

AT A GLANCE

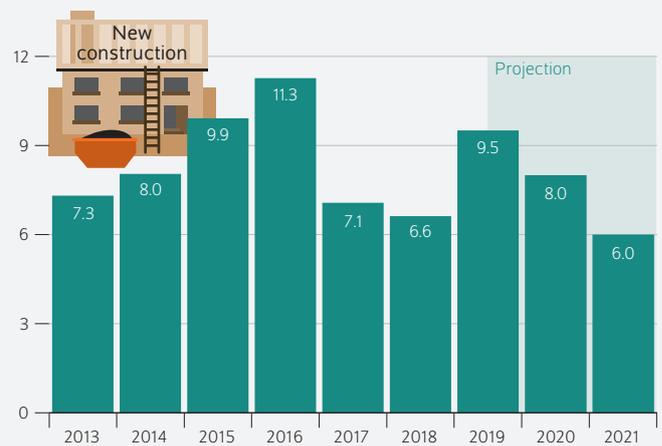
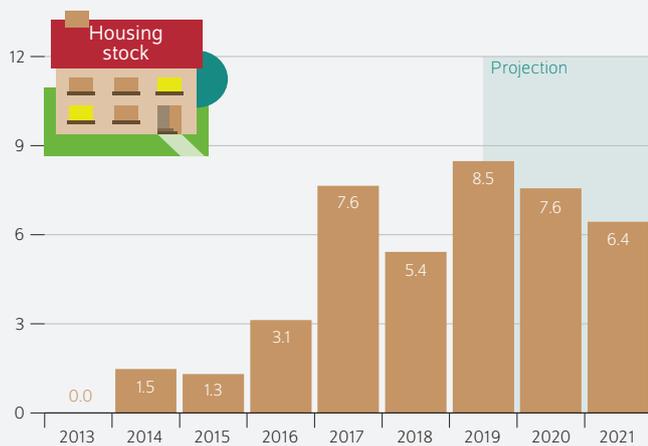
Construction industry an important pillar of the economy; investment assistance taking effect

By Martin Gornig, Claus Michelsen, and Laura Pagenhardt

- DIW Berlin construction volume calculation forecasts private and public construction activity until the end of 2021, differing between new construction projects and modernization projects
- Strong growth in the construction industry in 2020 and 2021, both in new construction and refurbishment, is supporting investments
- Public and commercial civil engineering also flourishing
- Federal investment promotion taking effect: public construction investments increasing significantly
- In addition to long-term investment incentives, complex approval procedures should be simplified to implement investments quickly

Growth rates of new residential construction and housing stock volume are converging

Changes from previous year in percent



Quelle: DIW Berlin Construction Volume Calculation.

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FROM THE AUTHORS

“Short-term investment boosts are driving up the prices for construction services.

*It would be wise to set up a long-term investment program
and thus strengthen the expansion of construction capacities.”*

— Martin Gornig —

Construction industry an important pillar of the economy; investment assistance taking effect

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ABSTRACT

The construction industry is increasingly becoming a key pillar of the business cycle in Germany. DIW Berlin's construction volume calculation indicates a real expansion of construction services by around three percent each year over the next two years. In nominal terms, sales in the construction industry and its related sectors will grow by around 6.5 percent in 2020 and almost six percent in 2021. Residential construction remains the cornerstone of the upswing, but construction activity in the public sector will also expand significantly over the next two years. Due to the current weak state of the economy, commercial construction is developing somewhat less dynamically. A long-term investment program would be a sound method of increasing growth potential; it would also improve business prospects in the construction industry for the foreseeable future and make the industry more willing to increase construction capacity.

The construction industry is continuing to perform well. In 2020 and 2021, sales from construction companies will increase considerably and investments in both constructing new buildings and refurbishing existing ones are likely to increase. The German Institute of Economic Research (DIW Berlin) calculations on construction volume¹—which includes repairs that do not directly increase value² in addition to building investment—led to this conclusion. Alongside the construction industry in the literal sense, they encompass related sectors, such as steel and light metal construction, the manufacture of prefabricated buildings, building fittings, planning services, and other services. As a supplement to the investment calculation of the Statistical Offices, DIW Berlin differentiates between new housing construction activity and housing stock modernization.

DIW Berlin not only calculates and documents the construction volume of past years; it also forecasts corresponding values for the current and subsequent year. This forecast (Box) is integrated into DIW Berlin's Economic Outlook, particularly with regard to investment activity.³ In addition to the present estimates regarding the development of construction investment, the construction volume calculation includes forecasts on the growth of new and existing housing volumes in the structural engineering, residential, and non-residential sectors.⁴ The forecast also includes growth trends for the mainstream construction industry and building trades.

¹ The construction volume calculation is financed with funds from the Zukunft Bau research initiative for the sustainable development of the German construction industry of the Federal Ministry for the Environment, Building and Nuclear Safety (Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit, BMUB). Also see the definition of "Bauvolumen" in the DIW glossary (in German; available online, accessed on January 8, 2018. This applies to all other online sources in this report unless stated otherwise).

² Martin Gornig et al., "Strukturdaten zur Produktion und Beschäftigung im Baugewerbe – Berechnungen für das Jahr 2018," *BBSR Online Publication*, no. 17/2019 (in German; available online).

³ Cf. Claus Michelsen, "DIW Economic Outlook, Winter 2019," *DIW Weekly Report*, no. 49/50 (2019) (available online).

⁴ Cf. Claus Michelsen and Martin Gornig, "Prognose der Bestandsmaßnahmen und Neubaulösungen im Wohnungsbau und im Nichtwohnungsbau," *BBSR Online Publication*, 07/2016 (in German; available online).

