



- Since 2000 Germany's investment share has fallen far behind the Eurozone. The gap is principally attributable to a steep decline in construction investment. German trends for investment in equipment are actually better than in the rest of the Eurozone.
- Investment in equipment is still weak in historical terms, despite historically high profits and low tax and interest rates. The main problem for investment in equipment is low capacity utilisation.
- Investment in construction has increased as a proportion of GDP, but remains lower than in the rest of the Eurozone. Lack of investment in public infrastructure is one reason.
- The state could improve capacity utilisation by working to relax Eurozone austerity policies and increasing investment in public infrastructure.



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FABIAN LINDNER | A SHORTAGE OF PRIVATE INVESTMENT IN GERMANY?

1. Germany's Investment Gap

Since 2000 German gross fixed capital formation has fallen well behind the rest of the Eurozone.¹ As Figure 1a shows, the proportion of German GDP going to investment fell from 21 percent in 2000 to 17 percent in 2013 and even after the euro crisis remains below the average for the rest of the Eurozone (without Germany) (see box on »National Accounts Revisions and Investment Data«).² On this basis, the German Institute for Economic Research (DIW) identifies a cumulative investment deficit of approximately 40 percent of GDP or one trillion euros (Bach et al. 2013). Priewe and Rietzler (2010) and Sinn (2005) had already noted a weakness of investment in Germany. DIW sees Germany's long-term growth threatened by this gap, arguing that the missing investments are holding back growth in productivity.

However, if one wishes to say anything about international productivity trends, comparing total investment rates is not very helpful, because the category comprises quite different classes of investment. In particular, we must distinguish between investment in equipment and investment in construction (residential and nonresidential) because productivity is driven above all by investment in equipment (which includes plant and machinery for producing goods and services). The private sector accounts for most investment in equipment and housing. Since 1991, on average 97 percent of investment in equipment and almost all housing construction has been undertaken by the private sector. The state invests above all in non-residential construction, which includes public infrastructure.

State investment in Germany lags significantly behind the rest of the Eurozone (Figure 2). Massive reductions in corporate and income tax in the early 2000s caused enormous losses of state revenues. In the ensuing massive budget consolidation efforts, public investments were among the first items to be sacrificed. This topic is discussed in depth by Rietzler (2014). However, since 1991 state investment has averaged only about 9 percent of total investment, so its weakness can explain only a very small part of the weakness of overall investment activity. Most of the German investment deficit must therefore be the responsibility of the private sector. The following analysis consequently focuses above all on private-sector investment.

To answer the question whether Germany suffers a private investment deficit of a magnitude capable of endangering long-term growth, we must first consider whether the gap revealed in Figure 1a stems principally from investment in equipment or investment in construction. Figures 1b to 1d show the various

National Accounts Revisions and Investment Data

After bringing the national accounts into line with the European Union's ESA 2010 accounting framework, the German Federal Statistical Office published revised national accounts data for Germany on 1 September 2014. But because not all EU member states have yet published their revised data, the European comparison presented here is based on the latest figures from the AMECO database (as of May 2014). The revisions do not alter the conclusions of this report.

The revisions principally affect the category of »other investment«, which is a component of capital formation but not discussed in the present report. Under the revision, spending on research and development is now categorised as investment under »other investment«, rather than as intermediate consumption. This increases value creation in the private sector. Largely on account of this change, between 1991 and 2013 German gross fixed capital formation as a percentage of GDP is on average 1.7 percentage points higher than shown in Figure 1a.

However, the data revision does not alter the picture for the investments in equipment and construction under discussion here. The average rates of investment in equipment, housing construction and non-residential construction for 1991 to 2003 lie about 0.1 percentage points below the pre-revision figures. The shape of the curve is almost unchanged. The reason for the slight fall is that overall GDP is now higher because of the inclusion of spending on research and development. The absolute levels of the investment categories under discussion are practically unchanged.

^{1.} Eurozone figures are for the eleven founding members (Austria, Belgium, Finland, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, Portugal and Spain) plus Greece.

^{2.} The data does not include the revision of the national accounts published on 1 September 2014. For details see box on »National Accounts Revisions and Investment Data«.



Fig. 1: Gross fixed capital formation and its components (% of GDP)









d. Non-residential investment





components of investment as a proportion of GDP for Germany and for the Eurozone (excluding Germany, and again excluding Germany, Ireland and Spain to exclude the effects of the property bubble in the latter two).

