COVID19-induced Wave of Defaults: How many companies are rationally expected to default?

Predictive Default Study

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Univ.-Prof. Dr. Walter S.A. Schwaiger, MBA

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Management Summary

1. Problem Statement

In the year of the economic and financial crisis in 2009 the real Gross Domestic Product (GDP) reduced by -3.78 % and the default rate compared to the year of 2008 increased by +0.20 %. In the year of the COVID19-crisis in 2020 the GDP reduced by -6.6. % and the default rate compared to the previous year decreased by -0.39 %. The big difference among the two crisis is the extra-ordinary assistance package that the government initiated to rescue companies from defaulting. The package helped to reduce the default rates. But is this reduction realistic? The answer is a clear "no"! The economy was kept alive but the economic situation did not improve for being able to explain the reduced default rate on a rational basis.

To the contrary, the economic situation even dramatically worsened, so that from a rational point of view the actual low default rate is clearly distorted from reflecting the true economic situation. The existence of a counterfactual distortion is of no doubt. The only question is its size. The investigation of the distortion's size is especially interesting for policy makers and the banking industry in order to rationally assess the effects following an exit from the assistance package.

To provide a solid founded answer to the size of the distortion in default rates is not a simple task as the economic GDP downturn and the assistance package occurred at the same time. In this case the economic effects are not separately observable from the assistance package. Consequently, an economic modeling has to take place for determining rational expectations of the default rate for the COVID19-crisis year 2020. With this rational expectation the distortion's size can be calculated by taking the difference to the actual default rate.

2. Predictive Default Study

For solving the problem of determining the default rate distortion's size a predictive default study will be implemented in line with the supervisory regime of the Basel III regulatory framework that governs the management of credit risks in the banking industry all over the world. At the heart of this framework are the predictive, i.e. future oriented default rates. In the current investigation these rates are directly linked to GPD-measured development of the economy over time. The resulting dependency of the default rates from the economic development will be estimated empirically by regressing the annual default rates derived from the database of Creditreform Austria against the percentage changes of the annual real GDPs. Using this calibrated regression model the expected default rates for the COVID19-crisis year can be estimated by an ex-post prognosis. By comparing the resulting COVID19 default rate estimate with the actual default rate in the year 2020 the distortion size of the actual rate can be calculated. In analogy to the Bubble Theory of the Nobel laureate Robert Shiller the distortion size will be called "COVID19-bubble".

Subsequently the COVID19-bubble will be decomposed into two effects, i.e. the "COVID19-crisis" effect and the "prevention" effect which is related the defaults that are expected to occur already under normal economic conditions (normal scenario) in addition to the actual defaults. Finally, the two effects are allocated to industry segments according of the affectedness to the COVID19 related lockdowns (LD). This has the advantage of gaining additional insights into the COVID19-bubbles related to the directly, the indirectly and the not affected segments.

Autor:

Univ.-Prof. Dr. Mag.
Walter S.A. Schwaiger, MBA
Projects & Publications

TU Wien – Institute of Management Science (IMW) – Financial Enterprise Management Group

Contact:

Mag. Gerhard M. Weinhofer
Member of the executive board

Creditreform Wirtschaftsauskunftei Kubicki KG
Muthgasse 36-40 (Building 4)
1190 Vienna

g.weinhofer@wien.creditreform.at
+43 1 218 62 20-551

3. LD-specific COVID19-Bubble and its Effects

The actual default rate of economically active companies amounts to 0.76 % in the
COVID19-crisis year 2020. Compared to the default rate in the year 2019 of 1.15
% this constitutes a reduction of 0.39 %.

On the other hand, the expected COVID19-related default rate amounts to 1.87
%, which exceeds the actual rate by 1.11 %. Accordingly, the COVID19-bubble of
1.11 % is almost as large as the actual default rate in the year 2019. This means,
the number of companies rescued from defaulting by the extra-ordinary govern-
mental assistance package corresponds quite closely to the overall number of de-
faulting companies in the year 2019.

The prevention effect of +0.42 % indicates that compared to the actual default
rate of 0.76 % additional +0.42 % of companies were already expected to default
under regular economic conditions (normal scenario). Hence, the governmental
assistance package prevented defaults that were expected to default in a normal
economic scenario. This is the reason for calling it the "prevention" effect.

The COVID19-crisis effect of +0.69 % indicates that due to the COVID19-induced
economic downturn additional +0.69 % of companies are expected to default com-
pared to the normal economic scenario. By considering the three differently af-
fected industry segments insight is given to the three lockdown (LD)-specific
COVID19-bubbles and their related prevention and COVID19-crisis effects.

4. Interpretation

The COVID19-bubble of +1.11 % gives insight into the distortion's size of the actual
default rate of +0.76 % observed for the COVID19-crisis year 2020. The decom-
position of the COVID19-bubble into the prevention effect of +0.42 % and
COVID19-crisis effect of +0.69 % provides a clear interpretation derived with re-
spect to the postulated scenario of a normal economic development.

According the old German saying "postponed isn't cancelled" the COVID19-bubble
relates to all companies rescued from defaulting by the governmental assistance
package, but the rescued defaults are not automatically cancelled forever. It is
important to note that the COVID19-bubble constitutes a "potential of defaults"
which was created by the assistance package. Up to now it is not clear in which
way and how fast this potential will discharge. The assistance packed was func-
tioning so far. If the economy recovers rapidly and consequently the COVID19-
bubble does not burst (completely) then the assistance package will have a sus-
tainable positive effect as well.

