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**Strong Increase in Innovation Spending by  
Austrian Companies in the Second Year  
of the COVID-19 Pandemic**

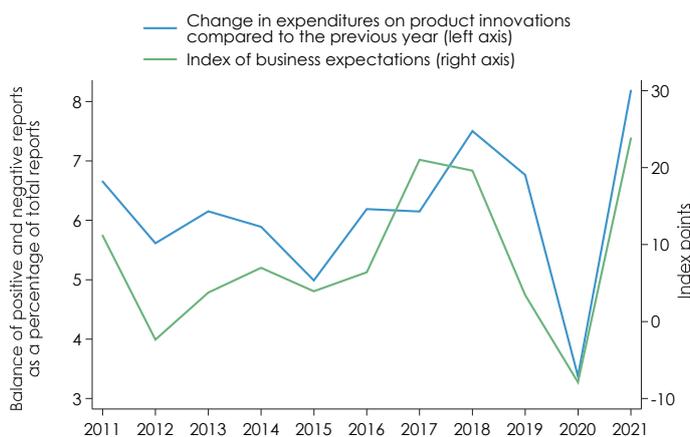
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# Strong Increase in Innovation Spending by Austrian Companies in the Second Year of the COVID-19 Pandemic

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- The share of companies that introduced new products increased slightly in 2021 compared to the previous year.
- As in the previous year, small and medium-sized enterprises (SMEs) and companies with a low innovation intensity in particular held back on their product innovations in 2021.
- Spending for innovation activities increased strongly in 2021. The corresponding indicator reached its highest level in ten years.
- While in 2020, companies of all sizes had tried to keep their innovation expenditure stable, in 2021 a broad-based expansion was observed. However, the persistence of the COVID-19 crisis is likely to have caused noticeable difficulties for SMEs in particular in 2021.
- The reports on innovation spending planned for 2022 reflect the cautiously optimistic business expectations. The majority of companies plan to keep spending constant.
- Given the current developments in Ukraine and the share rise in inflation and energy prices in the first quarter of 2022 we should expect to see a reversal of business sentiment and as a consequence a downward revision of innovation spending plans by firms.

## Expenses for product innovations



**"The improvement in business expectations in the second year of the COVID-19 pandemic was accompanied by a marked expansion of innovation spending. However, uncertainties remain. If the pandemic persists, the innovative capacity of SMEs in particular could be impaired in the long term."**

With the improvement in entrepreneurial expectations, domestic companies have strongly increased their innovation expenditures in 2021 (Source: WIFO-Konjunkturtest).

# Strong Increase in Innovation Spending by Austrian Companies in the Second Year of the COVID-19 Pandemic

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April 2022

## Strong Increase in Innovation Spending by Austrian Companies in the Second Year of the COVID-19 Pandemic

The results of the December 2021 WIFO-Konjunkturtest (business cycle survey) show that Austrian companies expanded their innovation spending in 2021. However, the still unfavourable economic environment has led to restraint in the introduction of new products. The persistence of the COVID-19 crisis is likely to have hit the innovation activity of small and medium-sized enterprises in particular.

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## 1. Introduction

In 2020, the COVID-19 pandemic led to a decline in innovation activity among Austrian companies (Reinstaller, 2021). The share of companies that launched new products on the market declined compared to 2019, and expenditure on the development and introduction of new products also developed in a subdued manner after a multi-year phase of continuous expansion. However, most companies tried to keep their innovation expenditure stable. Especially small and medium-sized enterprises (SMEs) and companies with a low innovation intensity reduced their activities to introduce new products in 2020. In addition, given the unfavourable business expectations their planning for 2021 was also very restrained.

These results of the WIFO-Konjunkturtest (business cycle survey) were supported by the annual R&D estimates published by Statistics Austria in early summer 2021. They suggest that in 2020 the corporate sector's financing share of total R&D expenditure in Austria fell sharply from 48.1 percent to 41.4 percent. In absolute terms, this corresponds to a decline in R&D financing by the corporate sector of almost 700 million € from 5.73 billion € in 2019 to 5.03 billion € in 2020.

International studies show similar developments in other countries. For Germany, Diekhof et al. (2021) conclude that innovation spending by German companies in 2020 was about 2 percent lower than in the previous year, with companies with fewer than 100 employees in particular cutting back on their spending more than larger companies. The development was also heterogeneous across sectors. While ICT service providers and the pharmaceutical industry, for example, increased their R&D spending strongly in 2020, it stagnated or fell in sectors that suffered from the effects of the COVID-19 pandemic and the subsequent supply chain problems, such as the automotive industry. Towards the end of 2020, however, the situation stabilised there again.

