COMMENT

Public Support to Companies in Times of Crisis: The Value of Microsimulations based on Company Data

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Abstract – The use of company data to simulate the effect of an economic shock or a public policy is a new method of *ex ante* forecasting and evaluation of public policies. Microsimulations are based on assumptions about the behaviour of firms, which can be discussed. However, as the three articles in this thematic section show, microsimulations allow us to identify the characteristics of firms that best capture their trajectory. During the crisis, the sector of activity proved to be the primary factor. Pre-crisis liquidity and productivity levels of firms then explain the fragility of firms within each sector. These simulations then show that public support has been fairly well targeted, and that the least productive companies have not been particularly helped. The possible overcompensation of sectors needs to be studied. It will be important to compare these simulations with the *ex post* evaluations, once the company data are available.

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The three-article thematic section of this issue focuses on non-financial companies during the 2020 health crisis. Although they are being published today, some of these studies were carried out very early in 2021, thereby contributing to our understanding of this unique crisis and the impact of the business support measures implemented. Before summarising their findings, we need to put this period into perspective in order to clear up the retrospective illusion, which would suggest that the state of the economy was known at the time: the economic policies described in these articles were put in place in Europe and France against a backdrop of huge uncertainty: the scale and duration of the health crisis were unknown; the behaviour of consumers and employees faced with the risk of infection had therefore to be considered within an unprecedented environment. The impact on activity of periods of lockdown had never been studied and brought about a rethink of the very concept of activity measurement (Bignon & Garnier, 2020; Blanchet & Fleurbaey, 2022). In addition, some of the measures put in place to support the economy were new in design and involved exceptional amounts. Finally, the impact on companies and the State budget was equally uncertain. Suffice to say that the contribution made by these three articles, which analyse company dynamics and the impact of the support policies implemented in 2020 is more than welcome.

Company Data and Microsimulation

All three articles make use of company data to perform microsimulations for the year 2020. It is important to emphasise not only the benefits, but also the limitations of such an exercise. Its main benefit lies in the fact that the databases allow a large number of companies to be tracked. The two articles by Bureau *et al.* (2022a and 2022b) track 645,000 non-financial companies (NFCs) in France using data from FARE (*Fichier approché des résultats d'ÉSANE* – compilation of annual company statistics –aggregate results file). These companies represent 71% of the value added of NFCs. Demmou *et al.* (2022) track 859,299 companies in 14 European countries based on balance sheet data from the ORBIS database. These large sample sizes allow us to understand companies' dynamics, by sector, by size, based on their financial robustness before the crisis, as well as the diversity of the individual situations beyond these factors.

However, the exercise is restricted by the availability of data: In the two articles by Bureau *et al.*, the 2018 FARE data are used to simulate the year 2020, using other data, such as monthly VAT data for 2020, as additional information. The ORBIS data used for the analysis date from late 2018. In addition, aggregated data from 2020 are used to improve the quality of the simulations. The three articles therefore do not analyse company data from 2020, which are not yet available, but informed forecasts of what happened in 2020, based on the 2018 data. As others performing the same exercise, in particular Gourinchas *et al.* (2021) or Guérini *et al.* (2020), the value of such studies lies in their ability to show that, even when faced with such inevitable limitations due to data availability, the use of company data and microsimulations provides an essential additional tool for understanding radically new events, such as the health crisis.

Now, in order to put the findings of these articles into perspective, we must refer to the significant economic challenges identified during the health crisis as regards the nature of the economic shock and the objectives of economic policy.

The Economic Shock during the Health Crisis

The value of company data lies in its ability to provide us with information concerning the nature of the economic shock caused by the health crisis. In early 2020, this shock was addressed with standard economic concepts: was it a demand or supply shock, a sectoral or aggregate shock? The use of company data and the construction of microsimulations have made it possible to shift the focus of the analysis to other essential elements. The first key element is a measure of the loss of operating income suffered by companies, without prejudging its cause (production difficulties or lack of customers). Second, it was understood that the findings were heavily reliant on the ability of companies to adjust their inputs downwards, and in some cases upwards, for example for payroll and for production costs, such as rent or electricity. Access to credit was also identified as a key factor in production dynamics in times of stress. Company data makes it possible to differentiate their weight between sectors, which turns out to be essential, as well as by size of the companies, shedding new light on the complexity of the economic shock on companies.

