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ECONOMIC IMPACTS OF THE COVID-19 PANDEMIC: AN EXPLORATION FOR THE NORTHERN PERIPHERY AND ARTIC REGION

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Introduction

The ongoing Covid-19 pandemic represents one of the most severe shocks that have hit the global economy and has caused a significant disruption to economic activity worldwide. The nature of this unprecedented shock and its ongoing impact have led governments to impose measures aiming at restricting the movement of individuals and in effect shutdown sectors of economic activity that are relying on social interaction and are thus considered as higher risk in terms of transmitting the virus. This “Great Lockdown” has had a major impact on economic activity worldwide (IMF, 2020).

The imposition of these strict measures at the onset of the Covid-19 pandemic led to a significant decline in economic activity, with most European economies facing large losses in terms of output and jobs. Once the strict measures were gradually lifted during the summer period, most economies were able to recover part of the losses; however, the recovery was incomplete due to a new round of lockdowns and restrictions that were reinstated following a new surge in infections and Covid-related deaths.

These observations naturally lead to an important question from an economics perspective, namely whether the observed effects on economic activity are the result of the policy choices of the government or of the significant impact that the pandemic had on the behavior of individuals. In particular, is the observed economic decline a result of the measures imposed by governments which included, among others, the restriction of non-essential movements and the shutdown of certain sectors of economic activity that rely on social interaction and in-store presence, or is it due to the behavioral response of consumers who prefer to voluntarily restrict their movements as means of protecting themselves?

In this section, our aim is to explore the economic impact of the covid-19 pandemic focusing specifically on the countries within the Northern Periphery and Arctic 2014-2020 Programme partner countries (for which data is available). We focus on both on the traditional macroeconomic indicators as well as on indicators that are better suited for capturing the short-run effects of the pandemic on the economy and some aspects of its impact on the behavior of individuals. Many of the indicators are only available for Ireland, Finland, Sweden and Norway due to data gaps.

Overall, a number of interesting findings emerge from our analysis. Firstly, while the negative impact of the pandemic is concentrated in the second quarter of 2020, its magnitude varies across countries; the heterogeneous impact of the pandemic is even more pronounced in the third quarter, where some countries experienced negative output growth rates whereas others managed to recover from the negative shock. Secondly, by examining the sectoral impact of the pandemic, we observe that sectors which rely on social interaction and where physical distancing cannot be ensured –e.g. the arts and entertainment sector and construction– are the ones that suffered the largest losses. Moreover, in the industry sector we observe that while in Ireland the pandemic did not have any impact, as the sector’s value added expanded throughout the first three quarters of 2020 largely due to the performance of manufacturing, the rest of the countries in the sample suffered significant losses. Lastly, by examining the correlation between indicators that are better suited for capturing the short-run developments in economic activity and the developments in the number of Covid-related deaths and the severity of the lockdowns imposed, we observe that while the lockdown measures do not seem to have an impact on

expectations formation, the number of deaths is negatively correlated with the expectations of the private sector regarding the future path of the economy.

In what follows, we begin with analyzing the impact of the Covid 19 shock on a more aggregate level, focusing on the main indicators of (macro)economic activity, such as gross value added, consumption and investment. Then, we turn our attention to the impact of the pandemic across the various sectors of economic activity and compare and contrast the experience of the countries included in our sample. Finally, we examine the effects on short-run indicators and how they are affected by the containment measures.

Impact of Covid-19 on Economic Activity

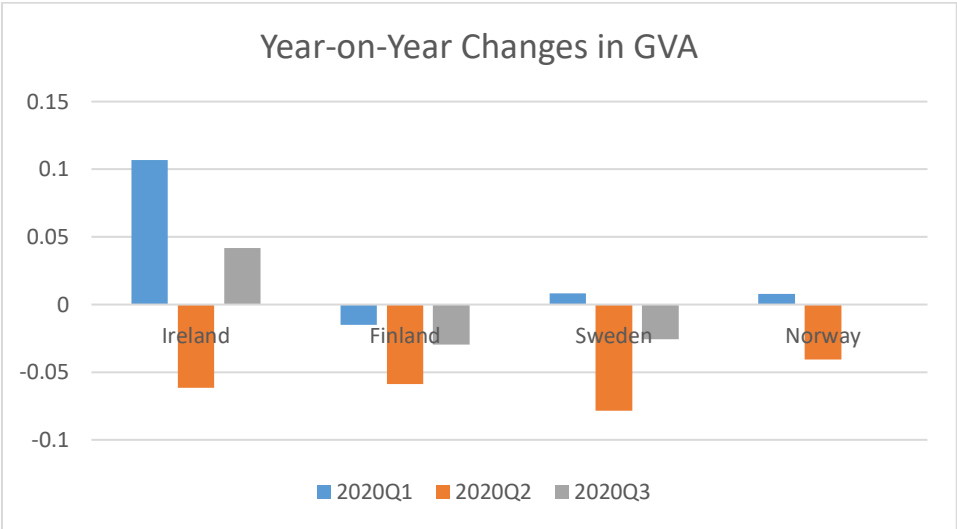
The first step in assessing the impact of the pandemic on the economic performance of the countries in our sample is to examine its effects on the main macroeconomic indicators and, in particular, on value added, consumption and investment.

Starting with Figure 1, which depicts the impact of the pandemic on gross value added¹, we observe that some interesting patterns arise across countries. Firstly, the initial impact of the pandemic, as captured by the developments in the first quarter of 2020, are relatively benign. In particular, with the exception of Finland, whose value added declined with respect to the first quarter of 2019, the rest of the countries saw an increase in value added with Ireland recording a growth rate of 10%. The bulk of the negative effects is concentrated in the second quarter of the year, with the average decline being equal to almost 6 p.p. compared to the second quarter of 2019 and the largest decline being recorded in Sweden (7.8 p.p.). During the third quarter of 2020, when the restrictive measures were gradually eased, we observe that the only country recording a significant rebound compared to the third quarter of 2019 is Ireland, with a growth rate of 4 p.p.; the rest of the countries in the sample performed better compared to the second quarter but still remained in a negative territory compared to 2019.

One of the main drivers of the observed trend in Gross Value Added is the changes in the rate of consumption. As is evident from Figure 2, household consumption was heavily impacted by the pandemic, with all the countries facing significant declines in the second quarter of 2020. Ireland recorded a decline of almost 22 p.p. while Finland faced a relatively smaller decline of 8 p.p. It is interesting to note that in the third quarter of the year, despite the easing of restrictions, even though there is a recovery compared to the second quarter of the year we do not observe a large increase in household consumption (when compared to the same quarter of 2019).

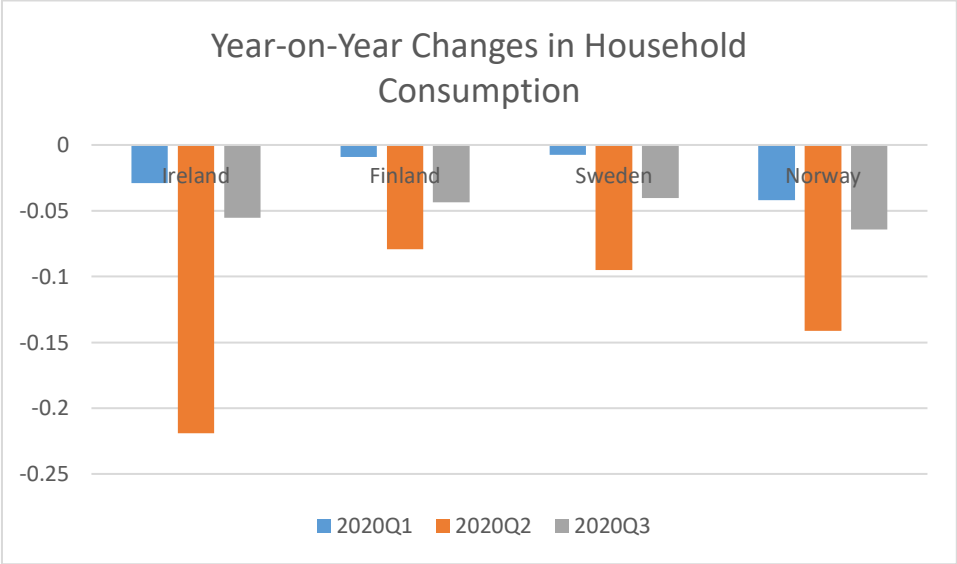
¹ Rather than using Gross Domestic Product (GDP) as a measure of economic activity, we focus on Gross Value Added in order to avoid the complications arising from the well-documented distortions related to the measurement of GDP in Ireland.