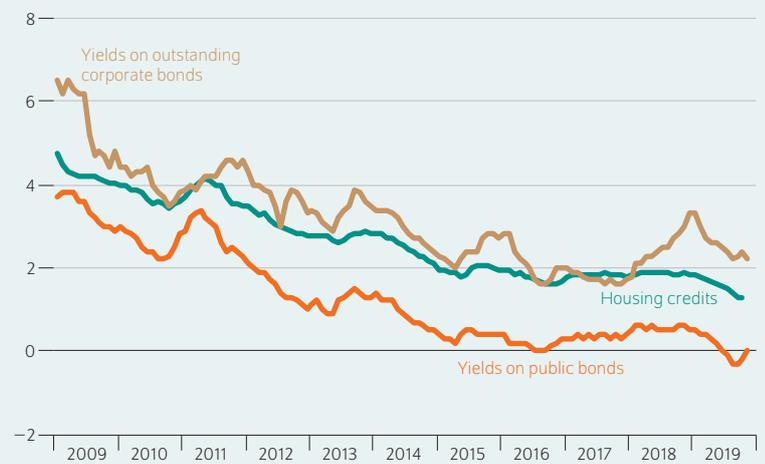
Residential construction under a continually exceptional economic situation

The most important pillar of the construction industry is the continually flourishing residential construction sector. Both new construction projects as well as the refurbishment and modernization of the building stock are benefiting from favorable circumstances despite, but also precisely because of, the economic slowdown. In response to the emerging economic slowdown in the euro area, the European Central Bank has once again loosened their monetary reins. In the summer of 2019, the interest rates for housing loans reached a new historic low (Figure 1). Simultaneously, it appears as if the weak turn in German industry has barely affected the labor market. Collective wage agreements are increasing household income markedly, and the real spending capacity of private households has also increased significantly due to the continually low inflation rate. In addition, many homebuyers can take advantage of the *Baukindergeld* approved in 2018, a subsidy granted per child to help families build or purchase homes, which is likely to boost real estate demand further. Over the next ten years, such subsidies in the order of around ten billion euros are expected to be awarded.⁵ The special depreciation allowances pursuant to Paragraph 7b of the EStG passed in summer 2019 are also likely to have boosted the appeal of rental unit construction. The allowances allow 28 percent of investment costs to be claimed for tax purposes in the first four years after construction is completed on buildings for which a building application was filed after August 31, 2018 but before January 1, 2022.⁶

Although capacity utilization in the construction industry remains high by historical standards, it has decreased again somewhat (Figure 2), in part because companies have recently hired more staff and expanded their machinery. Currently, it is difficult to expand production in the renovation sector (Figure 3). Despite a boost in construction production, both residential⁷ and public construction continue to fall short of demand. The prospect of favorable business prospects in the longer term is more important than short-term stimuli such as *Baukindergeld*, which can be claimed between 2018 and 2020, or a limited special depreciation allowance, which can be claimed from August 2019 until January 1, 2022. Without these long-term prospects, the short-term measures could partially have little effect on the general price increase, without a substantial increase in construction capacity and thus construction activity.

Figure 1

Interest rates and yields In percent, monthly average



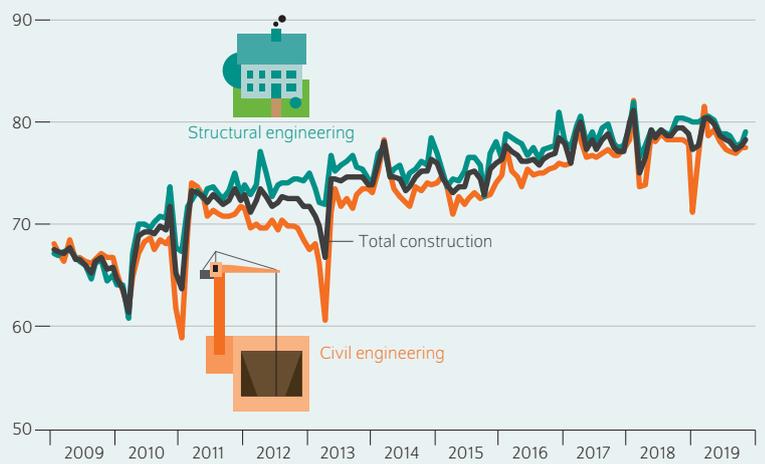
Source: German Central Bank.

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Interest rates for real estate credits are at a historic low.

Figure 2

Capacity utilization in the construction sector since 2009 As a percentage of normal seasonal machine utilization



Source: ifo Institute.

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Capacity utilization has decreased somewhat recently.

⁵ Claus Michelsen, Stefan Bach, and Michelle Harnisch, "Baukindergeld: Einkommensstarke Haushalte profitieren in besonderem Maße," *DIW aktuell*, no. 14 (2018) (in German; available online).

⁶ Claus Michelsen, "Stellungnahme anlässlich der öffentlichen Anhörung des Finanzausschusses des Deutschen Bundestages am 19. November 2018 zum Entwurf eines Gesetzes zur steuerlichen Förderung des Mietwohnungsneubaus," Bundestagsdrucksache 19/4949 (2018) (in German; available online).

⁷ Cf. Till Baldenius, Sebastian Kohl, and Mortiz Schularick, *Die neue Wohnungsfrage: Gewinner und Verlierer des deutschen Immobilienbooms* (2019) (in German); Ralph Henger et al., "Wohnen in der Stadt: Wege zur Lösung eines Knappheitsproblems," *Wirtschaftsdienst* 99, no. 9 (2019): 603–624.

Box

Method for forecasting construction volume

Several steps are required for forecasting construction volume. Initially, the calculations for new construction and existing building stock are available on an annual basis. The first step involves calculating the trends during the year. The volumes of existing stock are adjusted for the quarterly trend in building installation and other construction work using quadratic minimization.¹ New construction volumes are calculated as the difference between overall volume and existing volumes as a means of ensuring consistency in the construction volume calculation. Next, these series are adjusted for seasonal patterns using the ARIMA-X12 procedure.

In the second step, the new construction and existing stock series are "nowcast" using the information currently available. Numbers from the monthly reports of the construction industry and employment in the construction industry, as well as weather information, are used.² The last year before the forecast horizon (in this forecast, 2019) is actually only an interim estimate of construction volume. Final values are not available until the following year, when the statistical offices publish complete reports of all the relevant series.