Examining gross investment in equipment as a proportion of GDP (Figure 1b), we find that Germany had a higher rate of investment in equipment than the rest of the Eurozone. The particularly strong investment in equipment in the 1990s was associated with German reunification. Between 2002 and 2004 the rate matched the rest of the Eurozone, and remained higher throughout the period 2005 to 2013, even through sharp falls in the 2008 financial crisis and the subsequent euro crisis. So it cannot be said that German investment in equipment

performed weakly in comparison with the Eurozone – quite the contrary. That conclusion is shared by Dullien and Schieritz (2011), the German Ministry for Economic Affairs (Bundesministerium für Wirtschaft 2013) and the European Commission (2014a, 40–53).

As Figures 1c and 1d show, investment in construction is responsible for the gap, which affects both residential and non-residential construction. The latter includes all commercial buildings, all public buildings (schools, universities, etc.) as well as private and public infrastructure such as roads, railways, etc.

If we examine residential construction since 1991 (Figure 1c) we find exactly opposing trends in Germany



and the rest of the Eurozone. Germany initially had a very high rate of investment in housing, which fell sharply with the end of the German property boom in the late 1990s. After the introduction of the euro, construction boomed in the other Eurozone countries, especially Spain and Ireland. But here, as previously in Germany, the activity was largely unsustainable and investment in housing fell sharply from 2007. As a consequence many Eurozone countries are now experiencing an adjustment crisis in housing construction, similar to Germany's between 1999 and 2005. After 2010 there are again diverging trends between Germany and the rest of the Eurozone: the rate of investment in housing has increased strongly in Germany and now exceeds that of the other Eurozone countries.

German non-residential construction has been even weaker (Figure 1d). Two factors play a role here. Firstly, non-residential construction includes important complementary investments for residential construction. For example, when new housing is built it also requires new infrastructure such as roads, pavements, water and sewage, etc. (Dullien and Schieritz 2011). All these components are included in the figures for nonresidential construction. Secondly, the weakness of public investment was also a drag on non-residential construction (Figure 2) (Rietzler 2014).

So Germany does have an investment deficit in comparison with the Eurozone, but it relates principally to construction, rather than to investment in plant and machinery.

2. Demand Drives Investment in Equipment

Although German investment in equipment shows no particular weakness in relation to the Eurozone, it has nonetheless been very weak in historical terms since 2008. We now turn in greater detail to the factors determining investment in equipment.

The current weakness of investment cannot be caused by inadequate profitability, as the profits of non-financial businesses are close to historic highs. The pre-tax return on sales of German companies in 2013 was 13 percent, the figure after tax 11 percent.³ The historic record was achieved in 2007 when pre-tax returns reached 15 percent, after-tax returns 13 percent (Figure 3a).

The most important factors holding back investment in equipment are weak demand and the still uncertain outcome of the euro crisis. In general businesses require capital goods for production. The fewer products they are able to sell, the lower the utilisation of their existing plant and the less worthwhile it is to purchase new equipment. Here expectations are crucial. Because capital goods are generally expensive, investment is only profitable if expected demand is sufficient to utilise additional production capacity.

If there was a deficit in investment in equipment, that would mean that capacity was being fully utilised but businesses were unable to purchase new equipment for reasons of cost or financing. But such a deficit cannot be identified in Germany. Figure 3b shows capacity utilisation in industry since 1991, as determined by business surveys. The long-term trend until the 2009 crisis was a utilisation rate of about 85 percent. Capacity tends always to be slightly underutilised because businesses need to keep enough spare capacity to respond to any sudden increase in demand. The crisis is clearly visible in 2009, when capacity utilisation completely collapsed. It revived as the economy recovered, only to collapse again in the euro crisis. Since the second quarter of 2012 we are again seeing significant underutilisation of capacity. Thus businesses have little incentive to invest to expand

^{3.} For the non-financial sector only gross output data is available, which includes not only sales but also items and goods produced but not yet sold. However, the latter is small enough relative to sales that it is acceptable here to use gross output to calculate the return on sales.

production, because demand is insufficient to fully utilise existing capacity.

Figure 4 examines the relationship between existing production capacity, expected demand and investment in equipment. It shows the growth rates of real investment and the response of industrial companies when asked whether their current production capacity was adequate to fulfil existing and expected orders.⁴ There is a strong correlation between the two variables. At first glance actual growth in investment often appears to precede change in capacity utilisation. However, a two-sided Granger causality test shows mutual dependence.⁵

Another approach is to consult business surveys asking companies what limits their production: demand, labour, material and/or equipment, or finance (European Commission 2014b). As Figure 3c shows, the most important reason is almost always lack of demand. Capacity shortages occur principally when demand rises strongly.