Figure 1: Yearly Changes in Gross Value Added



Source: Authors' calculations based on Eurostat data

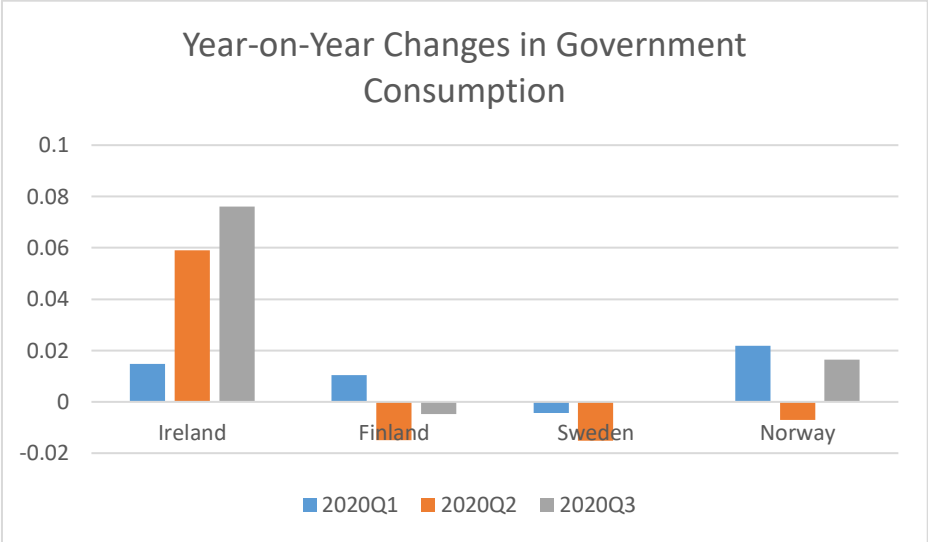
Figure 2: Yearly Changes in Household Consumption Expenditure



Source: Authors' calculations based on Eurostat data

Figure 3 depicts the year-on-year changes in the size of government consumption, which to a large extent represents expenditure on the part of the government related to social benefits (e.g. healthcare, housing etc.). As can be gleaned from the graph, Ireland seems to have substantially increased its spending on these benefits as a means of ameliorating the negative effects of the pandemic. Norway was the other country in the sample that increased this type of expenditures during the third quarter, while a reduction is observed in Finland and Sweden.

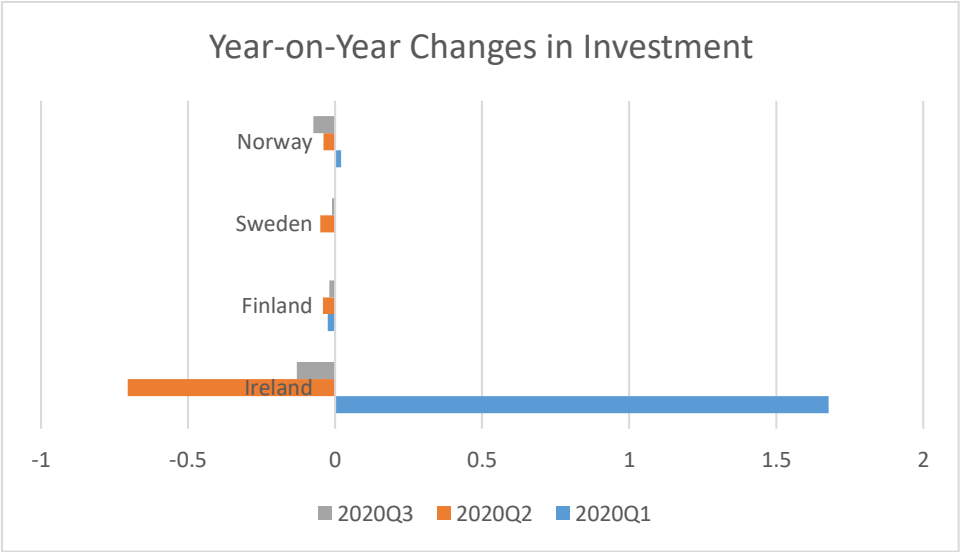
Figure 3: Yearly Changes in Government Consumption Expenditure



Source: Authors' calculations based on Eurostat data

The final component of aggregate output that we explore is investment. As can be seen in Figure 4, Ireland² is an outlier with a year-on-year increase in quarter 1 of 2020 that far exceeded 150%, largely explaining the large growth rate in gross value added (see Figure 1) and a decline in the second quarter of almost 70% compared to the second quarter of 2019. For the rest of the countries, investment dropped during the first three quarters of 2020, with Finland exhibiting the smallest decrease. The decline in the investment rates can be attributed to the elevated uncertainty caused by the pandemic and the waves of tightening/easing the various types of restrictions.

Figure 4: Yearly Changes in Investment



Source: Authors' calculations based on Eurostat data

² It should be noted here that the large fluctuations in the investment series in Ireland are stemming – to a large extent – from the operation of large multinational enterprises (see Fitzgerald, 2020).

Overall, we observe that the Covid-19 shock had a significant negative impact on household consumption and investment, the bulk of which is concentrated in the second quarter of 2020, and which led to a decline in the value added produced. During the third quarter of 2020, all countries experienced a recovery which, nonetheless, was not large enough to cover the losses incurred.

Effects on the Industrial Structure

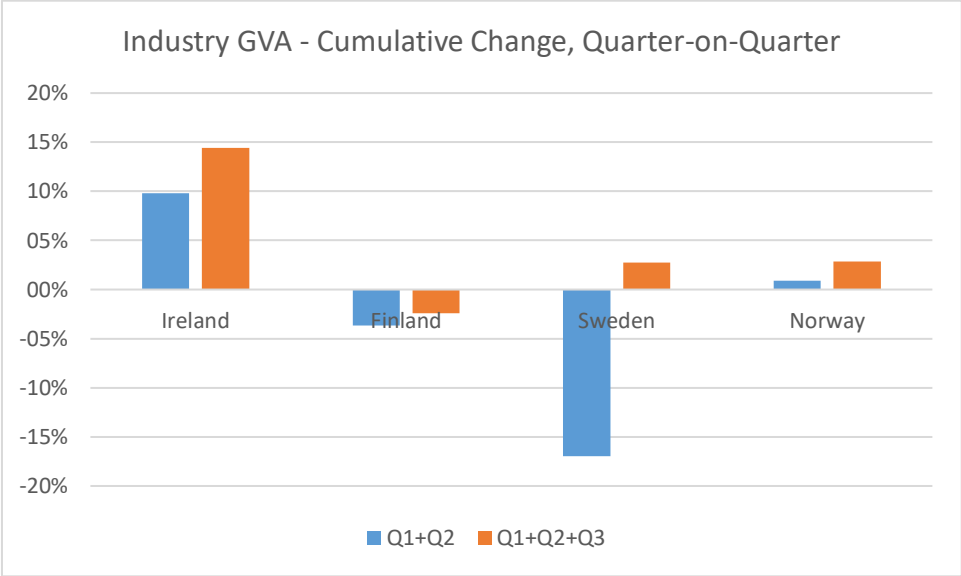
In order to obtain a better insight of how the ongoing pandemic has affected the structure of the economy, we proceed with analyzing the impacts in the main sectors of economic activity. In particular, based on the NACE Rev2 classification of economic activity, we focus on the following sectors: Industry (excluding construction), Manufacturing, Construction, Information and Communication, Wholesale and Retail Trade, Financial Activities, Professional and Scientific Activities and Arts, Entertainment and Recreation.