In the third step, the individual series are forecast. The volumes of existing stock and new construction are estimated separately. Statistical models supported by indicators are used in this step. In addition, the variables to be forecast (e.g., commercial building volume) are regressed to an autoregressive term and the lagged

values of the relevant indicator. The forecasting equation has the following form:

$$y_t = \alpha + \sum_{i=1}^n \beta_i y_{t-i} + \sum_{j=1}^m \gamma_j x_{t-j} + \varepsilon_t$$

y_t stands for the value to be forecast, x_t for the indicator, and ε_t for the statistical error term. α , β and γ are the estimated parameters. Delay periods n and m (quarters) are determined based on the autocorrelation or cross-correlation function. The different specifications are assessed based on information criteria. The approach of estimating a number of individual models and using average values for the forecast has proven effective. For an individual series, up to 50,000 single models are estimated. Construction permits, incoming orders, production, interest, loan volumes, employment and income trends, and surveys of construction companies and freelance architects have proven to be suitable indicators. Capacity utilization is also included in the estimates.³ Expected civil engineering work is equal to the difference between total volume and construction volume.

In the last step, the forecast results are transferred to the construction volume calculation formula. Demand-side trends are also considered by taking the special features of non-investment construction work over the business cycle into account. As a means of differentiating by other structural characteristics, more finely classified information on construction permits and the order backlog are included. In this way, it is possible to estimate the different patterns of individual producer groups, such as mainstream construction and the renovation sector.

¹ See Frank T. Denton, "Adjustment of monthly or quarterly series to annual totals: an approach based on quadratic minimization," *Journal of the American Statistical Association* 66, no. 333 (1971): 99–102.

² For a documentation of the methodology, see Claus Michelsen and Martin Gornig, "Prognose der Bestandsmaßnahmen und Neubauleistungen im Wohnungsbau und im Nichtwohnungsbau," Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR) Online Publication no. 07 (2016) (in German; available online).

³ See Claus Michelsen and Martin Gornig, "Prognose der Bestandsmaßnahmen."

After an increase of 8.8 percent in 2019, housing construction volume will grow by 7.7 percent in 2020 and 6.3 percent in 2021 (Table 1).

Residential unit construction gaining momentum

In 2019, new construction activity is likely to have increased dynamically by 9.5 percent in nominal terms, thus accelerating its expansion once again (Figure 4). Construction activity is likely to remain high over the coming quarters as well: New residential construction orders have risen until recently in line with the trend (Figure 5), and the orders on hand (Figure 6) indicate brisk activity in the coming quarters.

The extraordinarily good corporate sentiment in residential construction dampened at the beginning of 2019, but expectations brightened again noticeably over the course of the year. The businesses surveyed by the ifo Institute clearly expect good business in the near future. Building permits, on the other hand, have been showing only a slight upward trend for

some time (Figure 7). Primarily nominal estimated construction costs increase in the approved construction projects. The number of units (the number of newly approved apartments) has been stagnating for three years; in September, it was around two percent below the figure for the previous year.⁸ Unfinished construction projects, on the other hand, have reached a new record level, currently corresponding to a construction output of around 2.5 years.

Therefore, increased sales in residential unit construction are expected over the next two years, and both prices are likely to grow by around eight percent in 2020 and six percent in 2021. The sharp rise in prices for construction services is making itself felt; growth is likely to be around four percent in 2020 and 2.5 in 2021 in real terms.

⁸ Statistisches Bundesamt, "Genehmigte Wohnung von Januar bis September 2019: -1,9 Prozent gegenüber Vorjahreszeitraum," press release 446, November 20, 2019, (in German).

Renovation and modernization continue on an expansion course

With the exception of 2018, building activity on existing residential buildings increased less markedly than new residential construction activity in recent years (see Table 1). The main determinant of maintenance and modernization activities is disposable income. Some relief for private households—such as the reintroduction of parity financing of health insurance contributions and additional transfers such as the insurance period recognized for bringing up children (*Mütterrente*) and increases in the children’s allowance (*Kindergeld*)⁹ since the beginning of 2019—have significantly increased disposable incomes. Extensive relief has also been planned for 2020 and 2021, including the far-reaching abolition of the solidarity surtax, which should provide additional purchasing power and demand for services in the finishing trade. Business in used real estate is flourishing and is likely to have led to more extensive refurbishment activities, as real estate is typically repaired after being purchased.

In contrast, the reduction in the modernization allocation from 11 to 8 percent of the apportionable costs in the rental housing stock is likely to have slowed refurbishment activities slightly. However, positive impulses are coming from the introduction of tax incentives for energy-efficient refurbishment. The *Bundestag* passed these allowances, together with the introduction of a CO₂ price, to make saving energy more attractive.¹⁰

After achieving 8.5 percent growth in 2018, DIW Berlin expects renovation and modernization activity to expand by 7.6 percent in 2020 and by 6.4 percent in 2021.

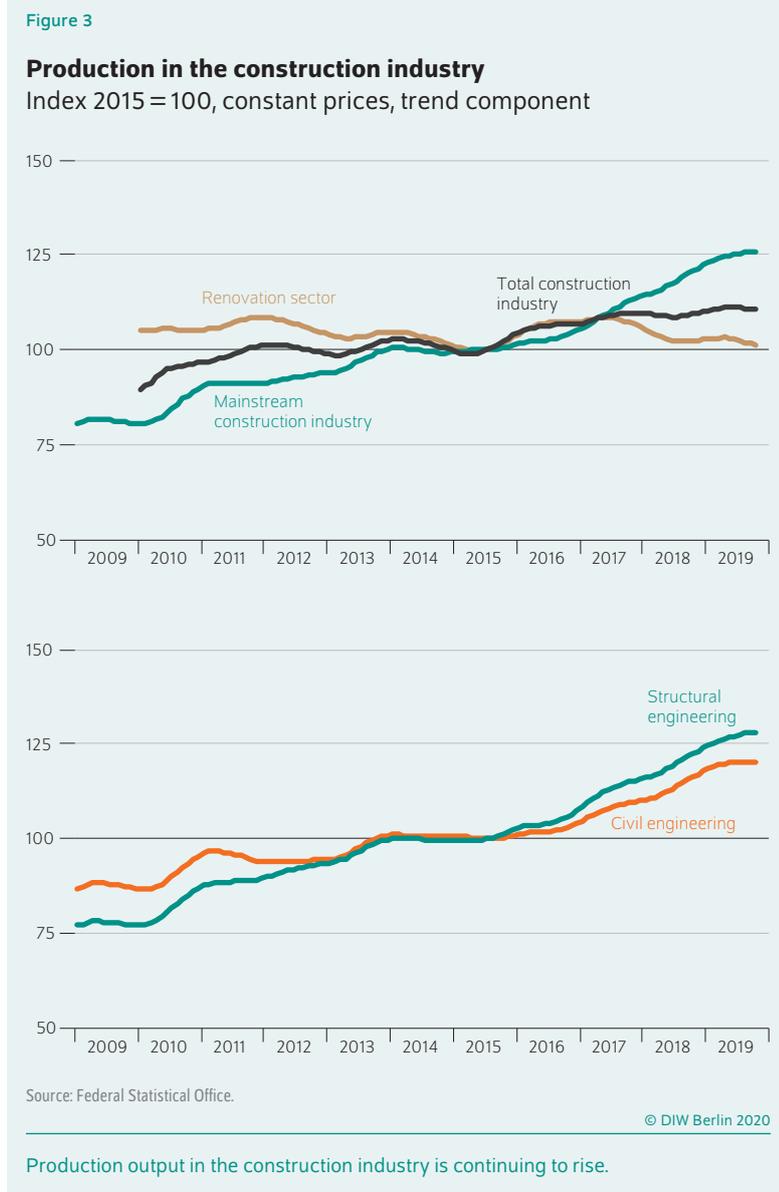
Non-residential construction: subsidies gradually used