Altogether, the data demonstrates that businesses invest when their capacity is insufficient to satisfy demand for their products. This makes demand the most important factor for expansion of production capacity, in other words for investment in equipment.

A glance at the composition of demand shows why investment in equipment has been so weak since 2008. Figure 5a shows the growth in corporate sales and the contributions of the state, private households and exports.⁶ State and household demand together make up domestic demand.

Fig. 3: Determinants of investment in equipment

a. Return on sales of non-financial corporations



b. Capacity utilisation in industry



c. The main factors limiting industrial production



In particular since 2002, exports have become the dominant source of growth in German corporate sales, while the domestic sectors contributed little. During the 1990s the distribution of demand was still more balanced between domestic and foreign.

There are two drawbacks to such a strong dependency on foreign demand. Firstly, national economic policy has little influence on foreign demand which, secondly, fluctuates much more strongly than domestic demand.

^{4.} The survey indicates the difference between the share of businesses reporting sufficient capacity to meet expected demand and the share reporting insufficient capacity (European Commission 2014b, p. 27).

^{5.} The influence of capacity on investment is in fact statistically more significant than vice versa. A lag length of nine quarters was employed, on the basis of the AIC lag length test, as well testing of autocorrelation in the residuals, which is no longer found in the specification with a nine-quarter lag. The delayed capacity variables influence investment in equipment with 1 percent significance, vice versa the significance level is only 10 percent.

^{6.} The expenditure components of the national accounts are used for state, household and foreign purchases. State purchases are composed of consumption and investment spending, household purchases are consumption spending; foreign purchases are exports. The sum of these components produces the sales of non-financial companies. Spending on residential and non-residential construction is not treated as corporate sales, because in the sectoral definitions of the national accounts the production of buildings is attributed to households and the state.





Fig. 4: Reported adequacy of production capacity and real growth in investment in equipment

Fig. 5: Corporate sales

a. Real growth of corporate sales, overall and by sector



Greater dependency on exports thus exposes businesses to greater turnover risks.

That became especially clear during the crisis year of 2009, when foreign demand collapsed and it was left to the state to prop up the markets. Although exports rose again strongly in 2010, this was only a correction of the collapse of 2009. Since 2011 growth in foreign sales has declined steadily, above all because of the euro crisis. As Figure 5b shows, the contribution of the other Eurozone countries to growth in overall German exports fell in 2012 and 2013. But exports to the rest of the world have also steadily deteriorated. With the economic future of the Eurozone still uncertain, demand expectations remain subject to great uncertainty.

b. Growth of exports, overall and by region (nominal)



2.1 Little Shortage of Finance

While weak and volatile demand is a major drag on investment there are few restrictions in terms of financing. Figure 6a shows the amount of internal and external financing of non-financial German companies. It reveals firstly, that businesses cover an ever increasing proportion of their financing internally while external borrowing on the financial markets represents a shrinking proportion (Deutsche Bundesbank 2012). Secondly, even for those businesses that remain reliant on borrowing, the conditions are very favourable.

Alongside internal financing through depreciation, retained earnings have come to play an ever-growing



Fig. 6: Corporate financing



a. Financing of non-financial corporations (billion euros)

Fig. 7: Conditions of corporate financing

a. Yield on German corporate bonds



role since 2001.⁷ This occurred firstly because overall profits grew strongly during this period (Figure 3a), and secondly because the distributed share of profits declined until 2007. Dividends as a proportion of profits fell from a high of 92 percent in 2001 to a low of 68 percent in 2007. Between 2002 and 2005 the retained funds were used above all to repay loans taken out during the new economy boom of 1997 to 2000 to buy stakes in foreign companies (Figure 6b). The global share crash of 2001 destroyed the value of these holdings, with grave

b. External financing of non-financial corporations (billion euros)







knock-on effects on equity. This is also the phase when the rate of investment in equipment was relatively low by German standards (Figure 1b).

Changes in financial market regulation and tax law probably also weakened borrowing and encouraged businesses to strengthen their equity capital. Since the introduction of capital adequacy regulation under Basel II, banks have to risk-weight their assets when calculating their regulatory equity capital. This has made it more difficult for businesses with low equity to borrow, and forced them to improve their credit-worthiness by increasing it. This particularly affected small and medium-

^{7.} The sharp increase in retained earnings in 1995 is attributable to a one-off effect, where the transfer of the debts of the officially private Treuhandanstalt to the public-sector Erblastentilgungsfonds was recorded as an asset transfer from the state to the private sector.