The following Figures present the quarter-on-quarter cumulative change in the respective indicators, for the first two quarters of 2020 which will allow us to analyze the severity of the outbreak of the covid-19 pandemic as well as the first three quarters of 2020 in an attempt to measure the effects of the easing of restrictions that occurred during the summer period and examine whether there was a recovery from the initial shock.

A first important result that can be gleaned from Figure 5 is that the industry sector (comprising of Mining and Quarrying, Manufacturing, Electricity, gas, steam and air conditioning supply and Water supply, sewerage, waste management and remediation activities) suffered significant losses in Sweden, where the Value Added of the sector declined cumulatively by 17 p.p. and, to a lesser extent, in Finland where the decline was 4 p.p. In Ireland, the Industry sector recorded a considerable expansion of almost 10 p.p., being the only EU country that did not suffer losses in the first two quarters of 2020 (for more on this see O'Toole (2020)). Once we consider the cumulative quarterly change of the first three quarters of 2020 we do observe that there was a substantial recovery. In particular, in Sweden the cumulative growth rate of the value added turned positive, increasing by almost 20% in Q3, while in Ireland the sector expanded by almost 5%, leading to a cumulative growth rate of 15%. In contrast, in Finland the recovery was incomplete, as the expansion of the third quarter was not enough to reverse the negative trend of the first two quarters.

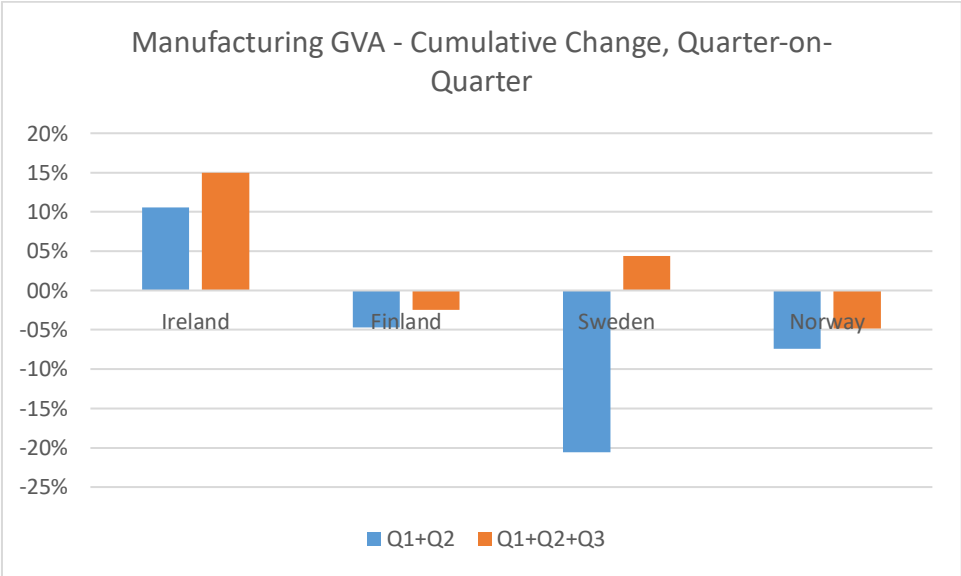
In order to obtain a better insight into the drivers behind this behavior in the Industry sector, Figure 6 focuses on the evolution of Value Added in Manufacturing, since this sector accounts for 80 to 95% of the Value Added of the Industry sector (the only exception being Norway, for which the Mining and Quarrying sector dominates the production of industrial Value Added). It is evident from the Figure that the developments in Manufacturing determine the trends of the Industry sector; for example, in Ireland, the strong performance of Manufacturing in the first quarter of 2020 essentially ensured that the impact of the pandemic would be minimal.

Figure 5: Quarter-on-Quarter Changes in Industry GVA



Source: Authors' calculations based on Eurostat data

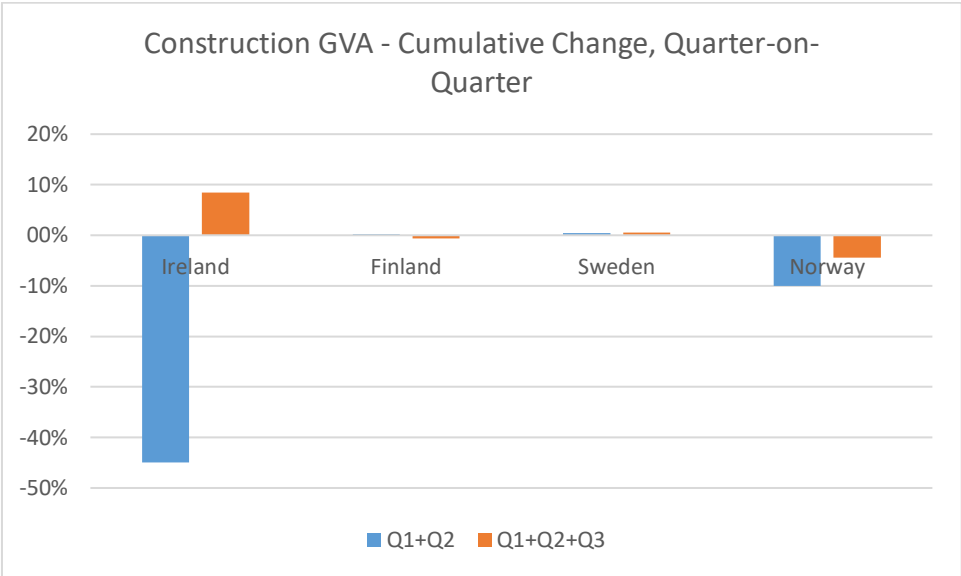
Figure 6: Quarter-on-Quarter Changes in Manufacturing GVA



Source: Authors' calculations based on Eurostat data

Turning to the Construction sector in Figure 7, Ireland exhibited a decline of 45 p.p., more than 4 times larger compared to the decline observed in Norway. In Sweden and Finland the value added of the construction sector was essentially constant. The third quarter of 2020 saw a significant expansion of activity in Ireland, resulting in a cumulative growth rate of 8 p.p. while in the rest of the countries in the sample we observe either an incomplete recovery (Norway, Sweden) or even a slight reduction in activity (Finland).

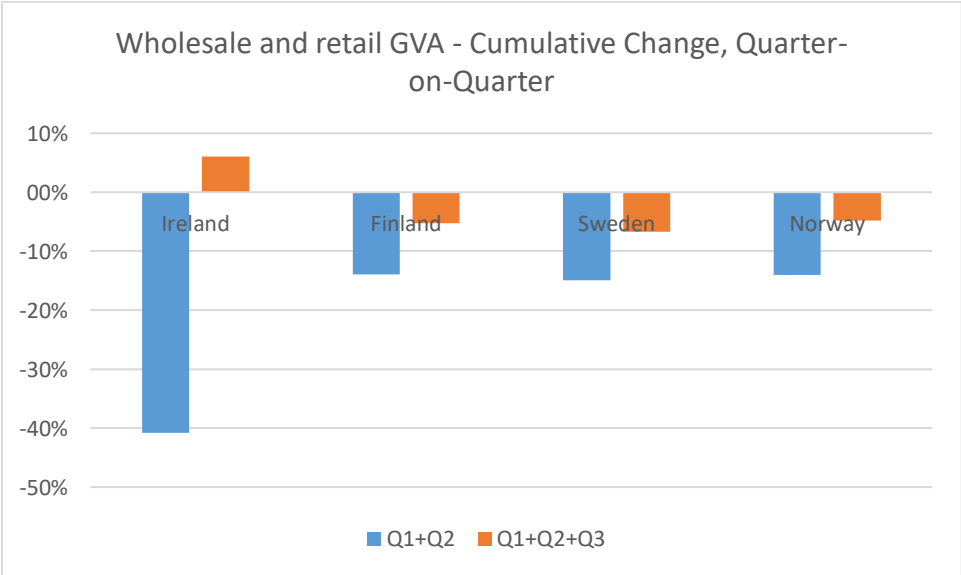
Figure 7: Quarter-on-Quarter Changes in Construction GVA