Thanks to the expansion of public investments, non-residential construction has also increased markedly. Overall, the volume of construction services rose by 8.6 percent in 2019 (see Table 2), and thus to a similar extent as residential construction activity, likely strongly supported by public spending. For example, the outflow of funds from the Local Authority Investment Promotion Fund (*Kommunalinvestitionsförderungsfonds*) gained more momentum¹¹ and the federal government significantly increased its budget estimates for investments. Tax revenue, buoyant until now, is also likely to have expanded the municipalities’ scope

⁹ Overall, the fiscal stimulus in 2019 amounted to around 15 billion euros, which was primarily used to relieve private households. Cf. Claus Michelsen et al., “Deutsche Wirtschaft: Eine Rezession ist noch keine Krise: Grundlinien der Wirtschaftsentwicklung im Herbst 2019, Kasten 2: Makroökonomische Effekte der finanzpolitischen Maßnahmen der großen Koalition,” *DIW Wochenbericht* no. 37 (2019): 656–677 (in German; available online).

¹⁰ Bundesrat, “Anrufung des Vermittlungsausschusses durch den Bundesrat zum Gesetz zur Umsetzung des Klimaschutzprogramms 2030 im Steuerrecht,” *Bundesrat Drucksache* 608/19 (Beschluss) (2019).

¹¹ Umsetzung des Infrastrukturprogramms in den Ländern – Kommunalinvestitionsförderungsgesetz Kapitel I (KInvFG I), Handreichung des Bundesministeriums der Finanzen vom 1. Oktober 2019 (in German).



for additional investments. However, a personnel bottleneck probably still exists in many municipalities, as the number of employees in the building planning offices has been falling continuously despite brisk construction activity.¹²

By contrast, growth in commercial building construction remained rather moderate, likely primarily attributable to the sluggish economy. The export-oriented German industry, in particular, is likely to have held back on expanding its production and storage areas. International conflicts such as the trade dispute between the United States and China and an unresolved Brexit are also weighing on the economy. In contrast, building activity in service-related sectors, which are benefiting from consumers’ consistently positive buying mood, is likely to remain brisk.

¹² Cf. Martin Gornig and Claus Michelsen, “Kommunale Investitionsschwäche: Engpässe bei Planungs- und Baukapazitäten bremsen Städte und Gemeinden aus,” *DIW Wochenbericht*, no. 11 (2017): 211–219 (in German; available online).

CONSTRUCTION VOLUME CALCULATION

Table 1

Residential construction in Germany, 2013 to 2021

	2013	2014	2015	2016	2017	2018	2019	2020	2021
	In billion euros at the respective year's prices								
New construction volume ¹	47.54	51.36	56.45	62.81	67.25	71.70	78.51	84.79	89.88
Construction on existing buildings ²	127.52	130.80	131.32	136.34	143.18	153.12	166.08	178.63	190.14
Total residential construction volume	175.06	182.16	187.77	199.15	210.43	224.81	244.59	263.43	280.02
	Change in percent								
New construction volume ¹		8.0	9.9	11.3	7.1	6.6	9.5	8.0	6.0
Construction on existing buildings ²		2.6	0.4	3.8	5.0	6.9	8.5	7.6	6.4
Total residential construction volume		4.1	3.1	6.1	5.7	6.8	8.8	7.7	6.3
	Shares in percent								
New construction volume ¹	27.2	28.2	30.1	31.5	32.0	31.9	32.1	32.2	32.1
Construction on existing buildings ²	72.8	71.8	69.9	68.5	68.0	68.1	67.9	67.8	67.9
Total residential construction volume	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1 Estimated using the estimated construction costs (construction activity statistics), plus surcharges for architects' services and fees, exterior facilities, and internal activities of investors.

2 Buildings and housing modernization (incl. conversion and extension measures) as well as repair services in the construction industry.

Sources: Federal Statistical Office; DIW Construction Volume Calculation.

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Residential construction volume will increase significantly over the next few years.

Table 2

Non-residential construction volume in Germany, 2013 to 2021

	2013	2014	2015	2016	2017	2018	2019	2020	2021
	In billion euros at the respective year's prices								
New construction volume ¹	30.92	31.67	32.38	35.41	37.95	41.09	44.36	46.84	49.37
Construction on existing buildings ²	56.64	57.86	57.49	56.36	57.99	60.31	65.75	68.94	72.32
Total construction volume ³	87.56	89.53	89.87	91.77	95.94	101.40	110.11	115.78	121.69
	Change in percent								
New construction volume ¹		2.4	2.2	9.4	7.2	8.3	7.9	5.6	5.4
Construction on existing buildings ²		2.2	-0.6	-2.0	2.9	4.0	9.0	4.8	4.9
Total construction volume ³		2.2	0.4	2.1	4.5	5.7	8.6	5.2	5.1
	Shares in percent								
New construction volume ¹	35.3	35.4	36.0	38.6	39.6	40.5	40.3	40.5	40.6
Construction on existing buildings ²	64.7	64.6	64.0	61.4	60.4	59.5	59.7	59.5	59.4
Total construction volume ³	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1 Construction volume in commercial and public construction.

Sources: Federal Statistical Office; DIW Berlin Construction Volume Calculation.