The results of the European Commission's R&D Scoreboard (Grassano et al., 2021), which examines the R&D behaviour of 2,500 multinationals and large companies worldwide, paint a more differentiated picture. According to this analysis large companies increased their spending by 6 percent in 2020 compared to 2019. However, the increase was weaker than in previous years. Here, too, the effects were very asymmetrically distributed. R&D spending by ICT

service providers, ICT manufacturers and companies in the healthcare sector rose sharply in some cases, while it stagnated or fell for most companies in the automotive manufacturing, aerospace and chemicals sectors.

The results of the WIFO-Konjunkturtest (business cycle survey) of December 2021 presented here point to a strong expansion of

innovation spending in 2021 by Austrian manufacturing companies. In contrast, domestic companies were still cautious about introducing new products in view of the uncertain environment. SMEs showed greater restraint in their innovation behaviour than larger companies. Companies in sectors with lower innovation intensity were also still behaving cautiously compared to those in innovation-intensive sectors.

## 2. Data basis

Since 2011 the WIFO-Konjunkturtest (business cycle survey)<sup>1</sup> includes questions on innovation expenditures and the introduction of new products once a year in December. The results for 2021 provide a comprehensive picture of the innovation behaviour of

Austrian companies during the COVID-19 pandemic. 475 companies took part in the December 2021 survey wave. The indicators used in the analysis are summarised in the text box below.

### Indicators used

**Proportion of innovative companies:** proportion of all positive reports on the question of whether new products were introduced in the past year among all companies surveyed (Reinstaller, 2019).

**Change in expenditures for product innovations in the reporting year compared to the previous year:** the companies report whether such expenditures were made and whether they were higher, lower or the same compared to the previous year. The reports are shown as balances. The share of negative reports is subtracted from the share of positive reports in all reports of a year. The indicator was standardised in such a way that it can assume values between -1 and +1. With a value of zero, positive and negative reports balance each other out.

**Planned expenditures for product innovations in the following year compared to the reporting year:** calculation analogous to the previous indicator.

**Index of business expectations on the business situation:** the indicator is composed of monthly reports on questions on the development of production and employment in the next three months and on the development of the business situation in the next six months. The reports on these questions were first balanced for each enterprise over the monthly reports of the three indicators and from this an annual average was calculated over all reports of the enterprise in one year.

## 3. New product launches stabilised in 2021 after slump in previous year

Business expectations improved considerably in the course of 2021. Aggregating the monthly values of this indicator to annual values shows a marked improvement after the sharp decline in 2020 (Figure 1).

The share of companies reporting the introduction of new products has fallen steadily since 2015. In 2020, the indicator then contracted sharply by 5.2 percentage points. For 2021 the data point at a mild recovery by 0.6 percentage points<sup>2</sup>. This indicates that despite their predominantly positive business expectations, companies continued to assess the economic environment as unfavourable for the market launch of new products.

The decline in the share of enterprises launching new products in 2020 was particularly marked among smaller and medium-sized enterprises. The share of companies that did not introduce any new products in 2021 was highest in this group (Figure 2). If one compares the recent results with the average values observed between 2011 and 2019, the deviation from the long-term behaviour becomes visible: while in the years 2011 to 2019 an average of 38.7 percent of enterprises with 100 to 249 employees and 36.7 percent of enterprises with 250 to 499 employees had reported the introduction of new products, in 2021 the figures were down to 28.9 percent and 23.8 percent, respectively.

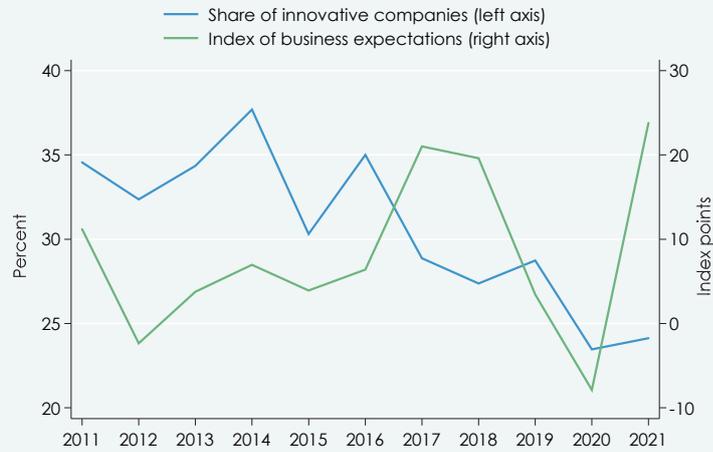
The share of companies that introduced new products increased slightly in 2021 compared to the previous year.