Economic Policy Objectives and Trade-Offs

Once the nature of the shock has been established, the economic policies put in place during the crisis must be evaluated. As is pointed

out in the article by Demmou *et al.* (2022), every European State intervened heavily to support companies with measures that were similar in nature, but applied in different ways, such as a deferral of tax payments, help to access liquidity and support for wage payments. In order to understand the lessons from these articles studying the impact of the measures involving the liquidity of companies (Bureau *et al.*, 2022b and Demmou *et al.*, 2022), we must first summarise the major trade-offs that the support policies put in place for companies had to face. We can identify three main trade-offs, i.e. elements for which the public authorities must choose between benefits and costs. We acknowledge in this regard that the identification of such trade-offs is much easier after the crisis and therefore suffers from the aforementioned retrospective bias.

The first trade-off, which will be the one discussed in the most detail here, is between the provision of financial support to companies and the cost to public finances, which are primarily financed through public debt. The answer to this trade-off was the selection of a set of measures that aimed to avoid waves of bankruptcy without defining a precise budget, a policy summarised as "whatever it costs". As a result, the measure of the cost to public finances is itself an object of analysis. It is useful to focus on this trade-off as there is no obvious answer. Indeed, the economic costs of bankruptcy are not easy to ascertain. A bankruptcy or default on payment involves either a dramatic restriction of business or the cessation of business. The company closes, but the production resources that it used are now available to other companies. The bankruptcy of a company has a net cost to society if specific capital is destroyed along with the company, a capital that is difficult to identify in times of crisis. However, the management of the 2008 financial crisis in Europe, particularly in Germany, made it possible to identify a stable relationship between employees and the company as an important form of productive capital. The use by Germany of *Kurzarbeit* allowed companies to retain workers while benefiting from government support for the payment of wages. The rapid implementation of partial activity in France was an import of that German crisis management into the French schemes. The mass use of wage subsidies in France contrasts with the decision made in the United States to support companies directly. The preservation of "human capital" as physical capital was therefore an objective sought by crisis management.

However, the preservation of capital is not the preservation of what already exists, as the value of such capital depends on the future activity of the companies. For an economist, the value of capital is not the book value of an acquisition, but the present value of the business generated. The value of the capital therefore depends on the anticipated business of the company. After a debate during the crisis regarding the profile of the GDP trajectory – "U", "L", "W" or even "K"-shaped[1] – the post-pandemic forecasts were very varied in 2020: would we emerge from the crisis quickly or slowly? Would we observe lasting changes in consumer behaviour that would render the business plans drawn up before the crisis obsolete?

The "whatever it costs" approach was retained based on the assumption of a short, sharp crisis that would not bring about any radical changes in behaviour. Now, in 2022, that assumption appears reasonable. A further benefit of preserving companies is a reduction in economic uncertainty for companies and households. A wave of redundancies increases uncertainty among companies as it has a direct impact on value chains (suppliers and customers). In addition, bankruptcies bring about an increase in unemployment, which reduces household income and increases precautionary saving. Both effects bring about a reduction in companies' activity.

Faced with an uncertain environment, the choice seems to have been to minimise bankruptcies. The figures for business failures in 2020 now show that the result has been achieved: the number of failures in 2020 was significantly lower than in 2019. This first trade-off with regard to total volume does not yet fully cover the impact on public finances. Indeed, the provision of support to companies can be achieved by means of subsidies (for example, direct support for the payment of wages) or loans, for which the budgetary cost is far lower. The economic policy option selected in France has brought about an increase in public debt, financed at a historically low interest rate, in both nominal and real terms.

The second key trade-off concerns the way in which support is targeted: should it be targeted specifically at certain companies, at the risk of not helping others in need, or distributed more widely, at the risk of unnecessarily allocating

1. The hypothesis of a K-shaped profile emerged in view of the strong sectoral heterogeneity of the recovery. Some sectors are experiencing a persistent decline in activity (the bottom segment of K), while activity in other sectors is rapidly returning to pre-crisis levels (the top segment).

resources to companies that do not need them or that are too reliant on them. Indeed, the targeting of support can be broken down into two distinct problems. The first sub-problem is to avoid causing a windfall effect, in other words transferring resources to companies that are liquid and solvent. The second sub-problem is the provision of public support to companies that are undoubtedly in need of money, but are unproductive and would have gone bankrupt even if the health crisis had not occurred. The aim of these two objectives is to minimise the negative impact on public finances, as well as to avoid keeping unproductive companies afloat through support measures, since this would needlessly absorb and even damage public and private resources. These so-called "zombie companies" became a subject of attention during the crisis (see Cros *et al.*, 2020).