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Non-residential construction has increased significantly over the past few years.

DIW Berlin expects growth in non-residential construction volume of a bit over five percent per year throughout the forecast period. Non-residential building construction should already have risen by 8.6 percent in 2019. Here, too, however, a large part is likely to be due to rising construction prices.

Demand remains high for additional office space

Additional demand for construction services indicates a clear upward trend in approving the construction of new office and administration buildings (see Figure 7), which

are particularly scarce in large cities.¹³ In contrast, there was barely any change to the number of newly approved workshop and factory buildings as well as new trading and warehouse buildings.

The new orders in the public and commercial construction indicate a further overall increase in sales in non-residential construction. DIW Berlin expects an expansion in the volume of new construction of around 5.6 percent in real terms for 2020 (Table 2).

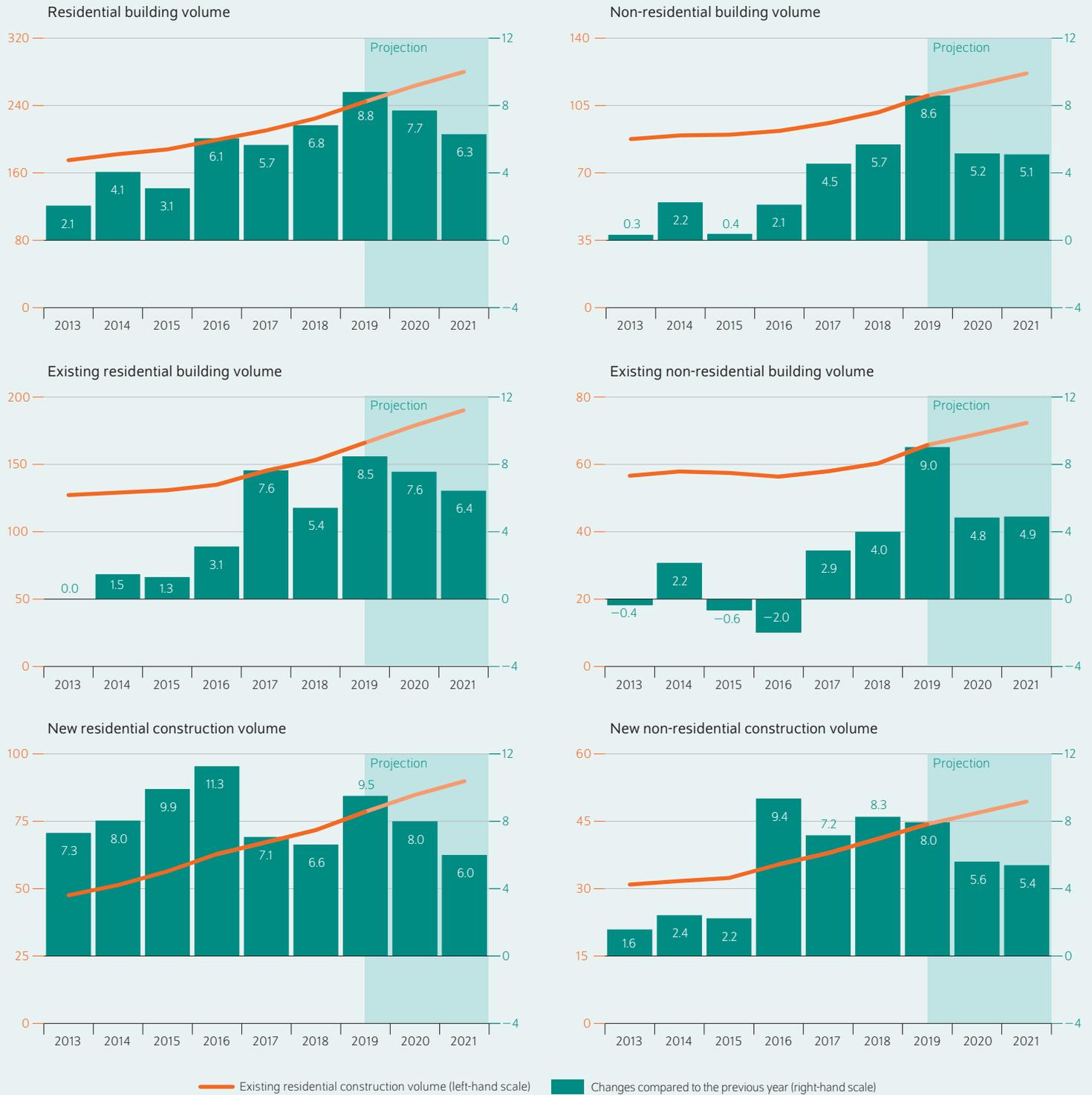
¹³ Eva Neubrand and Nicole Brack, "Ergebnisse des BBSR-Expertenpanel Immobilienmarkt 2018," BBSR-Analysen KOMPAKT, 12/2018.

CONSTRUCTION VOLUME CALCULATION

Figure 4

Development of structural engineering, 2013 to 2021

In billions of euros in respective prices (left-hand axis); change from previous year in percent (right-hand axis)



