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German Institute
for Economic Research

No. 6/2010
Volume 6
February 3, 2010

DIW BERLIN

Weekly Report

Building sector: Stimulus packages make an impact

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The sharp slump of the German economy has left its mark on the building sector. Commercial construction has been especially affected by the significant decline in companies' propensity to invest—triggered by the macroeconomic downturn. However, due to the stable development of real wages and the overall labour market as well as targeted supporting programmes, the recession has more or less bypassed residential construction. Public sector construction even increased in 2009, most notably during the later half of the year when the effects of the second stimulus package came into force. Nevertheless, due to idle capacities in commercial construction, only moderate price increases are to be expected.

Overall—and in real terms—, 2009 will see little change in German construction volumes compared to the previous year. In 2010, stimulus packages will encourage a noticeable recovery, which—in turn—will have a positive effect on the country's overall economy. All in all, construction volumes are expected to grow by more than two per cent (adjusted for price) in 2010 and the main construction industry will profit disproportionately. From an economic point of view, the investment programmes thus meet their intended goal: stabilisation of the construction sector.

Residential construction surprisingly stable

For years, residential construction has been subject to strong structural changes.[1] These changes are characterised by a substantial shift in construction activities from new construction to modernisation and maintenance measures on existing buildings (table 1). In 2000, more than 40 per cent of residential construction activities could be attributed to new construction. By 2008, new construction volumes had dropped from 65 billion euros to less than half that amount. Significant contributing factors turned out to be the stagnating number of households and weak income growth coupled with a reduction in governmental backing for residential construction. At the same time, Germany experienced a significant increase in construction on existing buildings. In 2008, modernisation and renovation measures accounted for almost 80 per cent of the country's residential construction volumes.

1 Gornig, M., : The German Construction Industry: Production and Employment 2007/2008 Weekly report by DIW Berlin no. 11/2008.

JEL Classification:
L74, O11

Keywords:
Housing demand, Construction industry, Forecast 2010

Table 1

Structure of housing construction volumes in Germany 2000 bis 2008

	2000	2001	2002	2003	2004	2005	2006	2007	2008
In billion Euros at the respective year's price									
Volume of new construction[1]	64.78	52.74	49.29	49.54	50.80	44.23	45.51	36.63	32.29
Private residential buildings	49.74	40.86	39.32	40.09	41.38	35.59	35.97	28.02	24.30
Apartment buildings	15.04	11.88	9.97	9.45	9.42	8.64	9.54	8.61	7.99
Construction on existing buildings[2]	88.65	91.89	86.78	83.79	81.86	82.96	90.55	106.75	115.91
Total volume of housing construction	153.43	144.63	136.07	133.33	132.66	127.19	136.06	143.38	148.30
Change in percentage									
Volume of new construction[1]	–7.7	–18.6	–6.5	0.5	2.5	–12.9	2.9	–19.5	–11.8
Private residential buildings	–4.7	–17.9	–3.8	2.0	3.2	–14.0	1.1	–22.1	–13.3
Apartment buildings	–16.6	–21.0	–16.1	–5.2	–0.3	–8.3	10.4	–9.7	–7.2
Construction on existing buildings[2]	2.4	3.7	–5.6	–3.4	–2.3	1.3	9.1	17.9	8.6
Total volume of housing construction	–2.1	–5.7	–5.9	–2.0	–0.5	–4.1	7.0	5.4	3.4
Structure in percentage									
Volume of new construction[1]	42	36	36	37	38	35	33	26	22
Private residential buildings	32	28	29	30	31	28	26	20	16
Apartment buildings	10	8	7	7	7	7	7	6	5
Construction on existing buildings[2]	58	64	64	63	62	65	67	74	78
Total volume of housing construction	100	100	100	100	100	100	100	100	100

1 Calculated on the basis of estimated construction costs (construction activity statistica), plus surcharges for architects' services and fees, outdoor facilities and borrowers' capital of the investors.
2 Building and housing modernisation (incl. conversation and extension work) and renovation services carried out by the construction industry.