Source: Authors' calculations based on Eurostat data

The positive effect of the easing of restrictions is evident in the large sector comprising Wholesale and Retail Trade, Transport, Accommodation and Food Services (Figure 8). Although all the countries in the sample recorded a cumulative contraction in value added in the first two quarters of 2020, with the loss of output in Ireland reaching almost 40 p.p., the third quarter saw a substantial yet incomplete recovery. In particular, Finland, Norway and Sweden saw an expansion of value added of 8.7% on average, while Ireland grew by 46%, thus managing to recover from the extensive losses in value added over the first two quarters of 2020. Unfortunately, Eurostat does not provide a further breakdown of the data for each of the individual sectors on a quarterly basis; as such, we cannot examine which of the sectors contributed most to the observed outcome.

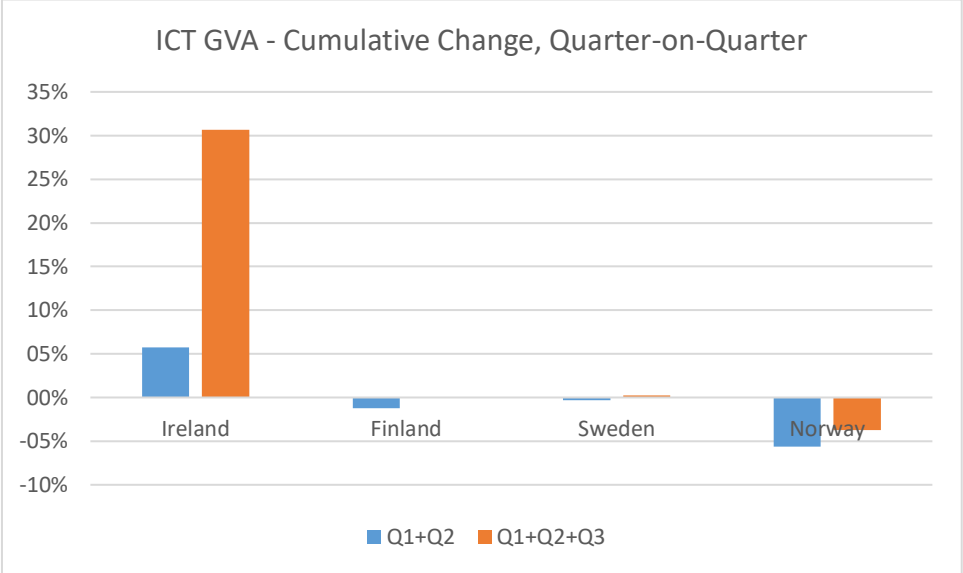
Figure 8: Quarter-on-Quarter Changes in Wholesale and Retail GVA



Source: Authors' calculations based on Eurostat data

In the Information and Communication (ICT) sector Ireland seems to outperform the rest of the countries in the sample, recording an expansion in cumulative terms both in the first two and the first three quarters of 2020, with the third quarter seeing an increase of almost 25 p.p. On the contrary, all the other countries saw a minor decline in the first two quarters, which they weren't able to reverse by the end of the third quarter, with Norway exhibiting the worse performance as it contracted by 4 p.p.

Figure 9: Quarter-on-Quarter Changes in Information and Communication GVA

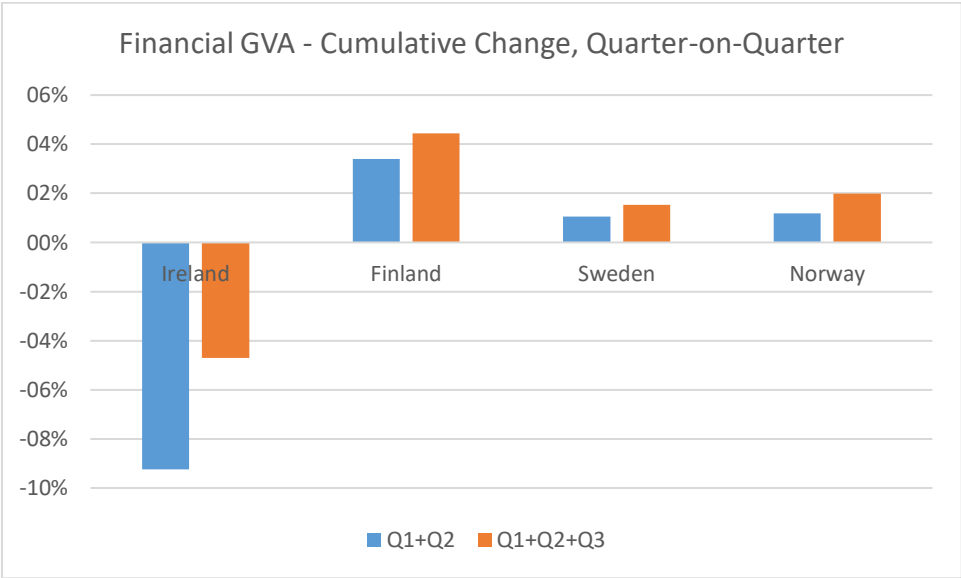


Source: Authors' calculations based on Eurostat data

In the Financial and Insurance activities sector depicted in Figure 10, Ireland is the only country that faced cumulative losses in value added over the first nine months of 2020. In particular, up to Q2 of 2020 the decline in Ireland was 9%, while the recovery recorded in the third quarter was 4.5% and, thus, not able to cover the overall loss. The rest of the countries recorded an expansion with Finland experienced a 4% cumulative growth in the first three quarters.

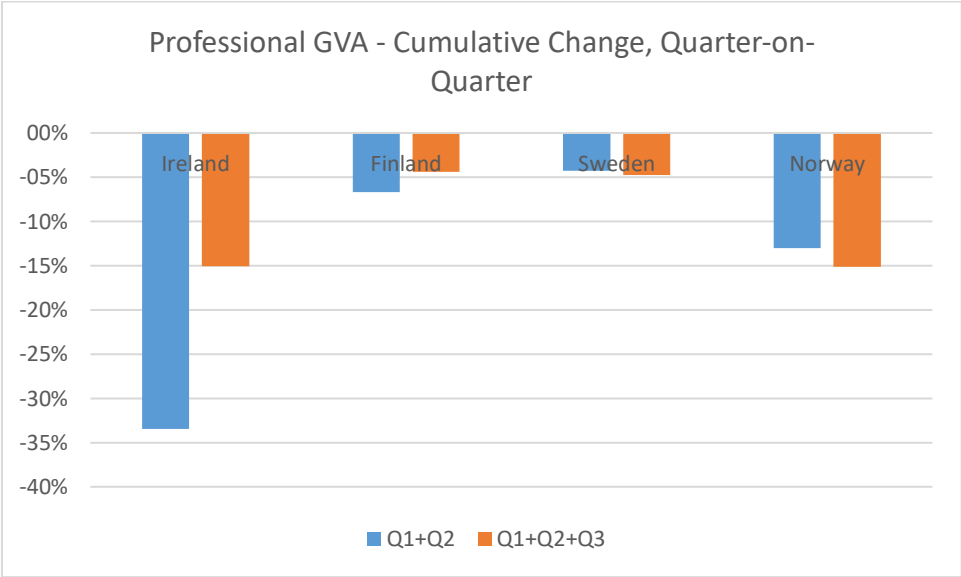
Turning to the developments in the Professional, scientific, technical, administrative and support service activities sector, we observe that all countries in the sample faced significant cumulative losses in value added in the first two quarters, with Ireland recording a loss equal to one third of the sector's output. By the end of the third quarter, only Ireland and Finland were able to recover a part of the loss, yet the recovery was incomplete; in Norway and Sweden the loss of value added continued albeit to a lesser extent compared to the first six months of 2020.