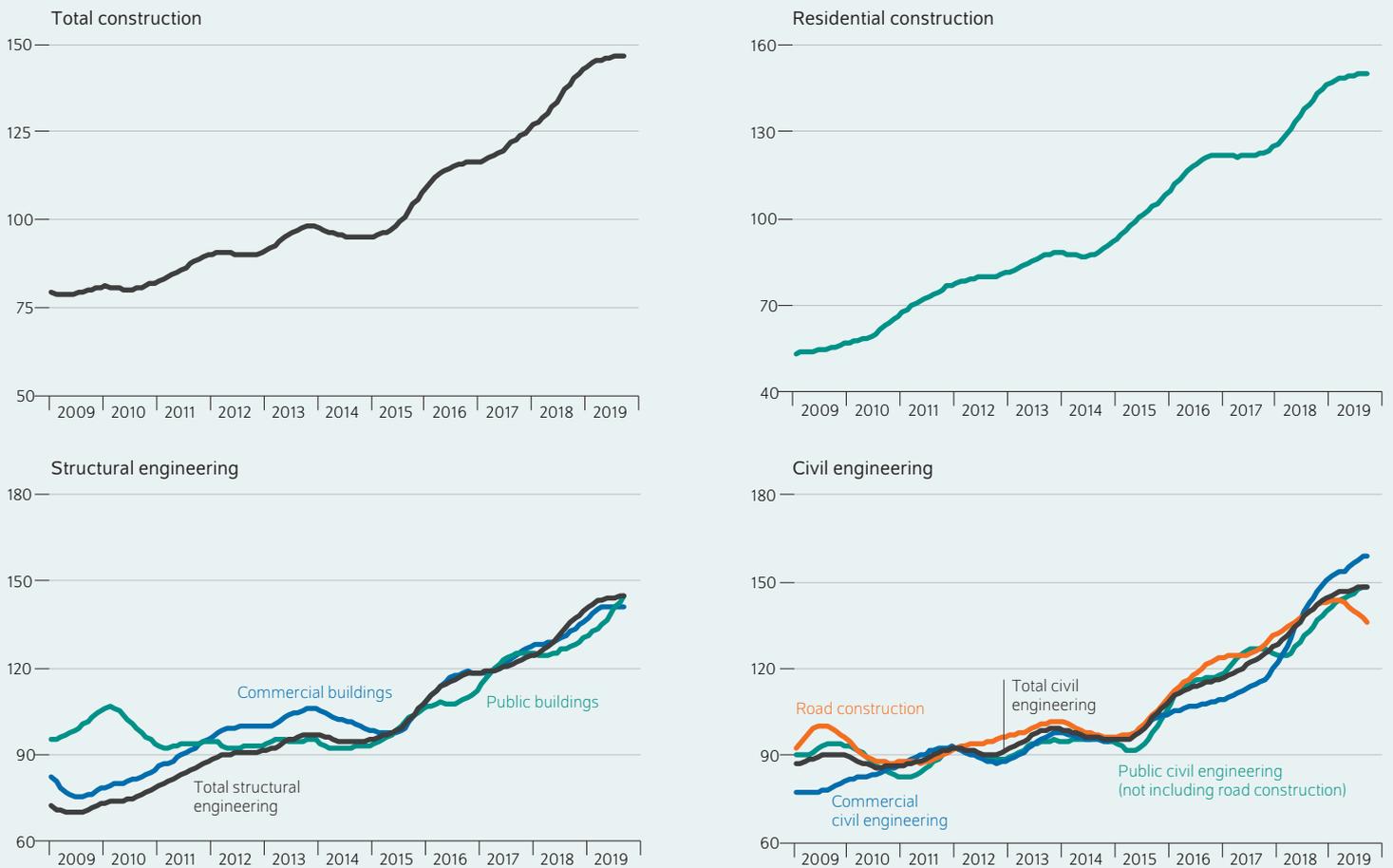
Source: DIW Berlin Construction Volume Calculation.

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Residential construction is increasing more markedly than non-residential construction.

Figure 5

Incoming orders in the core construction industry
Index 2015 = 100, respective prices, trend component



Source: Federal Statistical Office.

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Only new orders in road construction are showing a downward trend.

Renovation of public building noticeably expanded

Renovation and modernization activity accelerated over the past few years and is expected to increase significantly by 9 percent in 2019. This growth is likely due to lively renovation activity in the public sector, where, following years of little activity, the backlog of necessary renovation work is now being tackled. According to the KfW Municipal Panel (*KfW-Kommunalpanel*), the investment requirements have declined significantly due to the additional expenditure induced.¹⁴

In the commercial construction sector, the focus is likely to be on reinvestments. During times of high workload, these are often postponed so as not to interrupt the work processes. In addition, the buildings and structural facilities are particularly stressed in good economic times. Similar to

the acquiring equipment investments, companies are likely to concentrate on maintaining the substance of their business and initiate expansion projects only to a limited extent.

Overall, increases in inventory measures in non-residential construction are expected for this and the coming year by just under five percent in nominal terms (Table 2). Here, too, growth is likely to be significantly influenced by the development of public construction.

Growth in civil engineering sector continues

The nominal construction volume in civil engineering has experienced a steady upturn over the past years (Table 3). From 2017 to 2019, the construction volume increased by almost nine percent each year. Here, too, the decisive factor is government demand through investment in transport infrastructure. Public civil engineering has seen double-digit growth in the last two years. However, public funding for the

¹⁴ KfW Bankengruppe, *KfW-Kommunalpanel 2019* (Frankfurt am Main: 2019) (in German; available online).

expansion of broadband and rail networks also appears to be increasing in impact. The commercial civil engineering volume, which reflects investments of railway and telecommunications companies, rose by around seven percent in 2019.

DIW Berlin expects this growth trend to continue at a somewhat slower pace. While production in civil engineering continued to rise, new orders for road construction services decreased. The demand for other civil engineering services, in contrast, continued unabated (Figures 5 and 6). The construction volume forecast indicates civil engineering projects should experience growth of just over five percent in 2019. The gap in growth rates of commercial and public civil engineering are likely to continue to close.

Growth rate of finishing trade slowly catching up

Every sector of the construction industry is profiting from the high growth rate of construction volume. Over the past few years, real growth was significantly above average, particularly in the core construction industry. In 2019, the construction volume of the mainstream construction industry is likely to have been almost five percent higher than in the previous year. However, with lower growth rates in new residential construction and civil engineering, growth rates here will gradually decline. The core construction industry is likely to increase by three percent in 2020 and by two percent in 2021.

In the construction industry, however, the upward trend should continue almost unchecked. Real growth of around three percent each year in the construction volume generated by the finishing trade is expected in 2020 and 2021. A prerequisite for this, however, is that the efforts to expand capacities, in particular by recruiting and qualifying skilled workers, are successful.