Sources: Federal Statistical Office, calculations of construction volumes by DIW Berlin. **DIW** Berlin 2010

Any real-time survey of modernisation and maintenance measures, however, will be subject to a number of uncertainties. Most of these activities are carried out by finishing trades and these tend to be underrepresented in routine construction reports. VAT statistics provide the only reliable source of output estimates for this particular construction segment, but these statistics are only available after a two-year delay. For this reason, the data currently available stops in 2007.

Governmental support and subsidies from the first stimulus package, passed back in 2008, suggest a continuing stable development of modernisation and maintenance measures in residential construction. These stimulus measures include additional funds for the CO_2 modernisation programme, spread over the next three year, which could up trigger up to 1.1 million euros of additional demand in the construction business.[2]

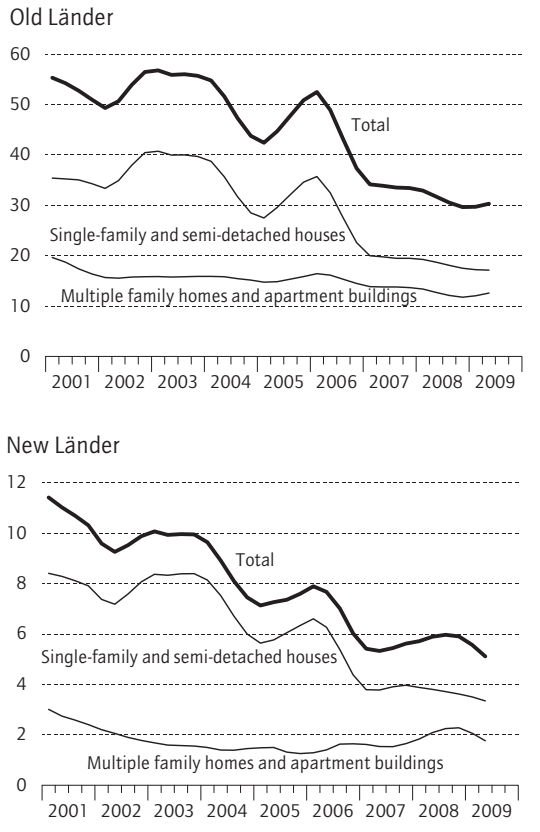
Another item on the stimulus agenda is the increase of the tax-deductible maximum, from 600 to 1,200 euros, for private residential construction and maintenance services according to § 35 a par. 2 clause 2 of the German Income Tax Act. As the tax relief amounts to 20 per cent of labour costs, the corresponding multiplier is five. In view of the fact that labour costs account for half of the business volume of these construction and maintenance services,

2 Cf. Clausnitzer, K.-D. et al.: Effekte des CO_2-Gebäudesanierungsprogramms 2007. (Effects of the CO_2 modernisation programme 2007) Report by the Bremen Energy Institute, 2008, 52.

Figure 1

Permit for Housing Construction

in 1000 apartments per quarter[1]



1 Seasonally adjusted by the Berlin Method.

Sources: Federal Statistical Office, calculations of construction volumes by DIW Berlin. **DIW** Berlin 2010

the overall multiplier becomes ten. For 2010, the Ministry of Finance has announced a prospective tax shortfall of 900 million euros,[3] i. e. it expects projected investments of around nine billion euros. However, it remains to be seen how effective this particular measure will prove at stimulating new investment and how much of it will simply be considered a welcome windfall. As a raise of the deductible amount—not a change in the reduction rate—the revision will only affect larger investments. This analysis therefore assumes that this measure will not lead to a rise in demand, but at least help to stabilise it.

In view of the relatively open housing market, medium-term prospects for new residential construction remain subdued. The trend in planning permissions, however, suggests an end to the slump in new construction (figure 1), especially for apartment buildings. Although the number of construction permits has reached a historic low in both East and West Germany, there is no sign of a further decline. For single-family homes or semidetached houses, however, seasonally adjusted volumes of planning permissions have continued to decrease in 2009.