Fig. 8: Foreign investment

a. Investment in equipment and German outward direct investment (billion euros)



sized businesses, which have greatly expanded their equity since 2000 (Deutsche Bundesbank 2013).

Moreover, the corporate taxation reform of 2000 abolished the tax disadvantage for retained earnings by reducing the previously different rates of corporation tax on distributed and undistributed profits to a single rate of 25 percent. The corporate taxation reform of 2008, which cut corporation tax again to 15 percent and slashed the rate of tax on retained earnings for partnerships and sole traders, also shifted the balance of incentives away from profit distributions and towards internal financing (Deutsche Bundesbank 2013). All in all, the role of external financing, and thus dependency on banks and other creditors, has steadily declined.

But even companies that depend to some extent on external financing, principally small and medium-sized businesses, have little difficulty finding funding. Firstly, interest rates are at historic lows. The yield on corporate bonds reached a historic low of 2.8 percent in July 2014 (Figure 7a). Secondly, in the first quarter of 2014 fewer than 5 percent of industrial companies complained of financing problems (Figure 3c). At the height of the 2009 financial crisis it was still 9 percent. The German credit constraint indicator prepared by the ifo-Institut also shows only little in the way of obstacles to borrowing. In July 2014 only 18 percent of surveyed businesses said that their bank was restrictive about lending, down from 63 percent in 2003 and 44 percent in the 2009 financial crisis (Figure 7b). So businesses suffer no lack of options for financing investment.





2.2 Is Investment Going Abroad?

It is often asserted that businesses are failing to invest in Germany and instead seeking lower costs abroad. These claims have generated a whole discussion about Germany's industrial competitiveness and created fears that German companies are exporting production and jobs wholesale. But this interpretation is at odds with the facts.

In fact German direct investment abroad and capital investment at home appear instead to complement one another. Greater investment in equipment tends to coincide with greater direct investment, as Figure 8a shows. More formal econometric investigations by the German Bundesbank come to the same conclusion (Deutsche Bundesbank 2006a, 2014). This is because companies invest abroad not primarily to save costs but to open up new markets and locate distribution and customer service operations closer to foreign purchasers. This is confirmed by regular business surveys conducted by the Deutsche Industrie- und Handelskammertag (DIHK) (DIHK 2014) (Figure 8b). Companies planning to expand production generally increase both foreign and domestic investment.

It must, however, be noted that domestic gross fixed capital formation is conceptually different to foreign direct investment. The former represents tangible assets such as plant, machinery and building, whereas the latter is financial in the sense of acquiring holdings in foreign companies. These financial holdings (for example acquisition of shares in a foreign company) need not



Fig. 9: Determinants of construction investment









Source: Bank for International Settlement, Destatis, IMK calculations

automatically actually involve investment in plants abroad. Of course there is still a conflict of goals for an individual company, whether to invest its money in new plants at home or in a stake in a foreign company. But it makes little sense to blame foreign direct investment for any weakness of domestic capital investment, because they tend to be complementary.

3. Construction – Achilles' Heel of the German Economy

The weakest link of the German economy is investment in construction, whose marked decline especially between 2000 and 2005 severely weakened the German economy (Borger 2003). The weakness of construction probably

b. Completed residential and non-residential buildings (thousands)



d. The main factors limiting construction



has a great deal more to do with Germany's weak growth during that period than supposedly excessive wages and salaries or the still unreformed labour markets (von Heusinger 2005).

The weakness of both residential construction and private non-residential construction (which mostly tracks residential construction) in the 2000s resulted above all from the close of the 1990s property boom. Three factors produced the boom (Deutsche Bundesbank 2002): Firstly, immigration caused a sharp increase of four million in the West German population between 1988 and 1993 (growth of 6.5 percent) (Figure 9a). Of these, 1.5 million were ethnic Germans (Aussiedler) from Eastern Europe and the former Soviet Union, one million were internal migrants from the former East Germany, and 1.5 million



were asylum-seekers. Such strong immigration caused demand for housing to spike, driving up property prices (Figure 9c) and generating strong construction activity (Figure 9b). Secondly, until the mid-1990s the state subsidised construction through generous tax breaks and the expansion of social housing. Thirdly, there was a construction boom in the former East Germany. Unlike in the former West, the eastern population was actually shrinking (Figure 9a), but major government stimulus programmes offered tax breaks, financial subsidies and cheap loans.

