REPORT

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The M&A Report is a biannual publication issued by the ZEW – Leibniz Centre for European Economic Research und Bureau van Dijk. It uses the Zephyr database to report on current topics and developments in global mergers and acquisitions. The Zephyr database, which is updated on a daily basis, contains detailed information on over one million M&As, IPOs and private equity transactions around the world.

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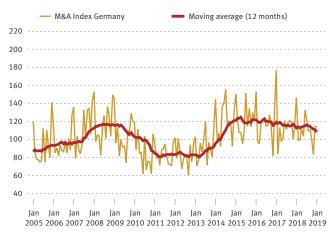




German M&A Index Declining Since Year-End

The number of mergers and acquisitions (M&A) involving German firms fell slightly in the second half of 2018. Transaction volumes were especially low in the fourth quarter of 2018, with M&A activity particularly weak in November, which saw the lowest monthly level for two years and the second-lowest volume in six years; only November 2016 had seen even fewer mergers and acquisitions. However, December 2018 and the beginning

ZEW-ZEPHYR M&A-INDEX GERMANY



Source: Zephyr database, Bureau van Dijk, calculations by ZEW

of the year 2019 were not much busier either and failed to compensate for the lacklustre autumn. This trend is reflected in the ZEW-ZEPHYR M&A Index, which has been calculated twice a year since 2005 and tracks the number of M&A deals completed in Germany. Although the twelve-month moving average had been edging up until August 2018, it has been declining ever since.

Abertis' takeover of Hochtief AG for 28 billion euros marked largest deal

By far the largest deal in the second half of 2018 – amounting to some 28 billion euros – was the acquisition of Abertis, a Spanish toll-road operator, by Germany's building and infrastructure construction group Hochtief AG, headquartered in Essen. Hochtief

in turn, however, forms part of Atlantia, an Italian holding company in which the Benetton family is a major shareholder. With this acquisition, Hochtief has increased its international presence as well as diversifies its portfolio. Following the acquisition, earnings increased by 20 per cent in the first quarter of 2019.

Further transactions in the billions included the acquisition of the real estate developer SSN Group AG – headquartered in Zug, Switzerland – by Berlin-based Consus Real Estate AG, which was a deal worth just over one billion euros. With this takeover, Consul Real Estate AG aims at strengthening its position as Germany's largest property developer. The acquisition of CIT RAIL Holdings (Europe) by the wagon hire and rail logistics company VTG AG based in Hamburg amounted to a transaction value of just under one billion euros. The deal increased this railcar leasing company's fleet to 94,000 railcars worldwide.

M&A activity in Germany weakened slightly in the considered period, which is fully consistent with the general economic climate. Experts recently forecast lower growth for the Germany economy in 2019. However, they were merely predicting slightly weaker business activity rather than a sharp economic downturn.

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The ZEW-ZEPHYR M&A-Index measures the number of M&A transactions completed in Germany each month. It considers only mergers and acquisitions by and with German companies. It does not differentiate between the country of origin of the buyer or partner. This means that both domestic and international buyer companies are considered, provided that the target companies are active in Germany. The M&A Report is a biannual publication issued by ZEW and Bureau van Dijk. It uses the Zephyr da-



tabase to report current topics and developments in global mergers and acquisitions. The Zephyr database, which is updated on a daily basis, contains detailed information on over 1.9

million mergers and acquisitions, IPOs, and private equity transactions around the world.



M&A Activity in the German Construction Sector Remains Fairly Robust

The German building industry is booming: its order books are full, construction prices are rising and the workforce size per company is growing, with job vacancies also at record levels. The number of M&A transactions is high as well. In terms of the buyers and takeover targets available in Germany there were 55 deals last year, which was only slightly fewer than at their peak in 2009 (58 transactions). From 2009 onwards there were growing signs of the recession that had previously been mitigated by the first and second economic stimulus packages. The number of transactions prior to 2005 had been far lower, with an average of only 21 deals between 2000 and 2004.

play a minor role, accounting for less than ten per cent of the total. The vast majority of small firms are sole traders. The cohort of potential buyers is therefore fairly limited, which explains the low number of deals.

Transaction volumes present a mixed picture

Transaction volumes – which are not known for all deals and therefore tell only part of the story – do not give a consistent picture. The aggregated deal volumes mostly amount to less than one billion euros except for the years of upheaval from 2005

M&A TRANSACTIONS IN THE GERMAN CONSTRUCTION SECTOR



Source: Zephyr database, Bureau van Dijk, Thomson Reuters Datastream

This sluggish activity can be attributed to the reduction of excess capacity following the building projects undertaken as part of the reconstruction needed in the post-reunification in former East Germany – a process which started after 1995 and continued until 2005/2006.