<sup>1</sup> See Reinstaller (2019) for a detailed description of the sub-survey on the introduction of new products or Hölzl and Schwarz (2014) for a description of the entire WIFO-Konjunkturtest (business cycle survey).

<sup>2</sup> The figures for 2021 may differ slightly from those reported in Reinstaller (2021), as the composition of the survey sample has changed slightly.

Figure 1: **Product innovations**

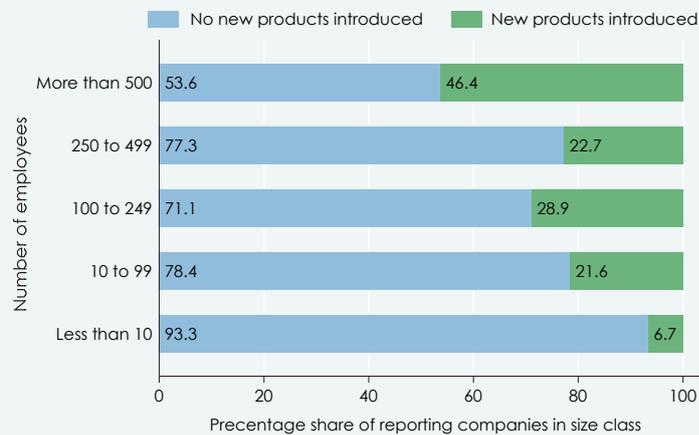
Percentage share of enterprises with product innovations of all reporting enterprises and index of entrepreneurial expectations as balance of positive and negative reports as a percentage of all reports



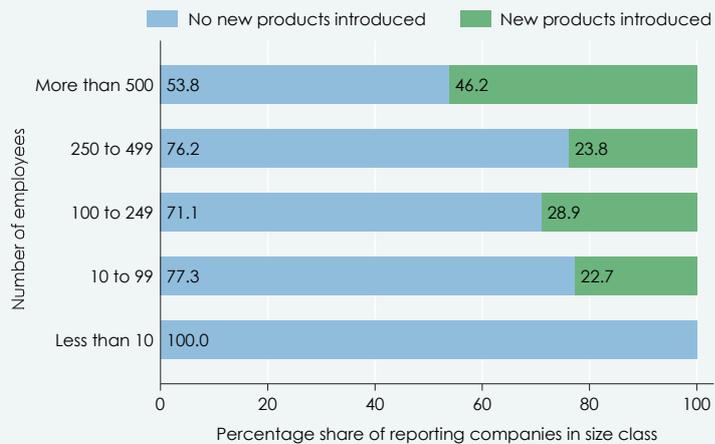
Source: WIFO-Konjunkturtest (business cycle survey).

Figure 2: **Product innovations in the reporting year by company size class**

2020



2021



Source: WIFO-Konjunkturtest (business cycle survey).

Before the COVID-19 pandemic, 27.9 percent of companies with 10 to 99 employees had reported the introduction of new products on average over many years. For micro-enterprises with fewer than 10 employees, the figure had been 18.8 percent. A comparison with the results for 2020 and 2021 shows that during the crisis, SMEs restricted the introduction of new products to the market more than larger firms.

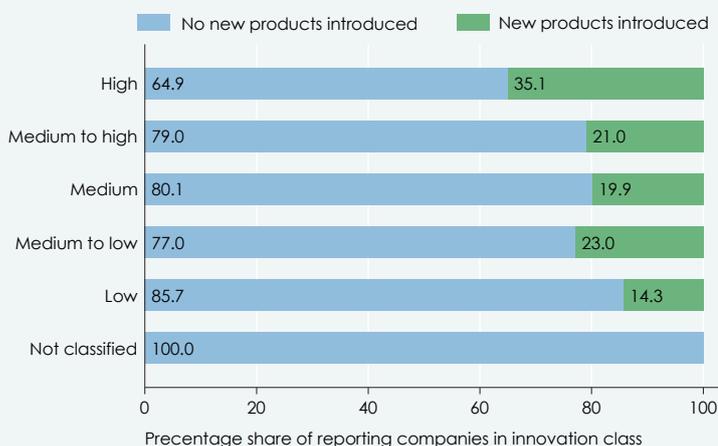
Breaking down results by the innovation intensity of the industry companies in industries

with medium and low innovation intensity deviate from the long-term average<sup>3</sup>. In sectors with a low innovation intensity, the share of companies with new products in 2020 was 11.9 percentage points below the long-term average observed for the pre-COVID-19 years. In 2021, this difference increased to 13.9 percentage points. In sectors with medium innovation intensity, the share of innovative enterprises in 2020 was 4.4 percentage points below the long-term average for the pre-COVID-19 years. In 2021, the gap widened to 10.9 percentage points.