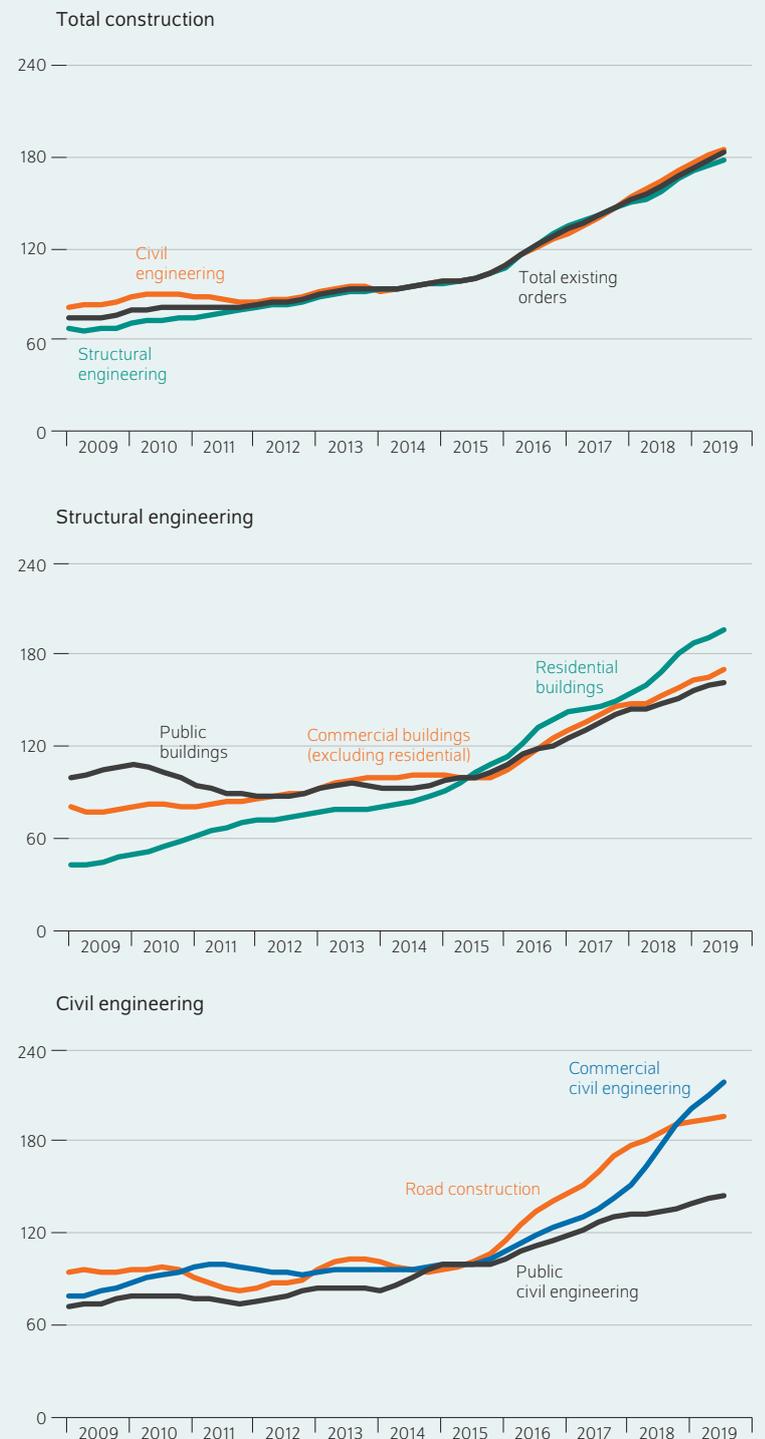
Conclusion: utilize long-term investments

The nominal increase in construction volume to almost 460 billion euros in 2020 and around 485 billion euros in 2021 should be offset by significantly weaker growth rates in real terms. The upward trend in prices is likely to continue thanks to the high demand for construction services and high capacity utilization in all construction sectors. Collective wage increases are reflecting this already. By contrast, price pressures on intermediate goods and services are expected to slow down somewhat in view of the economic slowdown. Construction prices are projected to rise by 3.3 percent in 2020 and by a further 3.1 percent in 2021 (Table 4).

Nevertheless, at 3.3 percent in 2020 and 2.7 percent in 2021, the real construction volume will grow much more dynamically than overall economic growth. Thus, the construction industry continues to be one of the most important pillars of the German economy. Indeed, the need for investments in many areas is large. Different estimates come to the same conclusion: over the next ten years, significantly means need to be invested in modernizing and expanding infrastructure

Figure 6

Existing orders in the core construction industry
Index 2015 = 100, respective prices, trend component



Source: Federal Statistical Office.

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The order books remain full to bursting.

CONSTRUCTION VOLUME CALCULATION

Table 3

Civil engineering in Germany, 2013 to 2021

	2013	2014	2015	2016	2017	2018	2019	2020	2021
	In billion euros at the respective year's prices								
Commercial civil engineering	28.11	29.31	29.55	30.29	32.90	35.02	37.47	39.11	41.00
Public civil engineering	25.19	27.36	27.35	28.50	30.88	34.44	38.03	40.34	42.51
Total civil engineering	53.30	56.67	56.89	58.79	63.79	69.46	75.50	79.46	83.51
	Change in percent								
Commercial civil engineering	0.2	4.3	0.8	2.5	8.6	6.4	7.0	4.4	4.8
Public civil engineering	2.9	8.6	0.0	4.2	8.4	11.5	10.4	6.1	5.4
Total civil engineering	1.4	6.3	0.4	3.3	8.5	8.9	8.7	5.2	5.1
	Shares in percent								
Commercial civil engineering	52.7	51.7	51.9	51.5	51.6	50.4	49.6	49.2	49.1
Public civil engineering	47.3	48.3	48.1	48.5	48.4	49.6	50.4	50.8	50.9
Total civil engineering	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Sources: Federal Statistical Office; DIW Berlin Construction Volume Calculation.

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Additional public funding is clearly visible in civil engineering.

