

# C4 Financing Research and Innovation<sup>465</sup>

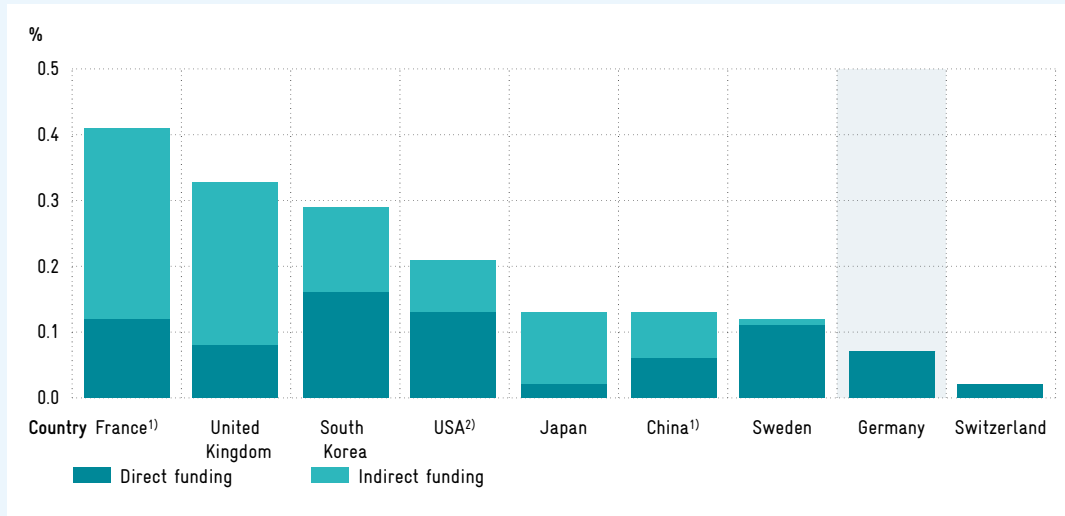
Public funding of research and development (R&D) in the business sector can take the form of direct R&D funding or indirect R&D funding (fiscal R&D funding). Figure C 4-1 shows the share of direct and indirect R&D funding in the business sector in the gross domestic product (GDP) in selected countries. It is clearly visible that Germany is only ahead of Switzerland in this group. The instrument of fiscal R&D funding was available to companies in most of the countries listed in the year under review (2018); Germany did not yet make use of this funding option in 2018. The Research Allowance Act (Forschungszulagengesetz) only came into force in Germany at the beginning of 2020.

Figure C 4-2 provides an overview of the share of venture capital investments in the national GDP of selected countries. For the comparison, data from Invest Europe are used, which are easily comparable internationally due to the harmonized collection and processing.<sup>466</sup> The highest venture capital investments relative to GDP in 2020 were recorded in Finland and the United Kingdom. Germany only occupies a position in the lower midfield within the European peer group and the share of venture capital investments in GDP fell slightly in 2020 compared to the previous year.

Since Invest Europe data only covers venture capital investments by companies organized in the association, there is a risk of underestimating the volume.<sup>467</sup> For the analysis of venture capital investments in Germany, data from transaction databases<sup>468</sup> are therefore used in addition to Invest Europe data. Their advantage is that the unit of observation is the individual transaction, which increases the probability that co-investments by atypical market participants<sup>469</sup> and non-European investors are also covered.

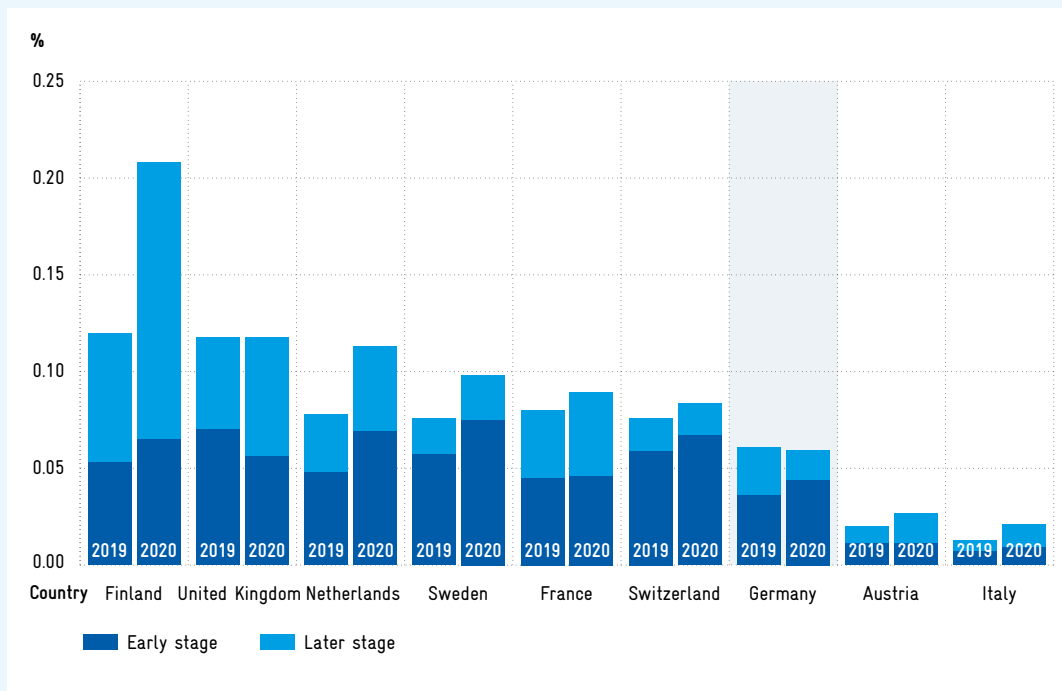
Figure C 4-3 provides an overview of the development of venture capital investments in Germany. Both Invest Europe and transaction data show a significant overall increase in venture capital investment between 2010 and 2020, but the increase in transaction data is much larger. However, both databases also show a significant decline in venture capital investments in 2020. Looking at the transaction data, there is a strong change in the structure of venture capital investments. Indeed, such a change would probably also be observed for other countries. The expanded data basis therefore does not allow any conclusions to be drawn as to whether Germany's weak position in the availability of venture capital relative to other countries could be improved in an international comparison. Even if venture capital investments in 2020 were underestimated by a factor of two and a half in the association data, the value for the United States would still be four times higher than that for Germany.