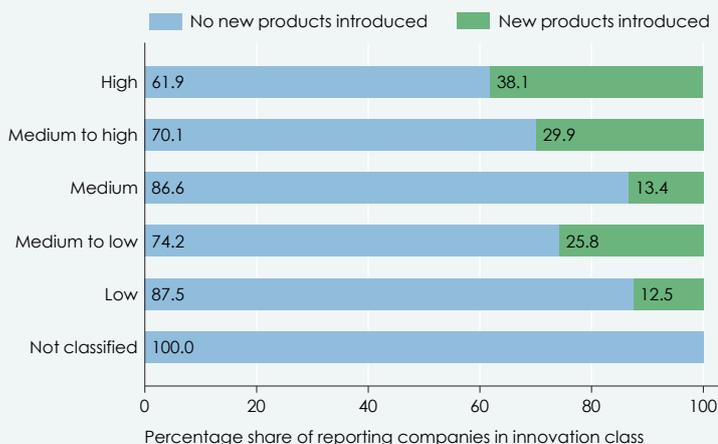
**SMEs and companies in sectors with a low innovation intensity in particular have delayed product innovations in 2021.**

Figure 3: Product innovations by innovation intensity of the industry

2020



2021



Source: WIFO-Konjunkturtest (business cycle survey).

For industries with higher innovation intensity the development in 2021 was different: the gap narrowed in sectors with high (2020 –6.9 percentage points, 2021 –3.9 percentage points), medium to high

(2020 –10.7 percentage points, 2021 –1.8 percentage points) and medium to low innovation intensity (2020 –5.5 percentage points, 2021 –2.9 percentage points).

<sup>3</sup> The underlying innovation taxonomy is described in Peneder (2010). An updated version using the current NACE 2008 classification was used for this study.

#### 4. Innovation expenditures increased strongly in 2021

**Expenditure on new product launches rose strongly in 2021. The corresponding indicator reached its highest level in ten years.**

Figure 4 shows the balance of positive (increase in innovation expenditure) and negative responses (decrease in innovation expenditure) as a percentage of all reporting companies, weighed by company size. Expenditures for the introduction of new product started to decline already in 2019 and plummeted again in 2020 (left-hand chart). However, as the indicator never dropped below zero the number of companies reporting an increase in innovation expenditures still outweighed the number of companies reporting a decrease in innovation expenditures in 2020. In 2021, the trend reversed and the share of companies that have increased their innovation expenditures compared to the previous year rose sharply. The excess number of companies reporting increases in innovation expenditures went from 3.6 in 2020 to just under 8.2 percent in 2021. This corresponds to a 4.8 percentage points increase in the second COVID-19 year. In addition, the

indicator reached the highest level since first being introduced in 2011.