Figure 10: Quarter-on-Quarter Changes in Financial Activities GVA



Source: Authors' calculations based on Eurostat data

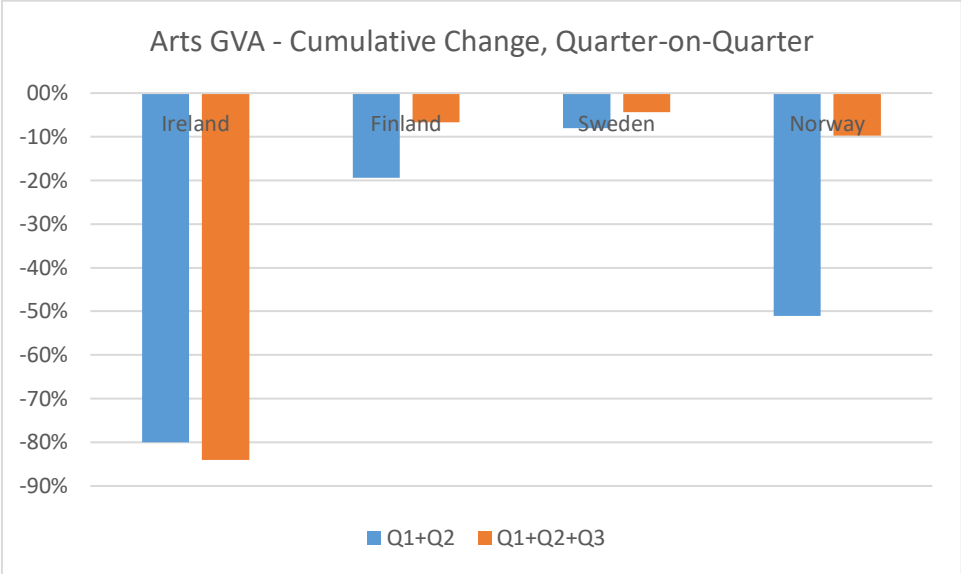
Figure 11: Quarter-on-Quarter Changes in Professional Activities GVA



Source: Authors' calculations based on Eurostat data

The last sector to be examined in the Arts, Recreation and Entertainment activities. Here we observe significant losses in all the countries, with Ireland standing out having recorded a cumulative loss of 80 per cent in the first two quarters of 2020; this decline is the largest across all the countries in the EU (see O'Toole (2020)). It should also be noted that while Finland, Norway and Sweden exhibited a positive growth rate in the third quarter, Ireland kept on a negative trend albeit significantly milder compared to the catastrophic second quarter of the year.

Figure 12: Quarter-on-Quarter Changes in Arts and Entertainment GVA



Source: Authors’ calculations based on Eurostat data

Overall, we observe large degree of heterogeneity exhibited in the performance of the various sectors of the economy across countries, both in the first two quarters of 2020 when the pandemic's first wave hit and during the third quarter which saw a lifting of restrictions and a surge in economic activity. In Ireland, both the Industry and the ICT sector recorded significant gains, in contrast to the rest of the countries that faced losses in terms of value added. At the same time, the decline in sectors like Wholesale and Retail Trade and Arts and Entertainment in Ireland, which far exceeded the corresponding losses in the rest of the countries highlight the importance of accounting for country-specific structural and behavioural characteristics. These characteristics are the ones that in effect determine the response to the shock caused by the covid-19 pandemic.

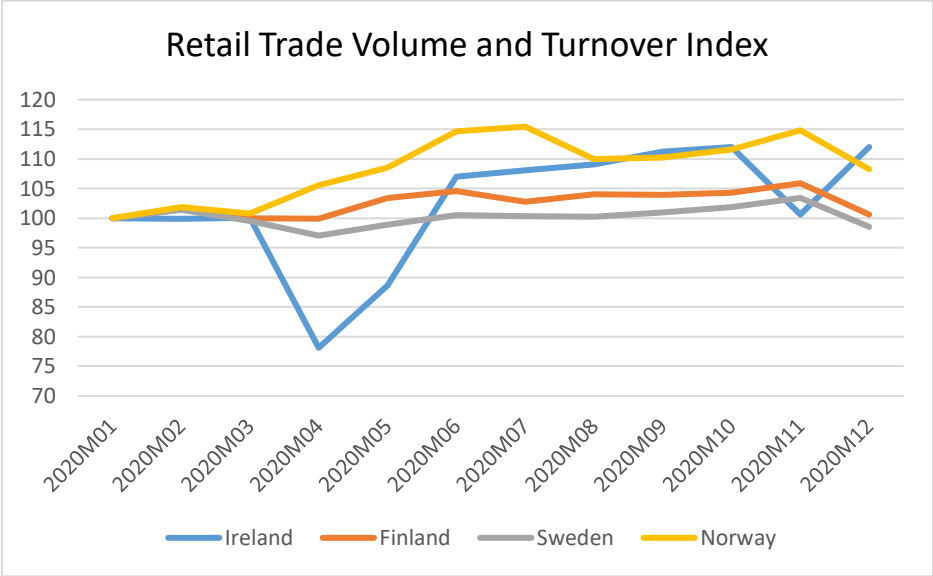
Impact of Covid-19 on Short-Run Indicators

In order to obtain a “real time” sense of the impact of the pandemic on the workings of the economy, we utilize monthly indicators which by definition provide more information regarding the impact of changes in economic conditions, shifts in policy and in the sentiment.

The first indicator that we examine is the Retail Trade indicator; this is a business indicator which measures the monthly changes of the turnover of retail trade (covers sector G of the NACE REV2 classification).

As is evident in Figure 13, Ireland experienced the largest drop after the outbreak of the pandemic which lasted until April 2020. Then, a V-shaped recovery period followed that could potentially be explained by the fact that consumers resumed to spending in order to satisfy the demand of previous months. Finland and Sweden experienced a much milder decline in the first two months of the pandemic, and by May 2020 their retail sales index had surpassed its pre-pandemic level; Norway is a clear outlier in this sample, with the sales indicator exhibiting a robust upward trend that was reversed in July 2020.

Figure 13: Retail Trade Index

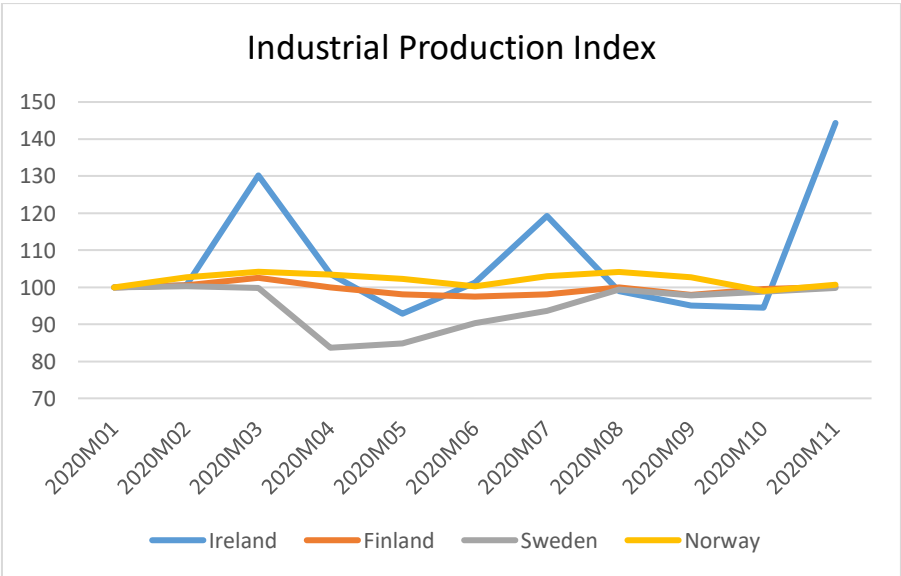


Source: Authors' calculations based on Eurostat data

By June 2020 the volume of retail sales in Ireland had surpassed its pre-pandemic level and remained on an upward trend until October 2020, when Ireland was placed on Level 5. The decline continued in November 2020, while in December a significant increase was recorded. This is in contrast to the experience of the Nordic countries of the sample, which saw a large decline in the retail sales index since November 2020.