Table 4

Key figures for development of construction volume in Germany up to 2021

	2015	2016	2017	2018	2019	2020	2021	2016	2017	2018	2019	2020	2021
	In billion euros at the respective year's prices							Change from the previous year in percent					
Total construction volume	334.53	349.71	370.16	395.67	430.24	458.74	485.19	4.5	5.8	6.9	8.7	6.6	5.8
Residential construction	187.77	199.15	210.43	224.81	244.64	263.51	279.99	6.1	5.7	6.8	8.8	7.7	6.3
Commercial construction	101.41	103.33	109.68	116.29	124.93	130.08	135.82	1.9	6.1	6.0	7.4	4.1	4.4
Public construction	45.35	47.23	50.05	54.57	60.68	65.16	69.37	4.1	6.0	9.0	11.2	7.4	6.5
Price development								1.9	3.6	4.9	4.6	3.3	3.1
	Real, chain index 2010=100												
Total construction volume	105.37	108.09	110.51	112.73	117.35	121.25	124.48	2.6	2.2	2.0	4.1	3.3	2.7
By construction sector													
Residential construction	109.88	114.24	116.96	119.60	124.79	129.91	133.80	4.0	2.4	2.3	4.3	4.1	3.0
Commercial construction	103.84	104.01	106.21	107.29	109.97	111.62	113.30	0.2	2.1	1.0	2.5	1.5	1.5
Public construction	92.79	94.85	96.72	99.72	105.40	108.78	111.61	2.2	2.0	3.1	5.7	3.2	2.6
By producer group													
Core construction industry	112.13	115.95	120.48	124.44	130.23	134.20	136.86	3.4	3.9	3.3	4.7	3.1	2.0
Finishing trades	98.85	100.75	101.45	102.93	105.47	108.98	112.01	1.9	0.7	1.5	2.5	3.3	2.8
Other producers	107.52	110.84	114.34	118.46	123.71	127.67	130.99	3.1	3.2	3.6	4.4	3.2	2.6

Sources: Federal Statistical Office; DIW Berlin Construction Volume Calculation.

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Residential construction continues to support the construction industry.

in order to strengthen Germany as a business hub.¹⁵ Such a program would significantly increase potential growth. However, this would immediately mean that inflation in

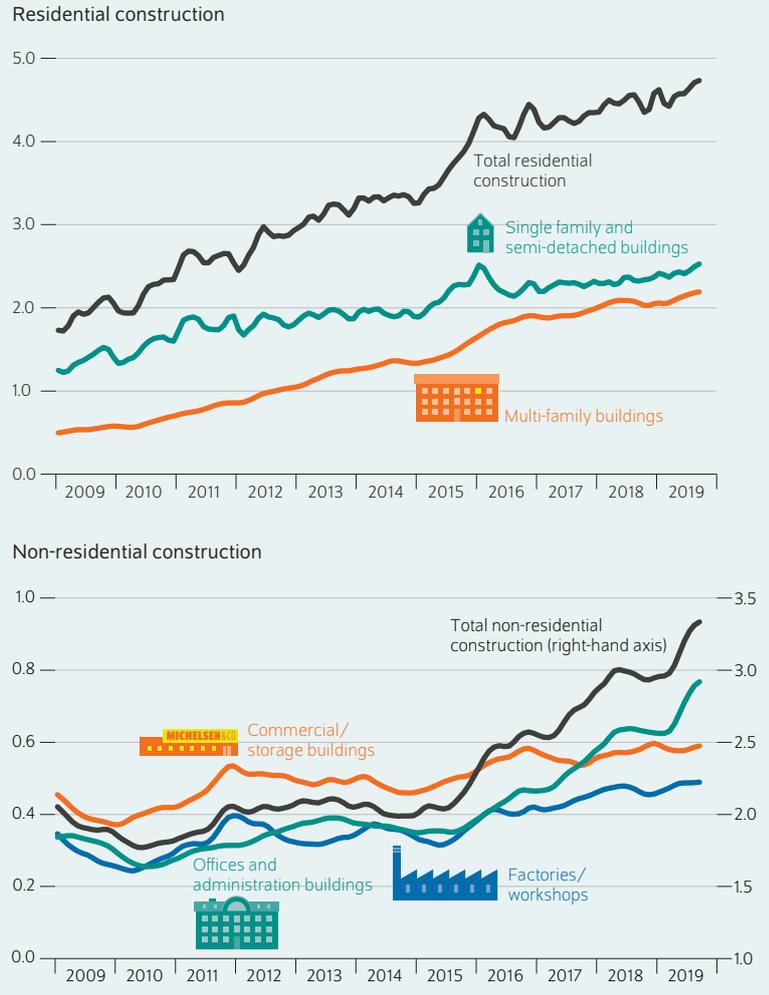
the construction sector would initially remain quite strong, although production capacities would be built up if investment intentions were long-term. As a result, there would be a shift towards the construction sector and a necessary substantial real expansion of construction investments. If investments continue to be made on a cash basis, the willingness of construction companies to hire more staff and expand their machinery is likely to be limited. On the contrary, short-term investment boosts, especially in the form of rising prices for construction services, would fizzle out.

¹⁵ Marius Clemens, Marius Goerge, and Claus Michelsen, "Öffentliche Investitionen sind wichtige Voraussetzung für privatwirtschaftliche Aktivität," *DIW Wochenbericht*, no. 31 (2019): 537–543 (in German; available online); Sebastian Dullien et al., "Konjunkturpolitik in der Krise," *Wirtschaftsdienst* 99, no. 11 (2019): 747–768 (in German); Marius Clemens, "Öffentliche Finanzen: Haushalts-spielräume verlichtigen sich nach und nach – Investitionsprogramm wäre sinnvoll," *DIW Wochenbericht*, no. 50 (2019): 952–960 (in German; available online); Tom Krebs and Martin Scheffel, "Öffentliche Investitionen und inklusives Wachstum in Deutschland," Bertelsmann Stiftung (in German; available online); Tom Krebs and Martin Scheffel, "Lohnende Investitionen," *Perspektiven der Wirtschaftspolitik* 18, no. 3 (2017): 245–262 (in German); Hubertus Bardt et al., "Für eine solide Finanzpolitik: Investitionen ermöglichen!," *IMK Report* no. 152 (2019) (in German).

One problem frequently mentioned is the lack of personal in municipal building planning offices and in shortage professions, particularly technology, in federal and state administrations. Therefore, additional budget funds are not used, as a lack of staff prevents investment activity from being expanded and infrastructure from being repaired and modernized. This could be countered by no longer keeping planning capacities in every municipality in their entirety, but by creating them in joint planning units, similar to municipal joint boards. Procedures could also be made less personnel intensive. For example, model building regulations or type approvals could shorten complex approval processes. If uniform standards were applied, such as in a model building regulation, or if it were possible to construct a building identical to an already approved building without requiring additional procedures, this would shorten necessary administrative processes considerably.

Figure 7

Building permits in structural engineering in Germany
Respective prices in billion euros, trend component



Sources: Federal Statistical Office; DIW Berlin Construction Volume Calculation.

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In particular, the number of newly approved offices and administrative buildings has risen sharply.

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