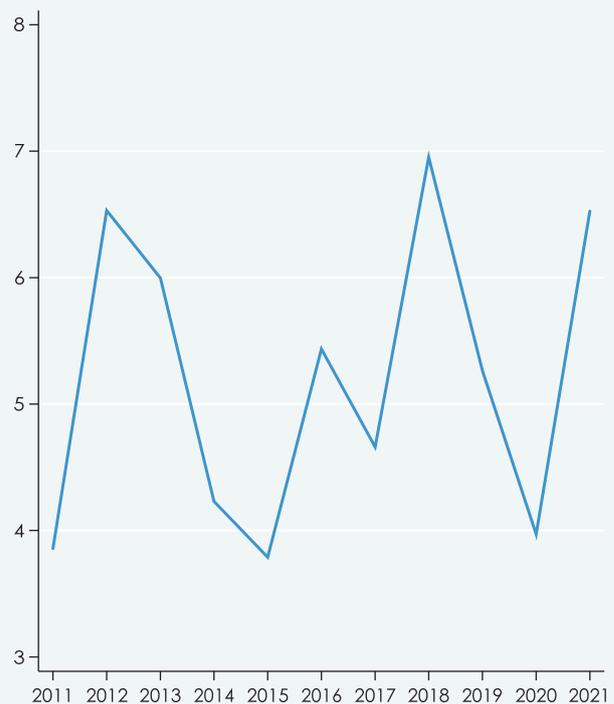
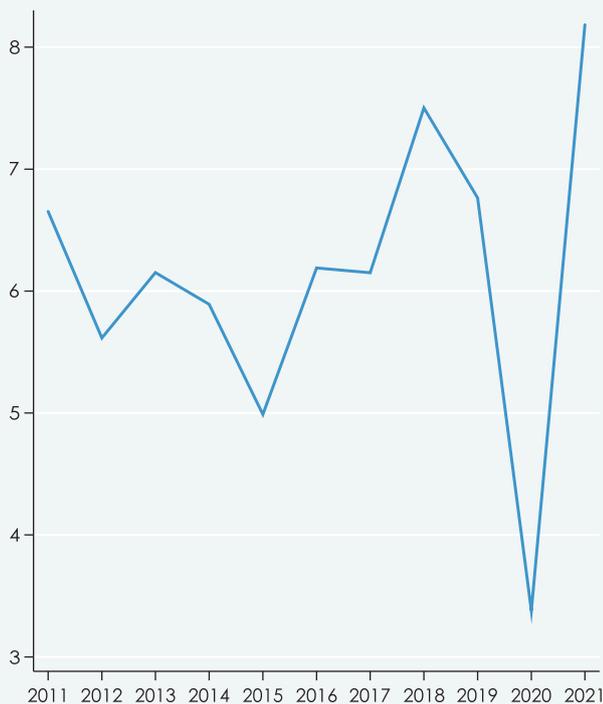
Figure 4 (right-hand chart) shows the same statistics but for planned innovation expenditures for 2022. This indicator reflects the planning uncertainty of the companies and is strongly influenced by the current business sentiment. For example, in 2020, the surveyed companies still assumed that they would have to reduce their innovation expenditure again in 2021, but revised their plans in the course of 2021. In December 2021, the companies were optimistic for 2022 and planned to expand their innovation expenditure again. However, depending on the further economic development in 2022, new revisions are possible. Given the current developments in Ukraine and the share rise in inflation and energy prices in the first quarter of 2022 we should expect to see a reversal of business sentiment and as a consequence a downward revision of innovation spending plans by firms.

Figure 4: **Expenditure on product innovations in the reporting year and planned expenditure on product innovations in the following year**

Balance of positive and negative reports as a percentage of all reporting companies, weighted by company size

Expenses for product innovations in the reporting year

Planned expenses for product innovations in the following year



Source: WIFO-Konjunkturtest (business cycle survey).

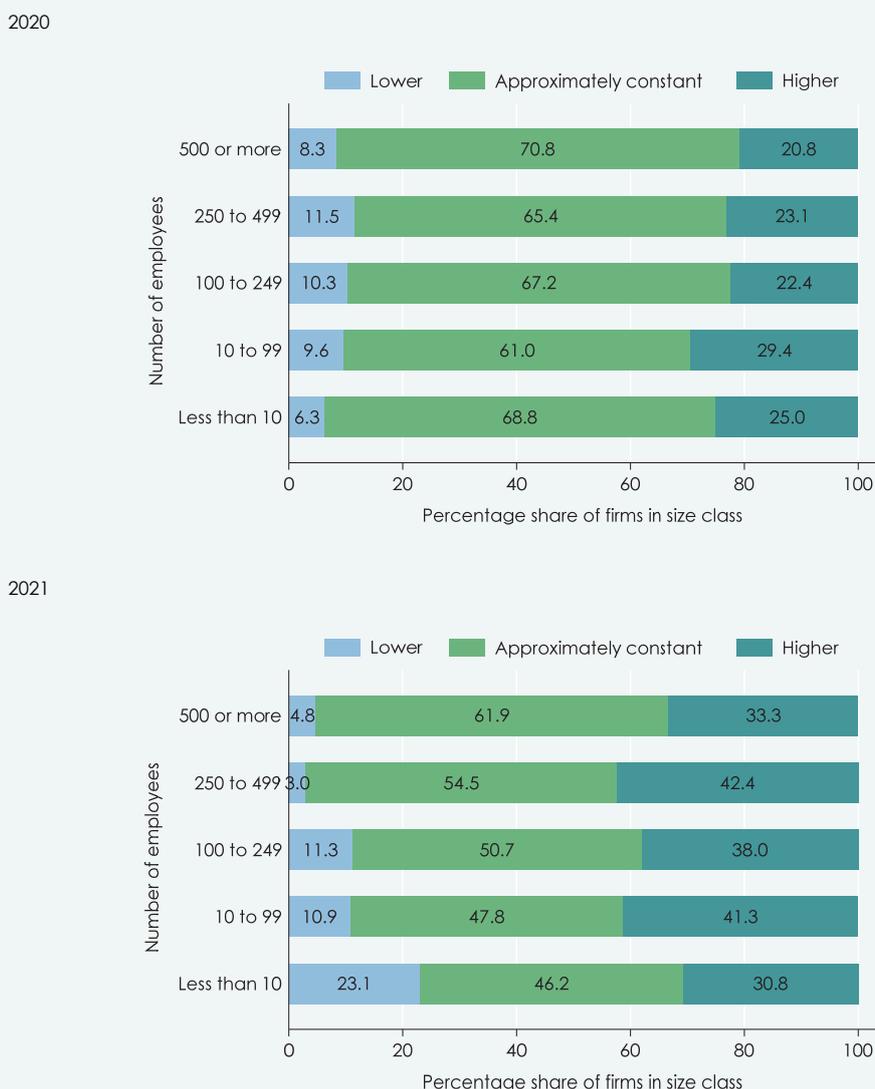
Figures 5 and 6 show the expenditure for the introduction of new products in 2020 and 2021 by firm size and the innovation intensity of the industries.