The next short-run indicator is the Industrial Production Index, a business cycle indicator which measures monthly changes in the price-adjusted output of industry. It covers the industrial sector of the economy and, in particular, comprises the following economic activity sectors: B-Mining and quarrying, C-Manufacturing, D-Electricity, gas, steam and air conditioning supply, E-Water supply; sewerage, waste management and remediation activities.

Figure 14: Industrial Production Index



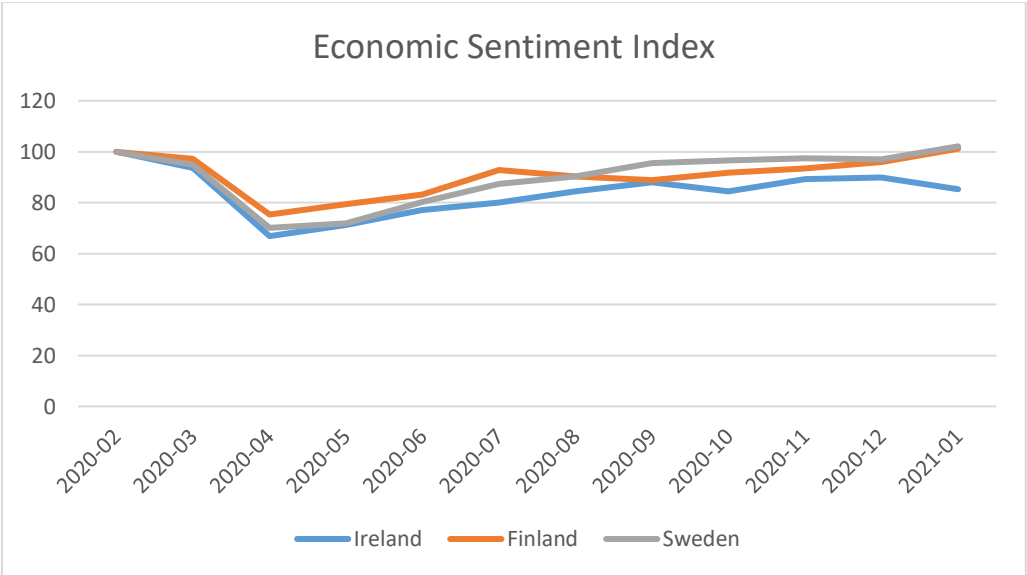
Source: Authors' calculations based on Eurostat data

In Ireland, industrial production seems to be more volatile compared to the rest of the countries. Production started declining after March 2020 as a result of the imposition of the lockdown measures with a reversal of the trend up to July 2020, when a new decline started with the indicator returning to its pre-pandemic level. Then, up to October 2020 the decline was relatively mild while in November 2020 a significant increase was recorded (which requires further investigation).

In Finland and Norway the index remained largely stable, with a minor decrease between April and June 2020 which was then reversed, with the indicator returning to its pre-pandemic level by October 2020. Sweden faced a significant decline in industrial production during the first two months of the pandemic; however, since April 2020 production was on the rise and all the losses were recovered by August 2020.

Lastly, we examine the evolution of the Economic Sentiment Index, a composite indicator that captures the evolution of the expectations of the private sector regarding the future path of the economy. The index is calculated as a weighted average of the balances of replies to selected questions addressed to firms in five sectors covered by the EU Business and Consumer Surveys and to consumers (industry (weight 40%), services (30%), consumers (20%), retail (5%) and construction (5%).

Figure 15: Economic Sentiment Index

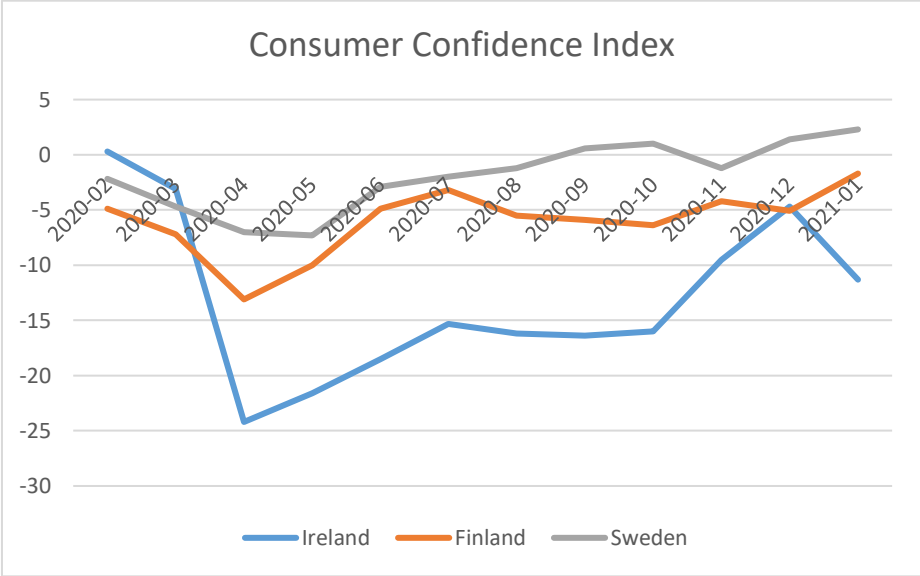


Source: Authors’ calculations based on Eurostat data

As can be seen in Figure 15, in the first two months of the ongoing pandemic, economic sentiment collapsed; however, despite its initial recovery in all countries, economic sentiment started declining again in Finland by July 2020 while Ireland did not face a decline until October 2020 and again in December 2020 when Level 5 restrictions were again imposed, negatively affecting expectations. In Sweden, in the post-April 2020 period, economic sentiment followed an uninterrupted upward path.

The effect of the pandemic on expectations is evident in the oscillating patterns of the consumer confidence index, one of the subcomponents of the Economic Sentiment index, with Irish consumers being far more pessimistic.

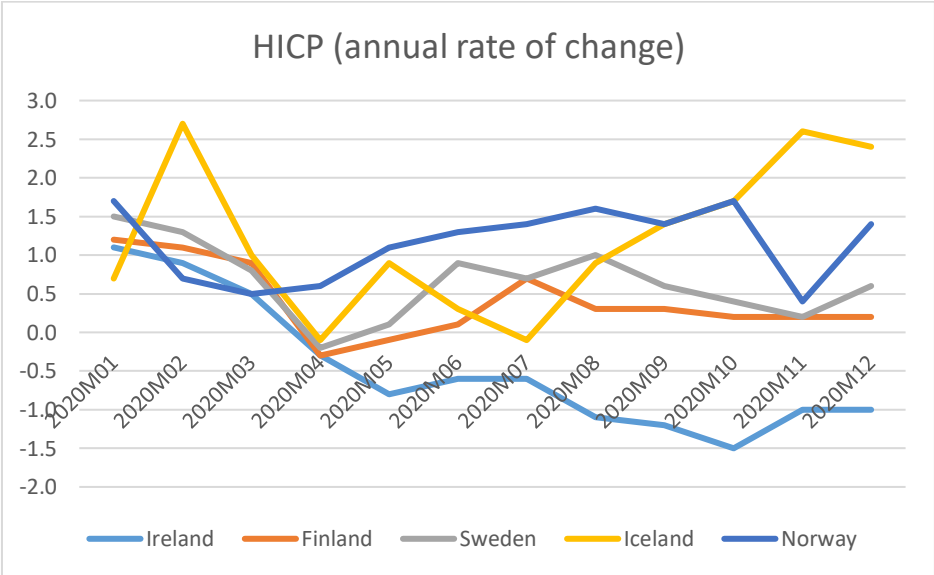
Figure 16: Consumer Confidence Index



Source: Authors' calculations based on Eurostat data

The impact of the ongoing Covid-19 pandemic on the measure of inflation (in our case, HICP) is subject of ongoing debate. In the case of Ireland we observe a significant decline in inflation, which may potentially be explained by the fact that demand side factors (such as the decline in consumption and the increases in the savings of households) dominate, leading to the observed disinflation. For the rest of the countries in the sample, we observe a rather oscillatory behavior, with Iceland experiencing a significant increase since July 2020, while Finland and Sweden are below their pre-pandemic levels.