The third trade-off concerns the choice between public and private debt. During the crisis, companies experienced a sudden decline in income, which was predicted to be temporary. They therefore had to deal with significant liquidity problems, which are discussed in the articles by Demmou *et al.* (2022) and Bureau *et al.* (2022b). There is a real difficulty in distinguishing between temporary liquidity issues, which will be reabsorbed following the emergence from the crisis, and long-term business downturns that first manifest themselves as liquidity issues before progressing to solvency issues, defaults on payment and then the cessation of business. The microsimulations presented in the articles within this dossier provide an appropriate analysis of the liquidity of companies to avoid having to qualify their solvency, which would require a forecast of their turnover.

In addition, the provision of liquidity to companies can be achieved in a number of ways, whether that be by means of direct subsidies, bank loans or State-backed public or private loans, an example of which is the State-guaranteed loan (PGE) in France. The trade-off between these three tools (subsidy, bank loan, State-backed loan) relates firstly to the cost for public finances. Subsidies are direct budgetary expenditure, guaranteed loans cost far less since part of the loan is paid back. This means that this third trade-off involves corporate debt: subsidies do not increase corporate debt, whereas loans (whether guaranteed or not) do. The impact of the increase in interest rates seen in 2022 on French NFCs, which are known to be heavily in debt when compared with companies in other countries, will require new analyses. However, the trade-off between subsidies and loans during the crisis cannot be formalised without taking account of these new, post-crisis dynamics.

Three Studies Using Microsimulations on Company Data

A quick overview of the articles will allow highlighting common findings. Bureau *et al.* (2022a) analyse the crisis through the monthly business shocks suffered by NFCs in France. They model the development of activity using a process of estimation before the crisis for the period from 2015 to 2020, which therefore supposes a stable turnover model. Then the authors simulate the turnover during the crisis from February to December 2020. The difference between the simulated and the observed turnover defines the monthly shock experienced by each company, which is studied by the authors. They examine the 645,000 companies, representing 71% of the value added of non-financial companies (NFCs).

These shocks, which are calculated for each company, provide important information regarding the different impacts of the crisis and the health measures adopted. Their skilful presentation consists of classifying the companies into four categories with well-defined profiles: "unaffected", "resilient", "restricted" and "depressed" in ascending order of the difficulties encountered. They find that a significant number of companies, around one third, did not experience negative shocks on average ("unaffected" companies). For the majority of companies, business followed the average situation ("resilient" and "restricted") and, finally, a group of around 6% "depressed" companies saw their businesses go under. The majority of these companies were already fragile before the crisis. The main factor for explaining the category that a company falls into is the business sector it is active in. However, there remains a residual heterogeneity. Finally, the companies that remained unaffected are the ones more likely to have restructured their business, invested in new technologies, developed online sales and used new delivery systems.

Demmou *et al.* (2022) evaluate the liquidity requirements of companies and the impact that the policy measures had on their liquidity. The authors use monthly company data (ORBIS) and track 859,299 companies in 14 European countries. They simulate the liquidity dynamics of each company, introducing limited adaptability of the companies' inputs. Here too, the lack

of liquidity is primarily explained by the sector to which the companies belong. The simulations show that, without State intervention, around a third of companies would have been facing a cash deficit after 10 months, three times higher than in normal times. Most crucially, those companies that would have faced cash flow risk appear, for the most part, to be both profitable and viable.

A slightly different contribution of this study is the recognition by the authors of the difficulties of modelling realistically the details of companies' behaviour: For example, inventory dynamics are difficult to take into account and the reimbursement of trade credits is tricky to identify (linked to bank behaviour).

The deteriorating situation of companies without State intervention and the current reassuring bankruptcy figures show the aggregate effectiveness of State support measures. These were massive and differentiated. The authors provide a recap of the nature of the public measures in the countries concerned, which included tax deferrals, financial support for debt repayment and temporary support for wage payments. The comparison of these measures based on their contribution to reducing cash-flow risk among companies shows that payment support is both the most effective and the most costly solution, while moratoriums on corporate debt and tax deferrals have much a smaller impact (but they also cost less). For a given budget cost assigned to each measure, the picture is more nuanced: the effectiveness of partial activity and wage subsidy schemes depends on their design, in particular the amount of any eligibility threshold.