**Fig. C4-1 Publicly funded R&D expenditure in the business sector as a percentage of the national gross domestic product of selected countries in 2018**



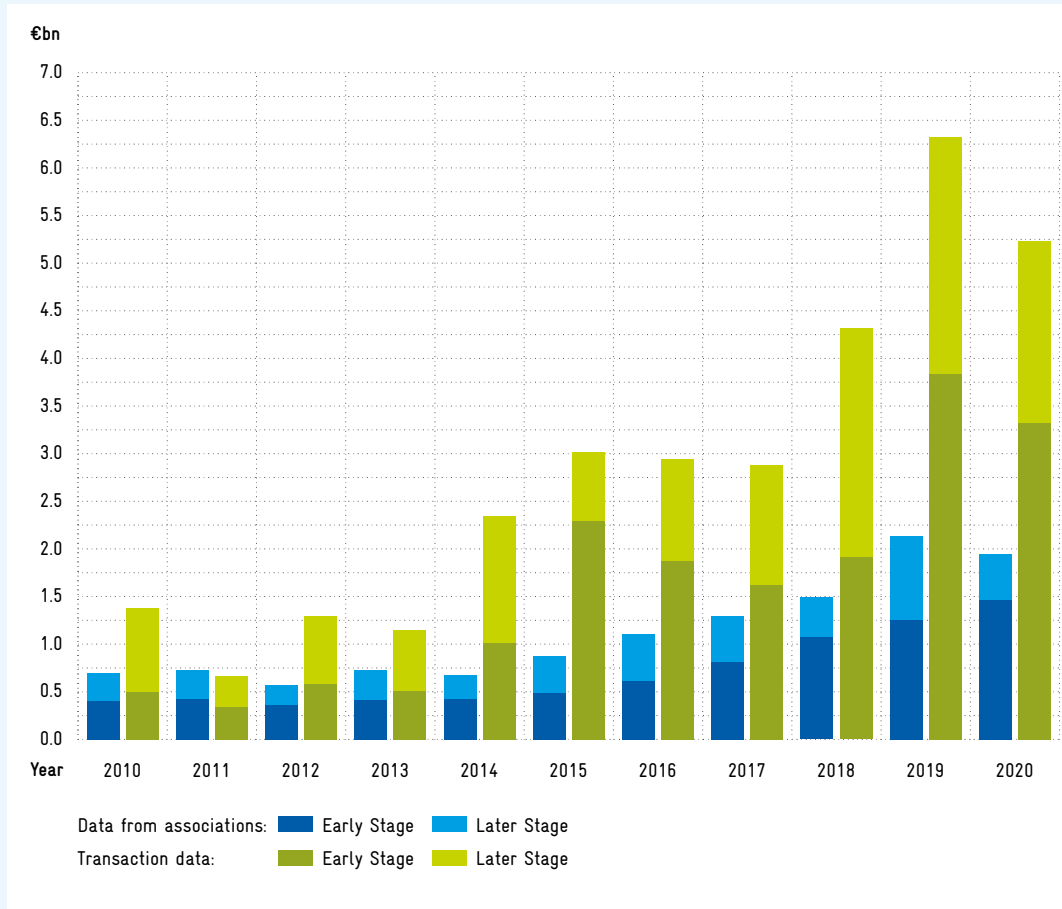
The public funding of private-sector R&D is divided into direct R&D funding and indirect R&D funding (through tax incentives).  
<sup>1)</sup> 2017, <sup>2)</sup> 2016.  
 Source: OECD R&D Tax Incentive Database, research March 2021.  
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**Fig. C4-2 Venture capital investments as a percentage of the national gross domestic product of selected countries in 2019 and 2020**



Venture capital is defined here as temporary equity investments in young, innovative, non-listed companies. Data for 2019 partly revised. Investments are broken down according to the portfolio companies' head offices. Early stage comprises the seed phase and the start-up phase.  
 Source: Invest Europe. Calculations by ZEW in Bersch et al. (2022).  
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Fig. C4-3 Venture capital investment in Germany 2010–2020 in billion euros



Venture capital is defined here as temporary equity investments in young, innovative, non-listed companies. Association data for 2019 slightly revised. Transaction data partly revised. Investments are broken down according to the portfolio companies' head offices. Early stage comprises the seed phase and the start-up phase. Source of association data: Invest Europe. Calculations by ZEW in Bersch et al. (2022). Source of transaction data: Bureau van Dijk, Majunke. Calculations by ZEW in Bersch et al. (2022). © EFI – Commission of Experts for Research and Innovation 2022.