during four consecutive forecasts. Ultimately, of the 38 forecasts conducted since March 1999, 16 show an overestimate, or 40% of the total, with the others resulting in an underestimation of growth.

Figure. The OFCE's growth forecasts for the current year and the following year and actual growth



Note: This figure shows the OFCE's forecasts for the current year and the following year, cumulated over two years, with respect to the actual figures published by the national accounts. In October 2016, for example, the OFCE forecast cumulative GDP growth of 2.9% from 2015 to 2017, which broke down into growth of 1.4% from 2015 to 2016 and 1.5% from 2016 to 2017. The latest version available of the national accounts on 29 May 2019 shows economic growth of 1% from 2015 to 2016 and 2.4% from 2016 to 2017, i.e. cumulative growth of 3.4% over the two years, which was 0.4 point higher than the OFCE forecast. Hence, a red bar (national accounts) rising higher than the blue bar (OFCE forecast) reflects an "overly pessimistic" GDP growth forecast on the part of the OFCE, and vice versa.
Sources: INSEE, OFCE calculations and forecasts.

Forecasts relatively in line with the final accounts

Furthermore, the accuracy of the forecasts should not be evaluated solely in relation to the provisional national accounts, as INSEE's initial estimates are based on a partial

knowledge of the real economic situation. They are revised as and when the annual accounts and tax and social information updates are constructed, which leads to a final, and therefore definitive, version of the accounts two-and-a-half years after the end of the year[2].

Table 1 compares the forecasts made by the OFCE and the participating institutions in the spring of each year for the current year and assesses their respective errors first vis-à-vis the provisional accounts and then vis-à-vis the revised accounts. On average since 1999, the OFCE's forecasts have overestimated the provisional accounts by 0.25 points. The forecasts from the Consensus appear more precise, with an error of 0.15 point vis-à-vis the provisional accounts. On the other hand, compared to the definitive accounts, the OFCE's forecasts appear to be right on target (the overestimation disappears), while those from the Consensus ultimately underestimate growth by an average of 0.1 points.

Statistical analysis conducted over a long period thus shows that, while there is room for improvement, the OFCE's forecasts are not affected by an overestimation bias when assessing their accuracy with respect to the final accounts.

Table. OFCE / Consensus forecasts in the spring of the current year and the provisional and revised national accounts

					OFCE error on...		Consensus error on...	
	OFCE	Consensus	Provisional account	Revised account	... Provisional account	... Revised account	... Provisional account	... Revised account
1999	2.6	2.3	2.7	3.3	-0.14	-0.69	-0.44	-0.99
2000	4.2	3.7	3.2	4.1	1.01	0.14	0.51	-0.36
2001	3.0	2.8	2.0	2.0	0.97	0.99	0.77	0.79
2002	1.6	1.4	1.2	1.1	0.44	0.49	0.24	0.29
2003	0.8	1.2	0.2	0.8	0.63	-0.04	1.03	0.36
2004	1.5	1.7	2.3	2.6	-0.82	-1.12	-0.62	-0.92
2005	2.2	1.9	1.4	1.7	0.81	0.49	0.51	0.19
2006	2.2	1.9	2.0	2.6	0.24	-0.41	-0.06	-0.71
2007	2.3	2.0	1.9	2.4	0.42	-0.12	0.12	-0.42
2008	1.9	1.5	0.7	0.1	1.18	1.78	0.78	1.38
2009	-2.3	-2.5	-2.2	-2.8	-0.11	0.48	-0.28	0.31
2010	0.9	1.4	1.5	1.8	-0.59	-0.94	-0.07	-0.42
2011	1.4	1.7	1.7	2.2	-0.31	-0.84	-0.06	-0.59
2012	0.2	0.3	0.0	0.4	0.21	-0.17	0.33	-0.05
2013	-0.2	-0.1	0.3	0.6	-0.47	-0.80	-0.37	-0.70
2014	1.2	0.9	0.4	1.0	0.84	0.21	0.58	-0.05
2015	1.4	1.1	1.1	1.0	0.30	0.36	0.00	0.06
2016	1.6	1.3	1.1	1.0	0.51	0.56	0.22	0.26
2017*	1.4	1.3	1.9	2.4	-0.52	-0.98	-0.61	-1.07
2018*	2.0	2.1	1.6	1.7	0.42	0.28	0.52	0.38
				1999-2018 Average	0.25	-0.02	0.15	-0.11

* : the latest definitive accounts are those for 2016. The national accounts for 2017 and 2018 are, respectively, semi-definitive and provisional. The "provisional account" column shows the GDP growth rate as an annual average as it is calculated from knowledge of the quarterly growth rates once they are published in the fourth quarter of every year. Compared with this version, the 2018 account has already been subject to a first adjustment on the annual provisional account published in mid-May 2019, with an upwards revision of growth from 1.6% to 1.7%.

Sources: INSEE, OFCE calculations and forecasts.

[1] The Consensus Forecast is a publication of Consensus Economics that compiles the forecasts of the world's leading forecasters on a large number of economic variables in about 100 countries. About 20 institutes participate for France.

[2] At the end of January 2019, the INSEE published the accounts for the 4th quarter of 2018, which provided a first assessment of growth for 2018 as a whole. At the end of May 2019, the accounts for the year 2018, calculated based on the provisional annual accounts published mid-May 2019, were revised a first time. A new revision of the 2018 accounts will take place in May 2020, and then a final one in 2021 with the

publication of the definitive accounts. For more details on the National Accounts revision process, see Péléraux H., « Comptes nationaux : du provisoire qui ne dure pas », [The national accounts : provisional accounts that don’t last], *Blog de l’OFCE*, 28 June 2018.