The ending of company support schemes is only given a brief mention in the article, since the study period ended in early 2021. However, the authors do stress the need for a gradual exit from the support measures with one great unknown: the impact of the support measures implemented during the COVID-19 crisis on productivity.

In their contribution looking at the financial situation of NFCs, Bureau *et al.* (2022b) construct a microsimulation tool for companies, based on French data, using monthly VAT data to track the actual monthly activity of the companies. The lessons drawn from these simulations based on French data are consistent with those of the European simulations by Demmou *et al.* (2022), but allow for more accurate estimates. The State support measures helped to reduce the negative cash flow shock seen in 2020 by half. The sectoral dimension is still essential to understand the extent of the financing need. As expected, the magnitude of the shock differed across sectors and the impact of government policies appears to be more effective in reducing the liquidity shock in the most affected sectors. For example, the negative cash flow shock in the hospitality sector, the worst affected, was halved by the State support. In the sectors that were the least affected by the crisis, such as the energy and information and communication sectors, public measures only reduced the intensity of the shock by a third. The companies that were the most fragile before the crisis (fragility measured by the Banque de France rating) certainly benefited from the government support, but they were not helped disproportionately.

Common findings

The first lesson, which is clear from reading the three articles, is the value of microsimulation tools and company data for understanding economic dynamics during crises. In the case of France, FARE data (INSEE), VAT data (DGFIP), scheme use data (DARES) and financial data (Banque de France) can be accessed quickly to allow for an analysis of the productive system. However, access to these data by researchers not affiliated with the administrations that produce them must be considered now to allow for more analyses to be carried out during crises.

The second lesson is that large-scale economic shocks, such as the health crisis, cannot be understood without a breakdown at least at the sectoral level. In all three articles, the sector (in the current classification) appears to be the main variable explaining the differences between companies. However, the three articles also point out a strong intra-sectoral residue, that should be the focus of future studies.

The value of these three articles also lies in their ability to point at the difficulties associated with microsimulation tools and possible improvements. Company data from 2018, so two years before the health crisis, are used, which highlights the benefits that faster access to data would provide. They also point to the difficulty of modelling the measure and the dynamic nature of company inventories.

As regards government policies, the two articles on NFCs' financial situation focus on liquidity issues to avoid inherent difficulties in measuring solvency. The first lesson seems to be that the schemes were successful in compensating for the liquidity issues experienced by companies, and it seems that they were quite effective. In France,

the companies that were the most fragile before the crisis (according to the Banque de France rating) were not helped disproportionately. The support tools offered to companies helped to reduce liquidity issues in the sectors where they were felt the most. The point of concern is the possibility of robust companies being overcompensated (windfall effect) while productive companies are undercompensated, or non-productive companies overcompensated. The simulations provide indications, but of course not decisive on this point, which will require studies to be carried out once the data become available.

In addition, the support measures for the payment of wages turned out to be powerful levers for the provision of liquidity. However, the effectiveness of these measures per public euro spent depends on the details of their implementation, as shown by Demmou *et al.* (2022). The tax deferral measures and assistance to pay private debts cost little, but also have a relatively small impact. These findings are consistent with those of other studies (Guérini *et al.*, 2021; Gourinchas *et al.* 2021; Héyer & Timbeau, 2020).

The Issues Ahead

These articles analysing the year 2020 bring us to the importance of the strategy for exiting the health crisis. It is important to recognise that the gradual end of partial activity and the solidarity fund did not result in an increase in bankruptcies and, at the time of writing this commentary in June 2022, the employment rate was high. The data for 2020, which will be available in a few quarters' time, will allow refining the analysis of liquidity and the effectiveness of the tools against this objective. The analysis of the effectiveness of the tools aimed at solvency, i.e. the survival of companies in the long-term, and the dynamism of the productive system, will be extremely difficult, since the French – and more broadly European – economy is facing a new, significant shock: the energy crisis and the unprecedented rise in energy prices, production prices and consumer prices. The increase in interest rates following these price increases will affect French companies, which are highly indebted. It is in this new environment that the issue of capital allocation and the trade-off between public and private debts will need to be studied. □

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