In 2009, actual construction volumes are projected to reach the previous year's level (see box). In West Germany, order volumes had already suggested a slight recovery by mid-year, while demand in East Germany declines yet again (figures 2 and 3). As part of an overall economic recovery, real residential construction volumes are expected to rise moderately in 2010. This trend will most likely be stronger in West Germany than in the east where, for a number of years, demand has been less affected by macroeconomic trends.

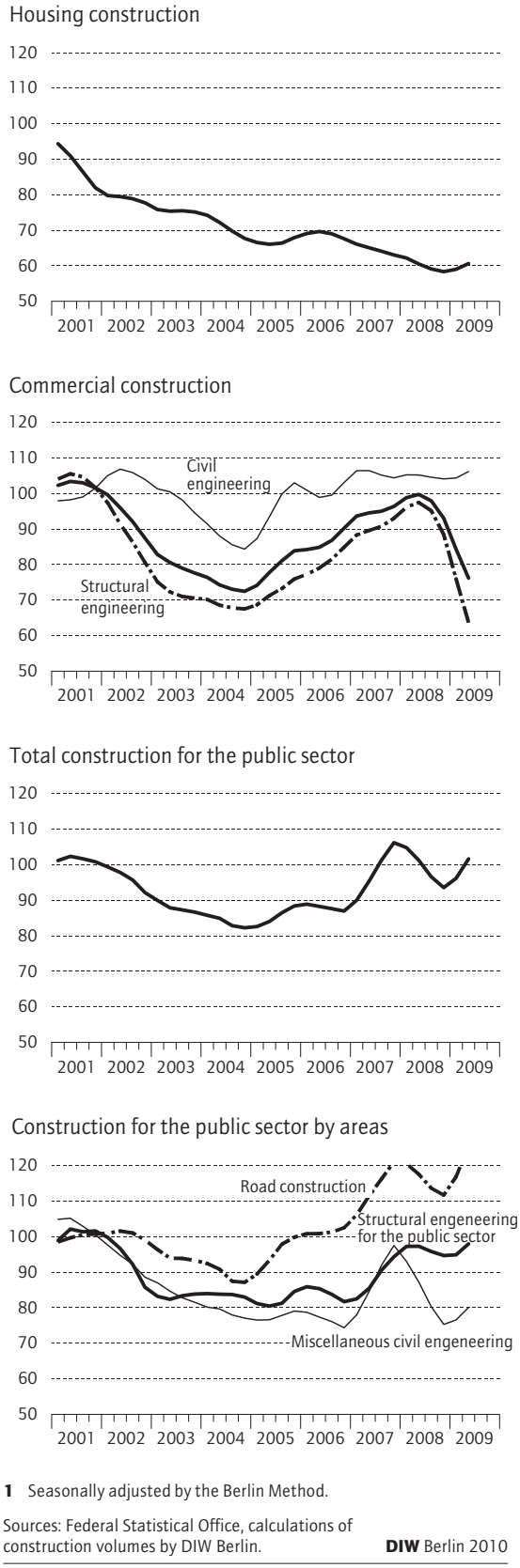
Commercial construction remains weak

Although commercial construction volumes gained substantially on the previous quarter during the second quarter of 2009, overall order volumes suggest a significant slowdown in the future. In West Germany, the number of permits for production as well as trade and storage structures has been decreasing since early 2008 (figure 4) and East Germany has registered a similar drop in the construction of new production, trade and storage structures, albeit with a few quarters' delay. The sole exception to this trend: office and administration buildings. Here, the

Figure 2

Incoming Orders in the Main Construction Trade, Old Länder

Value index 2000 = 100[1]



1 Seasonally adjusted by the Berlin Method.

Sources: Federal Statistical Office, calculations of construction volumes by DIW Berlin. **DIW** Berlin 2010

3 Draft paper by the parliamentary group: Gesetz zur Umsetzung steuerrechtlicher Regelung des Maßnahmenpaketes Beschäftigungssicherung durch Wachstumsstärkung. (Law for the implementation of fiscal control of the stimulus package for job security through the encouragement of economic growth) 2008, 10.