Comparing again the long-term averages observed before the COVID-19 pandemic with the values for 2020 shows that in practically all size classes, the share of companies that have kept their expenditure constant compared to the previous year has increased, while the shares of companies pursuing an expansive strategy have decreased. The comparison between 2020 and 2021, on the other hand, shows a strong increase in the share of companies that have expanded their innovation

expenditure in all company size classes (Figure 5). Whereas in 2020 there was still a discernible tendency to stabilise innovation expenditure, in 2021 the signs were pointing to expansion. On the other hand, the share of companies that reduced their innovation expenditure increased in 2021, especially among small and medium-sized enterprises with up to 250 employees. The innovation activity of part of the SMEs may have been hampered by the persistence of the COVID-19 pandemic and thus the continuation of the crisis. As a result, the group of SMEs became much more heterogeneous in terms of innovation behaviour during the pandemic.

While in 2020 companies of all sizes had tried to keep their innovation expenditure stable, a broad-based expansion was observed in 2021. However, the persistence of the crisis is likely to have caused noticeable difficulties for SMEs in particular in 2021.

Figure 5: Expenditure on product innovations in the reporting year as compared to the previous year by company size class



Source: WIFO-Konjunkturtest (business cycle survey).

Breaking down results by innovation intensity (Figure 6) shows a broad-based expansion of innovation expenditures for 2021: the

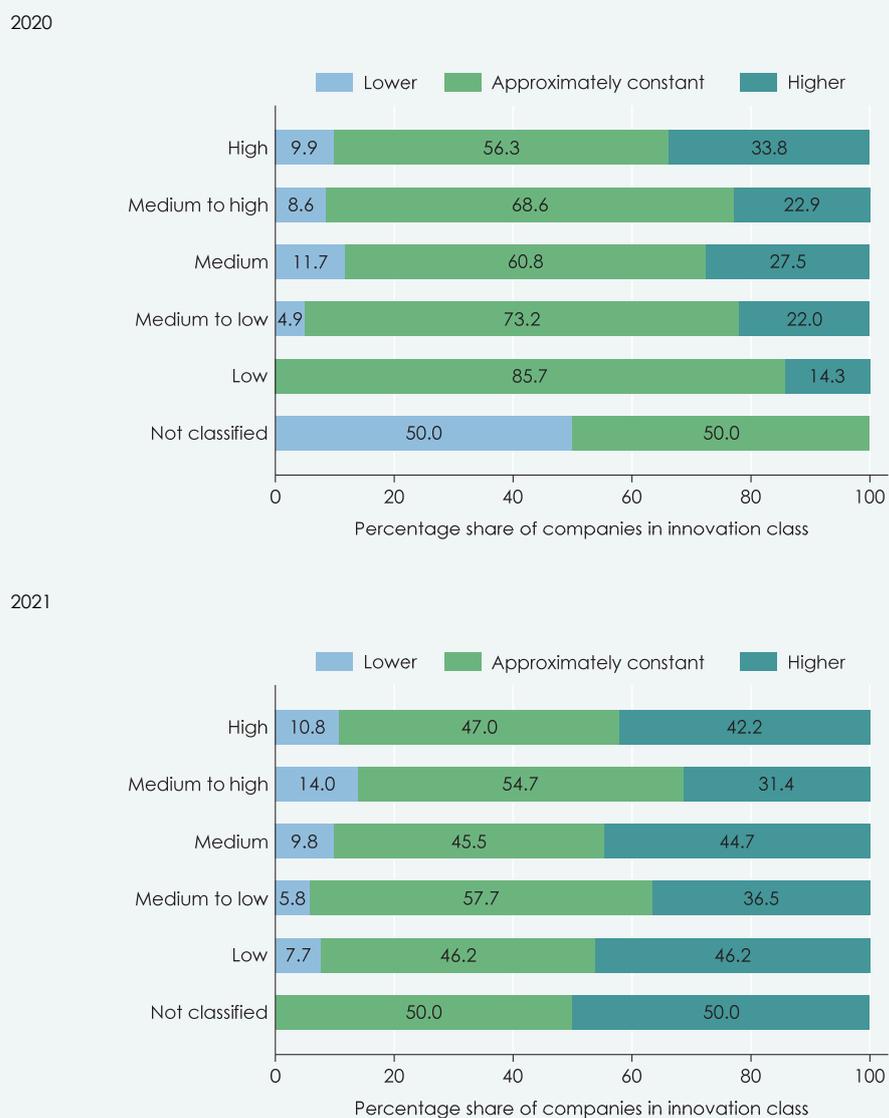
share of companies that reported an expansion increased in 2021 relative to 2020 in all industry classes. At the same time, the