Few deals due to small cohort of potential partners

However, the number of transactions must be seen in context. The number of construction companies in Germany varies around 390,000 since 2006. Just under 80 per cent are engaged in the finishing trade, while the remainder operate in the main construction trade. Moreover, firms with fewer than ten employees account for 90 per cent of the total. The absolute number of companies with more than 250 employees is in the hundreds. Furthermore, only around one-third of construction firms in Germany are legally constituted as public companies. Partnerships

to 2007 and in the year 2013. The average transaction value during the period under review came to roughly 130 million euros. The three largest deals were the purchase of Viterra AG by Deutsche Annington for seven billion euros in the year 2005, the sale of GBW AG to institutional investors for 2.45 billion euros in 2013, and the acquisition of ThyssenKrupp Wohnimmobilien by Corpus Immobiliengruppe and Morgan Stanley for 2.1 billion euros in 2004.

The picture looks different if we exclude companies that are at least partly involved in real estate (i.e. its sale, rental or management). In this case an average of only 19 deals per year have been completed. The pertinent average transaction volume amounts to a much more modest 60 million euros – a long way off the record sum of 28 billion euros paid by Gemany's building and infrastructure construction group Hochtief to acquire Spanish toll-road operator Abertis.

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M&A Activity Between Companies with Large Patent Portfolios Is Refrained From

A number of recent empirical studies have documented how, over the course of several decades, the market power of companies – and as a consequence – average price margins have steadily grown. An often cited possible cause for this trend is the concentration of ownership over key technologies, that is, a greater share of technology belonging to fewer companies. This phenomenon could, among other things, be the result from active M&A strategies pursued by highly innovative companies that acquire equally highly innovative rivals. The consequence is a highly concentrated technology market.

A widely used metric to capture the concentration of markets is the Herfindahl-Hirschman Index (HHI). To measure technological concentrations, a "Patent-HHI" is calculated by summing the squared patent market shares (as fractions) of each company. The chart below on the left shows that this Patent-HHI reveals a monotonically increasing trend overall (in yellow) of the concentration of patented technologies owned by German companies since the early 2000s. Similar patterns emerge if only the top 100 most intensively patenting companies are considered in the calculations of the Patent-HHI (in red). In both cases, we observe a slight weakening of this trend.

Although not shown graphically, the share of total patents belonging to the top 100 and 250 companies with the largest patent portfolios also reveals a similarly positive (and slightly weakening) trend. This heightened concentration of innovation (as captured by firms' patenting activity) in Germany does not appear to be caused by firms' M&A strategies however, as there

is no evidence that M&A activity has brought about any significant change in the Patent-HHI. A major reason for this is the fact that there is relatively little M&A activity between companies that both have large patent portfolios. Highly innovative companies generally do not seem to acquire equally innovative rivals. The data used in the M&A Report does, on the other hand, indicate a clear trend towards smaller portfolios being acquired by larger ones (see chart below on the right).

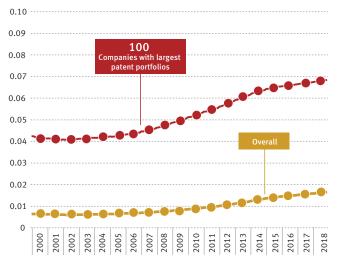
Companies with smaller patent portfolios are frequent takeover targets

Values greater than 0.5 on the vertical axis of the chart denote acquisitions of smaller portfolios by larger ones, while values lower than 0.5 indicate the opposite. The yellow curve shows the twelve-month moving average and the thin grey curve shows the monthly averages. The data make a convincing case: patentrich companies target firms with smaller patent portfolios. When including company size as an additional criterion, this trend becomes even more evident (red curve).

We find little compelling evidence thus far to suggest that M&A activity has caused technology in Germany to become increasingly concentrated among fewer and fewer companies. Our discussion draws a very simplified preliminary picture and more thorough economic analysis should help clarify this matter.

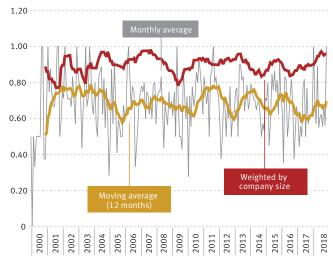
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PATENT HERFINDAHL-HIRSCHMAN INDEX, PATENT-HHI, FOR GERMANY



Source: Zephyr database, Bureau van Dijk, calculations by ZEW

TAKEOVERS BY PATENT-RICH COMPANIES



Source: Zephyr database, Bureau van Dijk, calculations by ZEW