Construction volume calculation

The construction volume calculation by DIW Berlin refers to production in the construction sector.[1] The analysis of development trends is not limited to a narrow definition of the building sector, but also includes other industries such as steel and light alloy construction, prefab production, smithery and specific branches of other industries that contribute to construction, right up to planning and other services. This analysis subscribes to the definition of construction investments as used in macroeconomic accounting—with one major difference: in this case, the construction volume encompasses all construction production, including non-value-adding repairs.[2]

The projected development trends of construction volumes are embedded into the macroeconomic economic prognosis by DIW Berlin.[3] In accordance with this analysis, a first step determines projected construction investments in line with the system of macroeconomic accounting.

The resulting prognosis of construction investments is based on indicator-supported statistical models. To this end, the desired parameter, e. g. the volume of commercial construction, is regressed to an autoregressive term and delayed values of the corresponding indicator. The resulting predictive equation corresponds to the following template:

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

Here, y_t indicates the value of the desired parameter at the time of t, x_t denotes the value of the indicator at the time of t, while α, β_i and γ_j represent the estimated parameters and thus the statistical error term.

The optimal delay structures n und m are determined by means of the auto-correlation or cross-correlation function. In addition, the different specifications are evaluated according to information criteria.

In order to test the quality of the prognosis, timelines are shortened to allow for the comparison of the remaining, realised values with the prognosis for each particular period. The specifications with the minimum square deviation between the projected and actual values are used to generate the final prognosis.

In terms of residential construction, order volumes and construction permits proved to be suitable indicators for the prediction of residential construction volumes, while production investments, capacity utilisation as well as orders or construction permits for non-residential structures turned out to be relevant indicators for commercial construction.[4] Public sector construction, on the other hand, is not determined by means of indicators. The volume of public construction is the result of political decisions—and these can be based on very different criteria, depending on the decision-making body or tier. Accordingly, predictions of public sector construction are based on projections of the federal budget as this accounts for both government revenue and the announced stimulus packages.

Some of the individual indicators can lead to markedly different results. Furthermore, construction investments are strongly influenced by legal policy, such as the abolition of the homeowner's allowance, and our predictive calculations cannot adequately model changes in such factors. For this reason, the employed statistical techniques only serve as a starting point for the actual prognosis. In a subsequent step, the overall outlook for the individual aggregates of construction investments is calibrated against the other aggregates of macroeconomic accounting.

In a final step, the results of the investment prognosis are translated to the template of the construction volume calculation. Here, demand-side development trends are favoured—while allowing for the idiosyncrasies of non-investment construction services in the business cycle. The subdivided information on construction permits and order volumes enables further differentiation by structural characteristics, such as different development trends in East and West Germany or between producer groups like the main construction industry and the finishing trades.

Insights resulting from this structural portrayal of the construction sector in turn prove invaluable in the formulation of assumptions for the regression model to determine overall investments.

1 The construction volume calculations were supported by the Federal Office for Building and Regional Planning as part of the research initiative „The Future of Construction" by the Federal Ministry for Transport, Building and Urban Development.

2 Further details on the structure of the construction volume calculation: Bartholmai, B., Gornig, M.: Bauwirtschaft auf Wachstumskurs. (Building sector heading for growth) Wochenbericht by DIW Berlin no. 47/2006.