share of companies that reduced their expenditures rose only slightly in most industry classes. This increase was strongest among companies with medium to high and low innovation intensity. Only among enterprises with medium innovation intensity this share declined compared to 2020.

In the long term, there is a high persistency in the behaviour related to innovation expenditures at the firm level over time.

Figure 7 (above) shows the expenditure behaviour of companies in the reporting years 2019 and 2020. Of the companies that had increased their expenditure in 2019, only 35.3 percent expanded it in 2020. This share was almost 6 percentage points below the long-term averages (2011-2019). In contrast, the share of companies that increased their expenditure in 2020 after keeping it constant in 2019 hardly deviated from the long-term average.

Figure 6: Expenditure on product innovations in the reporting year according to the innovation intensity of the sector



Source: WIFO-Konjunkturtest (business cycle survey).

Many companies that had kept their innovation spending the same level or reduced it in 2020 expanded it in 2021.

44.4 percent of companies that had cut spending in 2019 raised it in 2020 – around 5 percentage points more than the long-term average.

In 2021, this picture changed noticeably (Figure 7, below). The share of enterprises

that had reduced their expenditure in the previous year and expanded it again in the reporting year was very high at 63.2 percent – almost 20 percentage points above the figure observed for 2020. The share of enterprises that had tried to keep their innovation expenditure the same in the previous year

and increased it in the reporting year also rose to 30 percent in 2021, almost 10 percentage points higher than in 2020. The only decline observed in 2021 was in the share of enterprises that had expanded their innovation expenditure for two years in a row: it fell from 35.3 percent in 2020 to 29.6 percent in 2021.

An examination of the expenditures made in 2021 and those planned for 2022 for the introduction of new products at the company level confirms the optimism observed for 2022 (Figure 8). Basically, caution still prevails: the majority of companies would like to

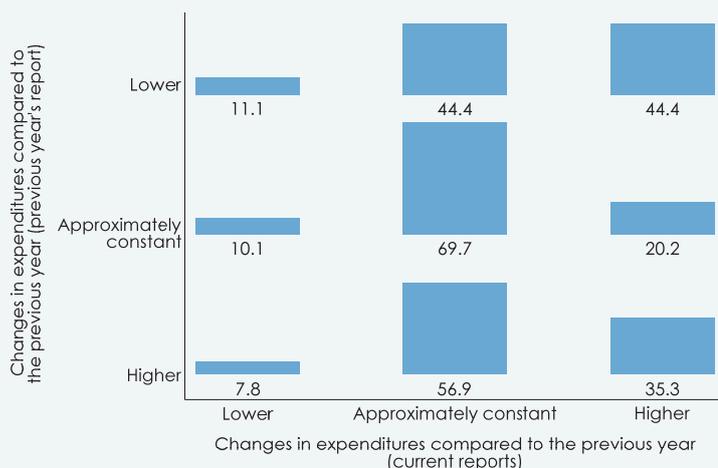
maintain the previous year's level in 2022, regardless of whether they reduced, kept constant or increased their innovation expenditure in 2021. However, the share of companies that want to expand their innovation expenditure in 2022 is very high in all groups. Thus 54.5 percent of the companies that already increased their innovation expenditure in 2021 are planning to expand it again in 2022. It is likely that the current uncertainty and increasingly negative business sentiment following the war in Ukraine and the share increase in energy prices will lead to considerable revisions of spending plans for innovation by firms.