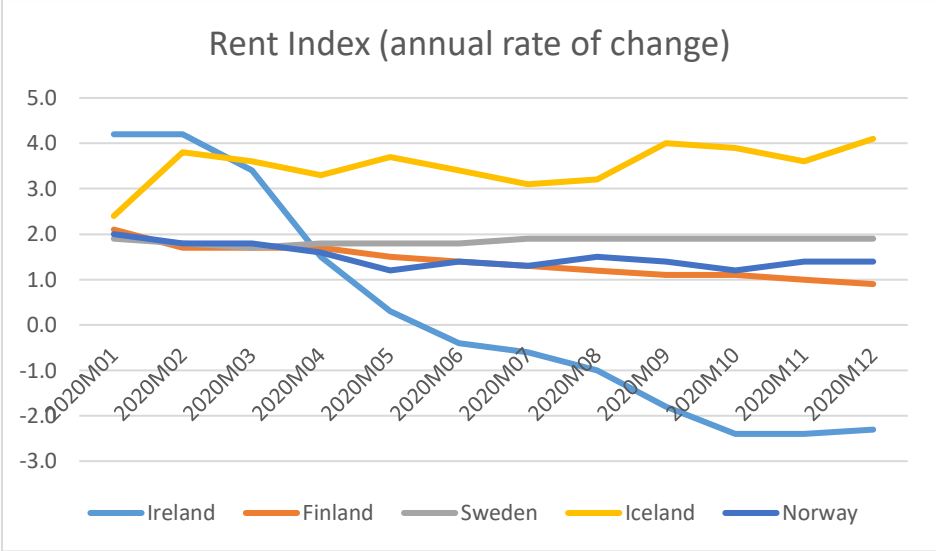
Figure 16: Inflation



Source: Authors' calculations based on Eurostat data

The rent index (one of the components of the overall measure of inflation) in Ireland exhibits a quite distinct **behavior**; it followed a constantly declining trend from March to October 2020, beyond which it flattened. For the rest of the countries in the sample, the rent index has remained largely stable.

Figure 17: Rent Index



Source: Authors’ calculations based on Eurostat data

Restrictive Policies, Fear and Short-Run Economic Activity

The widespread implementation of policies restricting movements and closing non-essential businesses in order to contain the spread of the virus has initiated a debate related to the effects of such measures on economic activity and whether they are the main cause of the observed decline. At first sight, there seems to be a strong correlation between the two, especially in light of the evidence presented above, which indicate that the easing of the restrictive policies coincides with a surge in economic activity (both in terms of the value added produced and the increases in consumption expenditure). However, this approach neglects the effects that the pandemic has on the behavior of individuals. Recently published research (see, among others, Goolsbee and Syverson (2021)) utilizes mobile phone usage data and highlights the fact that the decline of economic activity is largely explained by the choice of the consumers to reduce their visits to stores for shopping due to their fear of being infected. In particular, this research provides evidence that in areas where the number of Covid-related deaths is high, consumers voluntarily reduce their in-store visits, even more so in the case of large stores and establishments which do not provide the online shopping alternative. This finding is crucial in terms of policy design, as it implies that it is the impact on consumers’ behavior rather than the policy measures implemented that actually impact on economic activity.

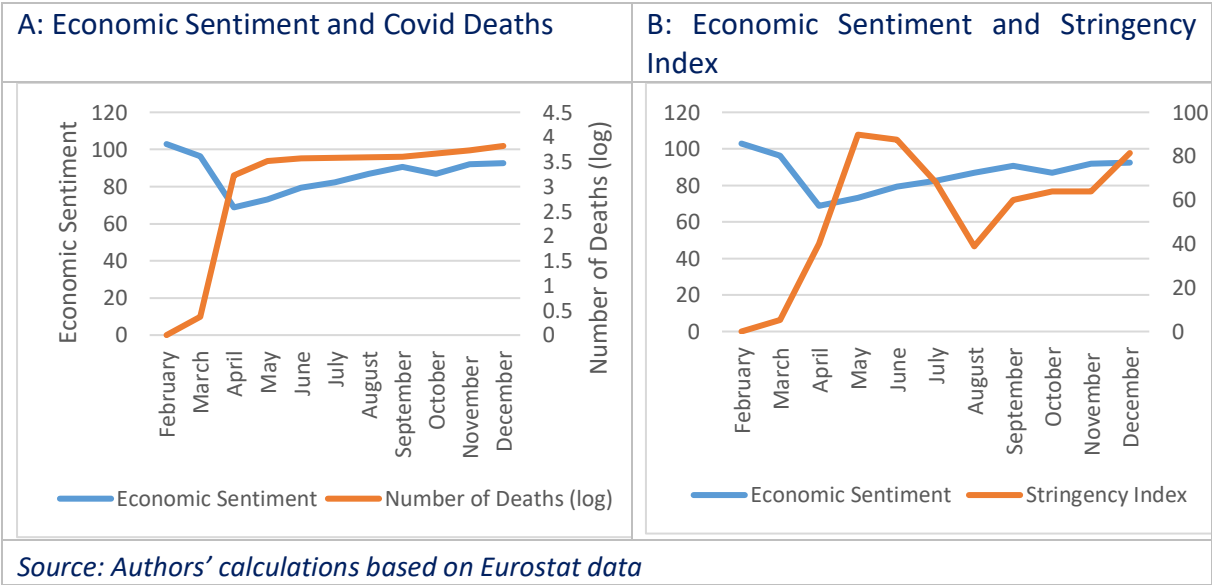
In order to examine whether it is the implementation of government policy or the fear resulting from the increases in infection and mortality rates that affects the behavior of individuals that ultimately affects economic performance, we focus on their potential impact on the economic

sentiment index. This index, as already stated, captures the expectations of the private sector regarding the future path of the economy.

In particular, we focus on providing simple correlations between the economic sentiment index and measures of the severity of covid-19 per country as proxied by the (log of the) number of deaths as well as a measure of the severity of the lockdowns (as captured by the stringency index developed by Hale et al. (2020)).

Starting with Figure 18, we examine the relationship between the economic sentiment indicator and the (log of the) number of Covid-related deaths – note that because of data limitations regarding the economic sentiment indicator, we focus on Ireland, Finland and Sweden. It is evident that the sharp rise of Covid-related deaths recorded between February and April 2020 is correlated with a sharp deterioration of economic sentiment. This suggests that the expectations formed regarding the future path of the economy deteriorated. However, starting from May 2020 the stabilization in terms of number of deaths (note that since the number of deaths is presented in a log scale in the y-axis, each point represents the corresponding percentage change) seems to have led to an improvement in terms of sentiment. Nonetheless, the economic sentiment index has not returned to its pre-Covid level by the end of 2020.