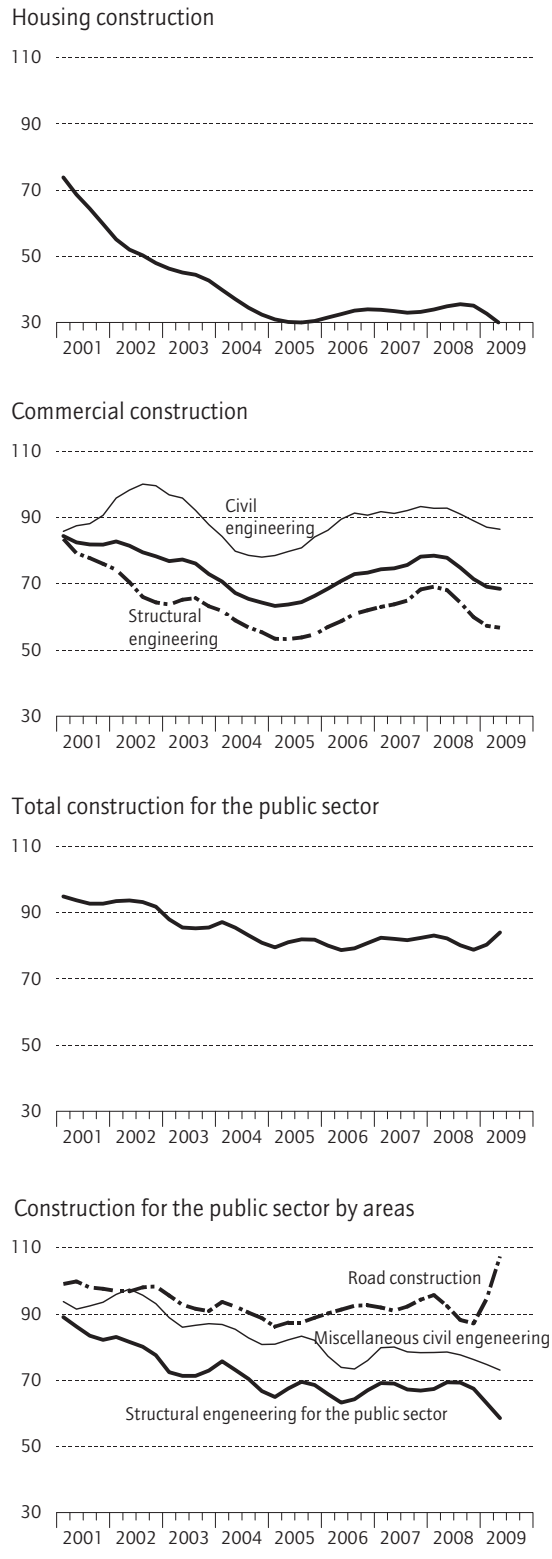
3 For method, see also: Rapach, D. E., Wohar, M. E.: Forecasting the Recent Behaviour of U.S. Business Fixed Investment Spending: An Analysis of Competing Models. Journal of Forecasting, Vol. 26, 2007, 33–51. Recent results available in: Dreger, C. et al.: Herbstgrundlinien 2009: leichte Erholung im nächsten Jahr. (Outlook in autumn 2009: slight recovery in the next year) Wochenbericht by DIW Berlin no. 42/2009.

4 Cf. Döpke, J. et al.: Indikatoren zur Prognose der Investitionen in Deutschland. (Indicators to predict investments in Germany) Kieler Arbeitspapier No. 906, Kiel 1999.

Figure 3

Incoming Orders in the Main Construction Trade, New Länder

Value index 2000 = 100[1]