**The reports on planned expenditures for the introduction of new products in 2022 reflect the cautiously optimistic business expectations. The majority of companies plan to keep spending constant.**

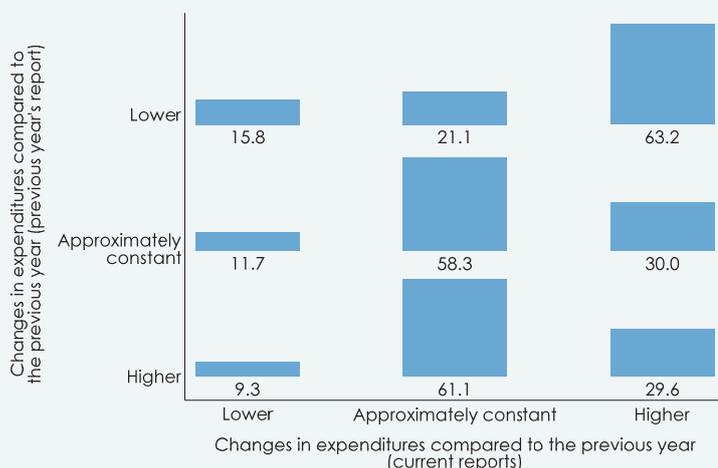
**Figure 7: Expenditure on product innovations in the reporting year compared to the previous year's report**

Percentage shares of companies of previous year's reports per response category

2020



2021



Source: WIFO-Konjunkturtest (business cycle survey).

## 5. Conclusions

After a subdued development of innovation activity in business sector in 2020, data from the WIFO-Konjunkturtest (business cycle survey) of December 2021 point to a strong revival of innovation spending in 2021. The share of surveyed companies that reported having expanded their innovation spending reached a historic peak.

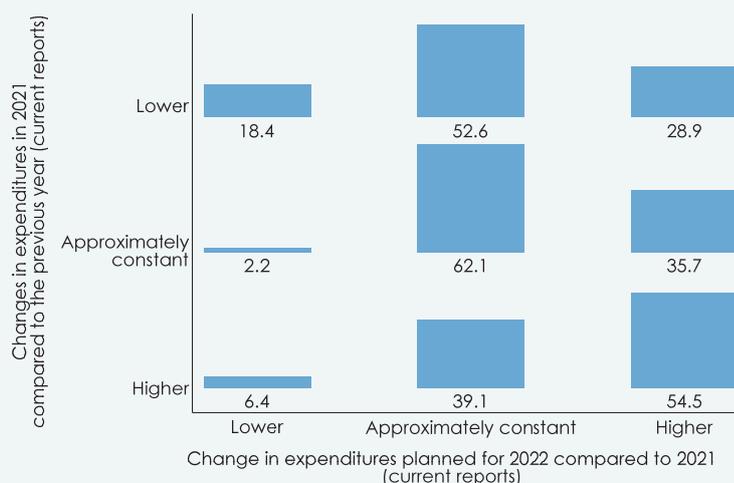
Companies see their innovation activities as strategically important, which is why they continued to invest in innovation despite persisting economic uncertainty. As survey results reported by Friesenbichler et al. (2021) showed, the significant increase in uncertainty during the COVID-19 crisis dampened companies' willingness to invest and led to changes in personnel policy. However, R&D spending and product development projects remained largely unaffected by the COVID-19 pandemic. At the same time, companies have pushed ahead with digitalisation projects. These observations are in line with the results of the WIFO-Konjunkturtest reported in this paper. Nevertheless, a certain restraint is still discernible,

which was reflected, among other things, in only a very weak increase in the share of companies that introduced new products in 2021. Although business expectations improved strongly in 2021, innovative companies are unlikely to have assessed the development of the markets in 2021 as sufficiently stable to launch new products, stable enough to introduce new products in 2021. Nevertheless, the share of companies that introduced new products was also higher in 2021 than that of companies without product introductions.

The results also suggest that the second year of the COVID-19 pandemic has led to a reduction in innovation activities, especially in SMEs. If the pandemic continues, there is a possible risk of lasting damage to the innovative strength of these companies. The current event in Ukraine and the sharp rise in energy prices are likely to have a negative impact on innovation expenditures that correlate strongly with business sentiment, which has considerably worsened in these past months.

Figure 8: **Expenditure on product innovations 2021 and planned change 2022**

Proportion of enterprises as a percentage of reports per response category (on expenditure in the reporting year)



Source: WIFO-Konjunkturtest (business cycle survey).

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