Figure 18 Comparisons – Ireland



Figures 19 and 20 (A), which depict the economic sentiment indicator and the number of deaths for Finland and Sweden, respectively, seem to corroborate these results. In particular, in both countries the rapid increase in the number of Covid-related cases led to a deterioration of the economic sentiment indicator, which was reversed once the number of deaths stabilized. By the end of the period under examination, the increase in the number of deaths led to another decline in the economic sentiment index in Sweden. Overall, this set of descriptive evidence seems to suggest that the expectations formed by the private sector are negatively affected by the rise in Covid-related deaths, indicating that the evolution of the pandemic and its effects on mortality could be an important driver of economic activity.

Figure 19 Comparisons – Finland

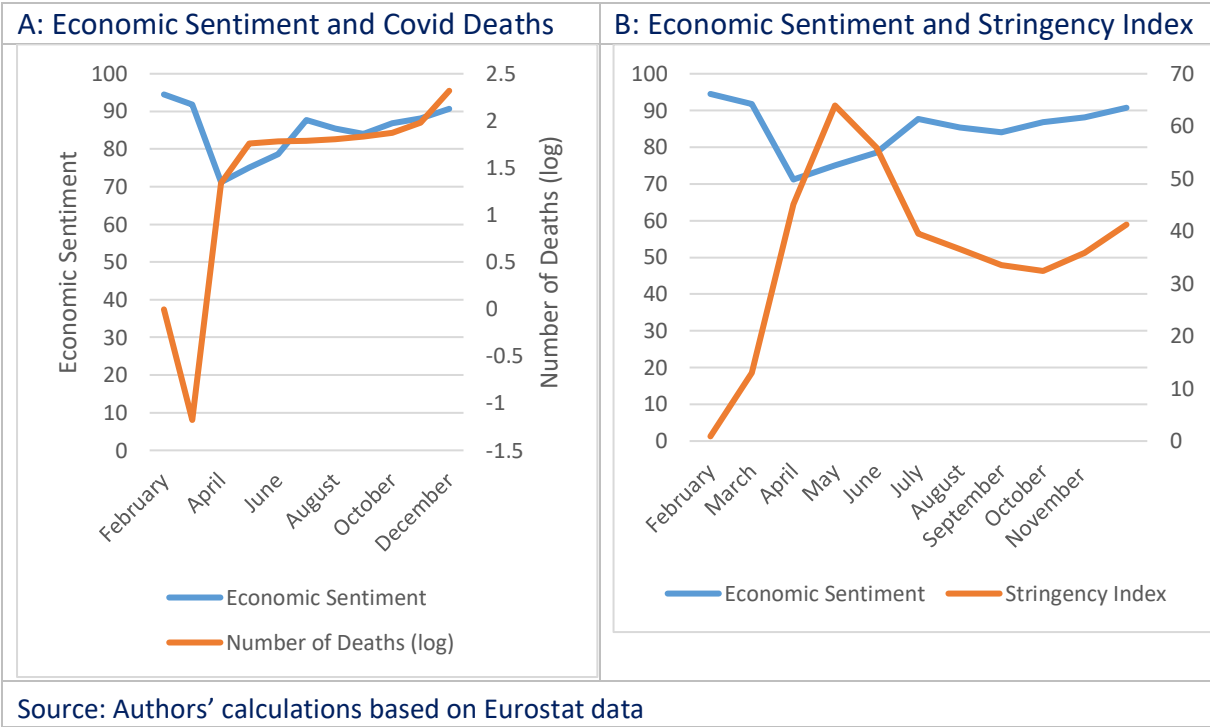
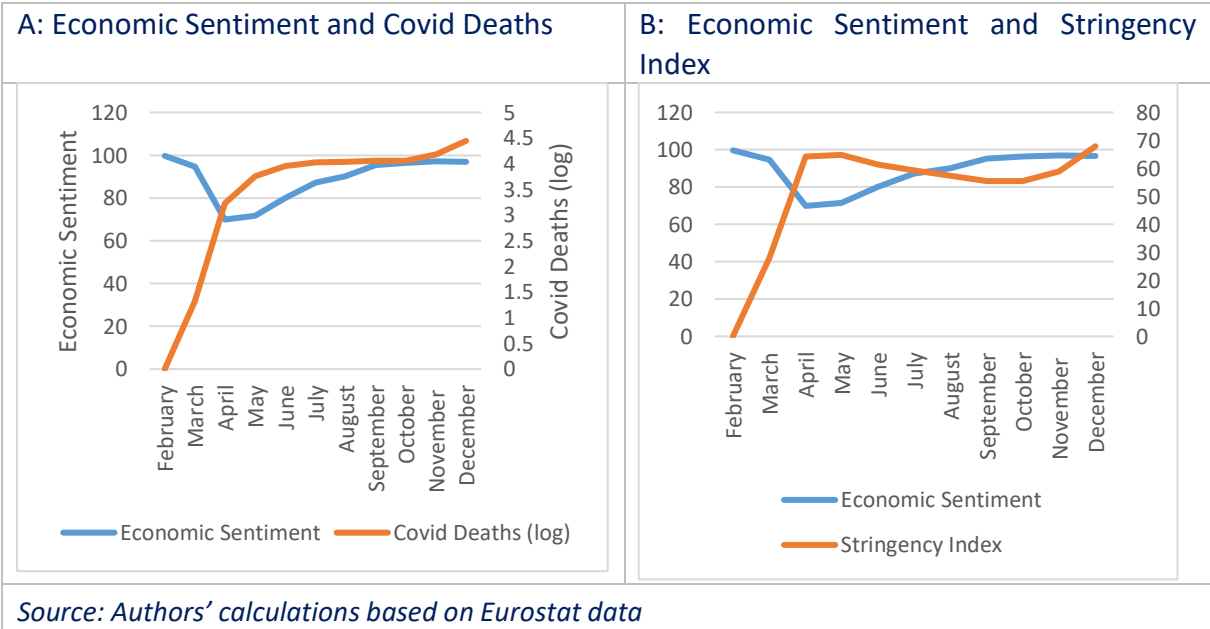


Figure 20 Comparisons – Sweden



In order to examine whether the imposition of lockdown measures is related with the formation of the private sector’s expectations regarding the future path of the economy, we present in Figures 18-20 (B) both the economic sentiment index and the Stringency index of Halle et al (2020). We observe that in this case there is no clear correlation between the two measures; rather, a quite heterogeneous relationship seems to emerge without a clear pattern. In particular, while the initial tightening of the restrictive measure seems to be correlated with a deterioration of expectations across all three countries in the beginning of 2020, the further

tightening of the measures up until May 2020 seems to coincide with an improvement in the economic sentiment indicator. This improvement persisted during the summer period which saw a gradual easing of the restrictions, while in the post-September period when the lockdown measures were re-introduced the trend in the economic sentiment index remained positive. Overall, this set of results suggests that the formation of expectations is not correlated with the stringency of the lockdown measures which, at a first glance, implies that this type of policy measures implemented by governments is not the main determinant of the observed economic outcomes.

Concluding Remarks

The aim of this section was to explore the impact of the Covid-19 pandemic on the macroeconomic performance of the Northern Periphery and Arctic 2014-2020 Programme partner countries, focusing both on the effects on the total economy and the various sectors of economic activity, as well as on short-run indicators that can capture the “real time” impact of the ongoing pandemic.

The evidence suggests that the negative effects on economic activity are largely concentrated in the second quarter of 2020, with the magnitude of the impact varying across countries. While we observe a recovery during the third quarter the recovery was incomplete -with the exception of Ireland- and didn't manage to cover the initial losses in terms of output. The resilience of the Irish economy seems to be driven by the performance of the Industry sector which, unlike the rest of the countries in the sample, managed to expand its output. Regarding sectors which heavily rely on social interaction, such as the Arts and Entertainment Activities sector, we observe significant losses across all the countries.

Moreover, this research attempted to shed some light on whether it is the stringency of the lockdown measures that has a bearing on the private sector's behavioral response or the fear resulting from the increases in mortality rates. The relevant evidence suggests that it is the latter that affects the expectations of the private sector and is potentially contributing to the observed economic outcomes.

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