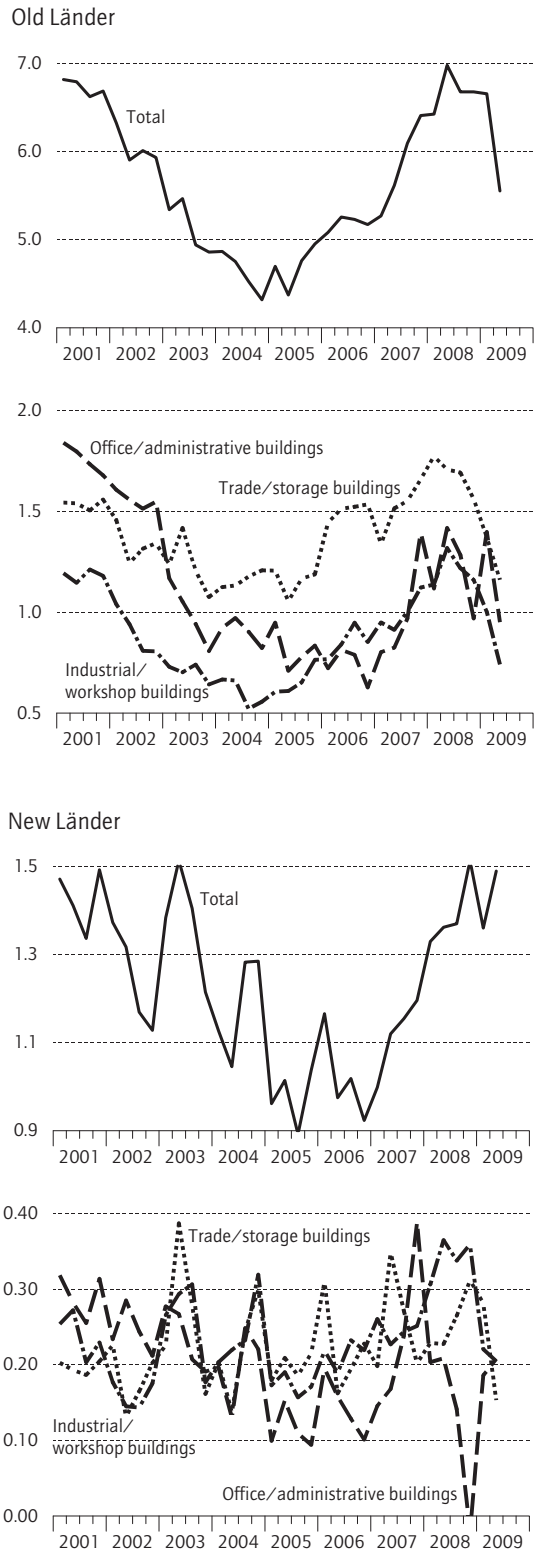
1 Seasonally adjusted by the Berlin Method.

Sources: Federal Statistical Office, calculations of construction volumes by DIW Berlin. **DIW** Berlin 2010

Figure 4

Permits in Non-Housing construction

Construction costs in euro billion per quarter[1]



1 Seasonally adjusted by the Berlin Method.

Sources: Federal Statistical Office, calculations of construction volumes by DIW Berlin. **DIW** Berlin 2010

Table 2

Outcome of both economic stimulus packages

in euro billion

	2009	2010	2011
stimulus package I			
federal government	1.5	1.4	0.0
Länder	0.0	0.0	0.0
local authorities	0.6	0.4	0.0
total	**2.1**	**1.8**	**0.0**
stimulus package II			
federal government	1.0	2.5	1.0
Länder	0.5	1.4	0.5
local authorities	1.9	4.1	1.5
total	**3.4**	**8.1**	**3.0**

Source: Federal Ministry of Economics and Technology: Employment security, Growth strength, measurements off the federal state, calculations by DIW Berlin. **DIW** Berlin 2010

number of permits has recovered substantially from its previous, significant slump.

Collapsing exports and the related drop in exporting companies' propensity to invest are expected to have a strong impact on commercial construction. East Germany's lower export dependency correlates with its order volume for commercial construction. Here, there are reliable signs that the market has bottomed out—a trend not yet discernible in West Germany. Meanwhile, relatively stable consumption growth helps to bolster the industry by having a positive effect on the investment propensity of service providers. Overall, this year's decrease in commercial construction is predicted to reach almost five per cent in Germany.