5. Outlook: Upcoming Analyses

In the future the "dischargement" topic will be investigated in detail. For this pur-
pose, the quarterly development of the actual default rates will be measured and
compared with the rationally expected default rates related to the successively re-
vealing economic developments. Furthermore, the context will be broadened by
not only considering defaults but by also including additional information related to
the consequences of defaults (like e.g. default-induced effects on unemployment).

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Conclusion and Outlook

The main problem addressed in this study is the un-ob-servability of the real default rates connected to the COVID19-crisis. The observed actual default rates for the COVID19-crisis year 2020 only contain the defaults that were not rescued by the extra-ordinary governmental assistance package. Consequently, the observations are clearly distorted. Hence, the main task consists in uncovering the "invisible real" by determining the rationally expected default rates for the COVID19-crisis year 2020.

For establishing an adequate understanding for the "distorted facts" concerning the actual default rates in the COVID19-crisis year 2020 a comparison to the economic and financial crisis year 2009 is helpful. In the crisis 2009 year the default rate increased by +0.20 % compared to the previous year. In the COVID19-crisis year 2020 the default rate decreased by -0.39 % compared to the year before. On the other hand, the economic downturn measured with the percentage annual change of the real GDP was in the COVID19-crisis year almost twice as high as in the crisis year 2009. A rough estimate indicates that the observed actual default rate in the COVID19-crisis year is due to the governmental assistance package far too low by about +0,79 % (0,39% + 2*0,20%).

Fig. 11: COVID19-Bubble and its decomposition – Prevention effect and COVID19-crisis effect
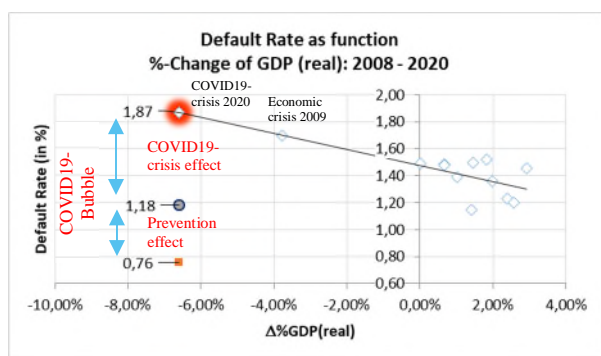
Source: Creditreform Austria

In the current study predictive analytics methods are used to calculate the expected default rates for economically active companies. For the COVID19-crisis year 2020 an expected COVID19-default rate of 1.87 % was calculated with an ex-post prognosis by inserting the real GDP downturn for the year 2020 into the calibrated regression model that links the annual default rates to the corresponding real GDP changes.

The size of the COVID19-bubble amounting to +1.11 % was calculated by comparing the expected COVID19-default rate of 1.87 % with the actual default rate of 0.76 %. The expected COVID19-default rate exceeds the previously roughly estimated value of +0.79 % by additional +0.32 %. By comparing the expected COVID19-default rate with the actual default rate of the year 2019 amounting to 1.15 % it can be seen that the companies

rescued from defaulting by the governmental assistance package are almost as many as were defaulting in the year 2019.

The forecasted default rate for the year 2020 of 1.18 % was calculated by aggregating the forecasts of all three LD-segments under the assumption of an economic normal scenario in each segment. Using this forecast the COVID19-bubble was decomposed into two effects (see Fig. 11), i.e. the prevention effect and the COVID19-crisis effect. This decomposition allows a clear interpretation of the COVID19-bubble.

- The prevention effect of +0.42 % is calculated by subtracting the actual default rate of 0.76 % from the forecasted default rate of 1.18 %. The effect measures the default rate of companies that are expected to default already under normal economic conditions in the year 2020 but that were prevented from default due to the governmental assistance package.

- The COVID19-crisis effect of +0.69 % relates to the additional companies that are expected to default in the year 2020 due to COVID19-induced economic downturn if no assistance package was provided.

For getting deeper insights, the two effects of the COVID19-bubble were allocated to three different industry segments according to their different affectedness from the legal lockdown requirements. As expected the different degrees of affectedness reflect in the LD-specific COVID19-bubbles of the three segments. The COVID19-bubbles are increasing, i.e. they are +0.38 % for the non-affected segment, +1.10 % for the indirectly affected segment and +1.96 % for the directly affected segment.

Additional temporal insights into the development of the annual default rates and annual changes in real GDPs were gained from a rolling analysis of these values on a quarterly basis of the COVID19-crises year 2020. It was shown that the COVID19-bubble built up quite linearly over the four quarters by successively diverging of the increasing expected COVID19-default rates due to the increasing economic downturn from the decreasing actual default rates due to the governmental assistance package.

Interpreted according to the Germain saying "postponed isn't cancelled" the LD-specific COVID19-bubbles relate in each segment to all companies rescued from defaulting by the governmental assistance package, but the rescued defaults are not automatically cancelled forever. In contrast to a cancellation the COVID19-bubbles constitute a "potential of defaults" that was created by the assistance package. Up to now it is not clear in which way and how fast this potential will discharge. According to the current study it can be expected that after a governmental exit from assistance package the prevention

effect will materialize quite rapidly. The materialization of the postponed defaults contained in the COVID19-crisis effect depends on the progress of economic recovery and it can be expected: The earlier the economic recovery the smaller, the effect's materialization.

In future analyses the "dischargement" (realization) topic of the two COVID19-crisis effects will be investigated in detail. For this purpose, the quarterly development of the actual default rates will be measured and compared with the rationally expected default rates related to the successively revealing economic developments. Furthermore, the context will be enlarged by not only considering defaults but by also including additional information related to the consequences of defaults (like e.g. default-induced unemployment effects).

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