But from the late 1990s the construction sector was hit by various difficulties which seriously affected overall German growth in the 2000s. Firstly, the construction boom created oversupply, especially in the former East Germany, where buildings remained unsold, prices tumbled and production collapsed. Secondly, the government cut housing construction subsidies at the end of the 1990s. The special tax incentives for renovation and modernisation projects in the former East Germany expired in 1998; conditions for the homeowner subsidy were tightened in 1996 and it was completely abolished in 2005 (Dullien and Schieritz 2011). Thirdly, population growth slowed noticeably from the mid-1990s; in fact, the population shrank between 2002 and 2010. Fourthly, between 2001 and 2005 stagnating incomes and high unemployment further darkened the outlook for construction. Sluggish earnings meant that households felt unable to afford larger or more expensive housing, affecting both the rented and owner-occupier sectors. High unemployment in this period exacerbated income worries and thus cast a shadow over the housing market.

Bank lending conditions, on the other hand, are unlikely to have held back demand for homes between 2001 and 2005 (Deutsche Bundesbank 2006b). Instead, low demand conditioned by income and unemployment trends is likely to have been decisive for the very weak development of mortgage loans.

Figure 9d summarises the situation from the perspective of the construction industry. As well as industrial companies, Eurostat also asks construction firms about the factors limiting production (European Commission 2014b, p. 42). The construction sector was much more strongly affected by lack of demand than industrial companies. Lack of demand for buildings was particularly marked between 2000 and 2005, when almost half the construction firms reported it as a problem.

However, investment in construction ended its long decline in 2005; after a period of stability, housing construction has noticeably regained momentum since 2011. More buildings are being built again, very many fewer construction firms complain of a lack of demand, and prices are increasing slightly. That is probably because oversupply in the sector has gradually eased, unemployment has fallen significantly and incomes have begun to rise again. Construction is also encouraged by very low interest rates, which both make borrowing cheap and encourage investment in property rather than financial assets.

Yet in none of the indices is there any sign of a construction boom of the kind observed in Germany in the 1990s and later in many other countries such as the United States, Spain or Ireland. Even if construction activity has noticeably recovered, investment in both housing and non-residential construction remains well below historic highs in Germany and in the Eurozone (Figure 1c und Figure 1d). The long period of zero population growth in Germany is probably responsible for this. But that could quickly change if there were sustained immigration for example from the euro crisis countries, as already demonstrated by the experience of the late 1980s and early 1990s.

4. Summary

Germany's low overall rate of investment in comparison to other Eurozone countries results above all from the weakness of investment in residential and nonresidential construction. This is a consequence of the 1990s construction boom and the long adjustment phase that followed. Currently, despite immigration, weak demographics are holding back the sector.

In the case of investment in equipment, on the other hand, there is no gap between Germany and the other Eurozone countries. Indeed, in relation to overall economic performance Germany is doing much better here than the rest of the Eurozone. But investment in equipment is still low in historical terms, largely because of the German economy's heavy orientation on export demand, which especially in the Eurozone is being



held back by overblown austerity policies. In their own self-interest, German businesses should be arguing for the Eurozone's misplaced cost-cutting to finally be abandoned, as should the German government.

There are no factual grounds to talk of a deficit of private investment in equipment. Neither costs not the banks are hindering businesses from expanding their production capacity by increasing investment. Profits remain at historic highs while corporate taxes have fallen significantly in recent years. With production capacity remaining strongly underutilised, only additional demand – whether domestic or foreign – will help.

Where there is a real investment deficit is in state investment (Rietzler 2014). Although its relatively small share of total investment means that it cannot explain the whole investment gap vis-à-vis the Eurozone, state investment is nonetheless central to the economy as a whole, which depends on functioning public infrastructure. Because of an erroneous budget consolidation policy, public infrastructure has been deteriorating steadily since 2003. And because expenditure on infrastructure has a particularly large multiplier effect for the economy as a whole, increasing public investment could also boost the utilisation of domestic private-sector production capacity.⁸ That would strengthen the domestic economy, somewhat reduce dependency on foreign demand and also stimulate private-sector investment in equipment and construction.

But the state should avoid using its scarce resources for more generous tax breaks for investment. The corporate tax burden in Germany is low by international and historical comparison and cannot justify additional tax relief. Both economic theory and empirical evidence demonstrate that corporate tax reductions have no positive effect on investment. Reducing tax rates above all reduces tax revenues, without generating additional investment (Corneo 2005).

^{8.} One extra euro of public spending increases GDP by more than one euro (Horn et al. 2014). The size of the multiplier also depends on the type of financing. Horn et al. (2014, p. 10) calculate a multiplier between 1.1 and 1.6 if public investment is debt-funded, between 0.6 and 1.2 if tax-funded.



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