Table 3

Development of Construction Volume

	2006	2007	2008	2009[1]	2010[1]	2007	2008	2009	2010
	In euro billions at current prices					Change (%) on the previous year			
Total construction volume	247.73	266.12	282.47	287.15	296.23	7.4	6.1	1.7	3.2
Old Länder	199.62	214.19	227.24	231.12	238.71	7.3	6.1	1.7	3.3
New Länder and Berlin[2]	48.11	51.93	55.23	56.07	57.55	7.9	6.4	1.5	2.6
	Index 2000=100								
Price development	105.47	112.06	115.86	117.25	118.51	6.3	3.4	1.2	1.1
Old Länder	105.20	111.75	115.50	116.89	118.14	6.2	3.4	1.2	1.1
New Länder and Berlin[2]	106.63	113.39	117.33	118.86	120.13	6.3	3.5	1.3	1.1
	In euro billions at 2000 prices								
Total construction volume	234.87	237.48	243.81	244.90	249.96	1.1	2.7	0.4	2.1
Old Länder	189.75	191.68	196.74	197.73	202.05	1.0	2.6	0.5	2.2
New Länder and Berlin[2]	45.12	45.80	47.08	47.18	47.91	1.5	2.8	0.2	1.6
According to construction areas:									
Housing construction	129.40	127.99	128.44	128.61	130.23	–1.1	0.4	0.1	1.3
Old Länder	110.96	109.72	110.15	110.38	111.86	–1.1	0.4	0.2	1.3
New Länder and Berlin[2]	18.44	18.28	18.30	18.23	18.37	–0.9	0.1	–0.4	0.8
Commercial construction	69.97	73.47	78.68	74.92	74.83	5.0	7.1	–4.8	–0.1
Old Länder	52.92	55.74	59.86	56.82	56.85	5.3	7.4	–5.1	0.0
New Länder and Berlin[2]	17.05	17.73	18.81	18.10	17.99	4.0	6.1	–3.8	–0.6
Construction for the public sector	35.51	36.01	36.69	41.37	44.89	1.4	1.9	12.8	8.5
Old Länder	25.88	26.23	26.73	30.53	33.34	1.3	1.9	14.2	9.2
New Länder and Berlin[2]	9.63	9.79	9.97	10.84	11.55	1.6	1.8	8.8	6.5
According to the category in the construction sector:									
Old Länder									
Construction trade: structural and civil engineering[3]	56.3	56.41	56.42	57.52	59.32	0.2	0.0	1.9	3.1
Construction installations, miscellaneous construction trades [4]	72.87	74.75	78.83	79.37	80.98	2.6	5.5	0.7	2.0
Other areas[5]	60.58	60.52	61.48	60.84	61.75	–0.1	1.6	–1.0	1.5
New Länder and Berlin									
Construction trade: structural and civil engineering[3]	17.73	17.77	17.86	18.03	18.37	0.2	0.5	0.9	1.9
Construction installations, miscellaneous construction trades [4]	16.03	16.65	17.72	17.74	18.03	3.9	6.4	0.1	1.6
Other areas[5]	11.36	11.38	11.49	11.40	11.52	0.2	1.0	–0.8	1.0

1 Forecast
2 According to the location of construction sites
3 Including preparatory construction site work (is equivalent to main construction trade)
4 Corresponds to the finishing trade
5 Manufacturing trade (installations, system-built structures and prefabricated constructions), construction related services, investors' own work and services.

Sources: Federal Statistical Office, calculations of construction volumes by DIW Berlin. **DIW** Berlin 2010

Due to the continuing macroeconomic recovery, commercial construction volumes are likely to remain more or less the same in 2010. Commercial construction also benefits from the stabilising effects of the growing proportion of modernisation and maintenance measures. In the segment of non-residential construction, work on existing buildings already makes up 45 per cent.

Public sector construction enjoys strong expansion

While nobody expected miracles from the first stimulus package,[4] the second instalment promises to play a major part in the stabilisation of the building sector. First of all, the second set of measures comprises a much larger volume (table 2). In addition, the first stimulus package—with the exception of the innovation and investment programme for transportation—focused mostly on credit measures that met with little interest in the prevalent economic situation.

For the first stimulus package, this analysis factors in one billion euros from the innovation and investment programme for transportation earmarked for the expansion of road and rail transportation in 2009 and 2010. For all other measures of the stimulus package at a local level, this study assumes a volume of 500 million euros for both years. This amount is significantly lower than the sum originally put forth by the Federal Government—it had anticipated an investment volume of 900 million euros in 2009.[5] just from the increased investment package. The actual, lower impact could be attributed to the large number of additional credit programmes at a local level—especially in times of an economic downturn, many businesses decide not to use them—but also to the displacement effect of the second stimulus package. Overall, the effect of the first stimulus package is most likely less significant than projected.

The second bundle of economic measures encompasses the direct provision of funds—17.8 billion euros in all—throughout 2009 and 2010, i. e. more than ten times the amount of the first package. Of this, four billion euros are issued by the German Federation. In addition, it provides a further 500 million euros for the modernisation of office buildings. Local authorities receive ten billion euros from the Federation. Bolstered by the approved co-financing of the German Länder, the overall amount available to local authorities rises to 13.3 billion euros.

The prognosis for public sector construction assumes that—despite government intentions—20 per cent of the provided funds will only enter production by 2011 due to the required preliminary planning, tendering and approval stages and despite the time-limited simplified contract award process included in the programme. A quarter of the remaining 80 per cent of funds will be spent in 2009, the remaining three quarters in 2010. The study assumes that the funds at the federal level are supplementary and will be spent—after all, as initiator of the package, the German Federation has a fundamental interest in the correct implementation of the agreed measures. On a local level, however, this might not always be the case. Although local authorities are meant to spend these funds in addition to investments already scheduled, some displacement and windfall effects are inevitable. Furthermore, there is no guarantee that the local authorities will indeed claim all of the allocated funds. For the purpose of this analysis, it is therefore assumed that only three quarters of the provided funding will have the intended effect on a local level.

In both East and West Germany, order volumes of public sector construction have experienced a substantial increase since the turn of the year. In East Germany, all of this increase can be attributed to road construction, but in the west, the main construction industry also benefits from the stimulus packages.

Against this background, the second stimulus package will dominate public sector construction in the current and subsequent year. All in all, real production volumes are projected to grow by 13 per cent in 2009 and 9 per cent in 2010. Next year, some of these measures might be offset by price effects as most of the programme will only take effect in 2010, i. e. at a time when the building sector will already enjoy better capacity utilisation again.

Conclusion

This year, overall construction volumes in Germany will reach a nominal value of approx. 287 billion euros. Adjusted for price, this is little more than in 2008 (table 3). Nevertheless, measures of the second stimulus package have at least helped to prevent a decline in construction activity in the present year.

The economic outlook for 2010, on the other hand, is more positive. A decisive contributing factor is

4 Gornig, M., Weber, S.: Konjunkturprogramm kommt auf dem Bau kaum an. (Stimulus package has little effect on the construction sector) Wochenbericht by DIW Berlin no. 48/2008.

5 Arbeitsplatzprogramm Bau und Verkehr. (Employment programme for construction and transportation) (2008, www.bmvbs.de/Anlage/original_1061003/APBV-Massnahmen-des-Innovations-und- Investitionsprogramms-Bau-2009-bis-2011.pdf.

the improvement of general parameters for residential and commercial construction. The macroeconomic upturn has positive effects on the labour market and thus household incomes, but also on the investment propensity of companies. In 2010, German construction volumes are expected to grow by two per cent (adjusted for price)—and most of this can be attributed to the strong increase in planned public sector construction.

In East Germany, the projected growth of the building sector (1.6 per cent) will most likely be somewhat lower than in West Germany (2.2 per cent) due to remaining overcapacities on the East German housing market, which affect new residential construction. Furthermore, public sector construction is already high in the New Länder, i. e. demand for the Federal stimulus programmes is likely to be lower.

An analysis of the (actual) construction work—divided by production groups—reveals that the main construction industry is catching up to the other building sectors. In 2010, real production of the main construction industry in East and West Germany should get a strong boost from the second stimulus package. The finishing trades and other segments (construction services by the manufacturing trades, planning services etc.), on the other hand, will continue to suffer from the relatively modest demand for new residential construction.

In the construction sector, the stimulus packages generate their intended countercyclical effect and thus also contribute to the stabilisation of the overall economy. With this particular stimulus programme, the risk of misallocation—and therefore inefficiencies—is relatively low. Right now, the building sector is not affected by a structural crisis, but—via commercial construction—by the downward spiral of global trade. Once demand returns to normal, existing capacities will come back into use, i. e. the stimulus packages only shift the structure of building demand, but do not protect or encourage overcapacities. To this end—and in view of the country's economic development—these measures have proven favourable.

(First published as "Bauwirtschaft: Konjunkturprogramme zeigen Wirkung", in: Wochenbericht des DIW Berlin Nr. 47/2009.)

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ISSN 1860-3343
Translated from the German.
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