

Economic Research:

Low Business Investment Is Weighing On German Economic Growth

September 18, 2019

Key Takeaways

- German GDP could have been up to 4.2% higher in 2018 if investment had risen at the same pace as before the financial crisis, enough to maintain the same rise in capital per worker as before the crisis.
- Since the financial crisis, external demand for exports has been the main impetus for business investment. Therefore, we expect the current global economic slowdown to hold the Germany economy back for a long time.
- Other structural factors weighing on business investment are increasingly high pension provisions due to low interest rates as well as relatively high corporate tax rates.

ECONOMIST

Sarah Limbach

Paris

+ 33 14 420 6708

Sarah.Limbach
@spglobal.com

SENIOR ECONOMIST

Marion Amiot

London

+ 44 20 7176 0128

marion.amiot
@spglobal.com

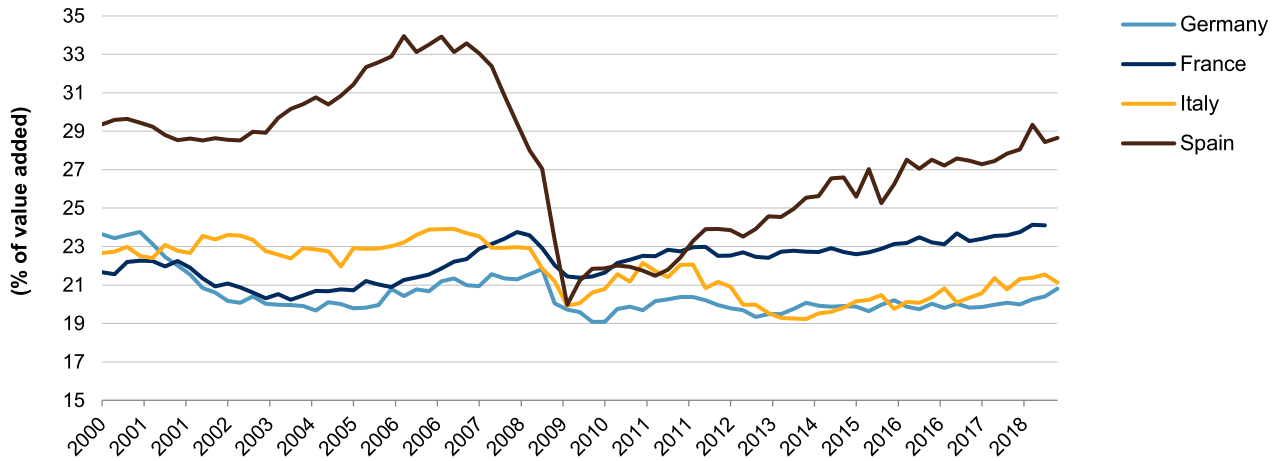
Many economists have pointed to the dearth of investment in Germany as holding back GDP growth. S&P Global Ratings argues that stunted business investment is the main reason the economy hasn't grown as much as it could have. Investment in Germany--public, private, and housing investment--has risen an annual average 2.9% over the past five years. Compared with that in other eurozone countries, German business investment has been weak despite the country's solid economic growth. Here, S&P Global Ratings examines the reasons for weak German business investment, which we believe is the main factor weighing on the country's potential output.

Business investment has been less dynamic than growth of the manufacturing sector

German business investment has been less dynamic than the performance of the country's manufacturing and export sectors since the global financial crisis. Investment as a share of value added is still below its 2008 peak and has only moved sideways since then. By contrast, the ratio of corporate investment to value added in France and Spain has increased, thus supporting their competitiveness (see chart 1).

Chart 1

German Nonfinancial Corporates Invest Less, In Value Added, Than Their Spanish And French Counterparts



Source: S&P Global Ratings.

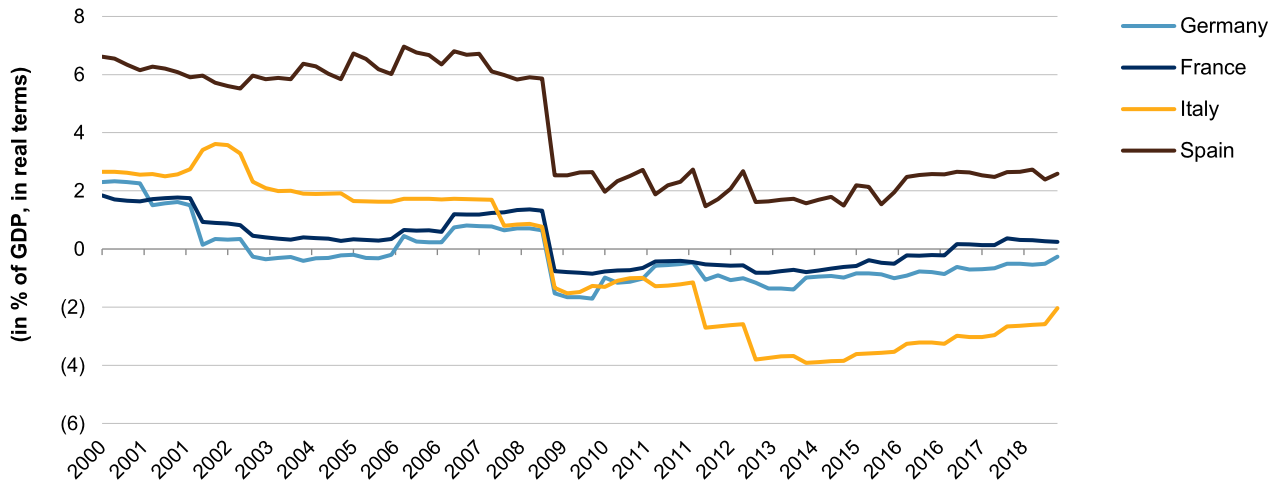
Copyright © 2019 by Standard & Poor's Financial Services LLC. All rights reserved.

Business investment has not been enough to replace depreciated capital

German productive investment has lagged behind capital stock depreciation since the beginning of the 2000s and consistently underperformed that of peer eurozone countries. Consequently, production facilities in Germany have seen less renewal over the last two decades than those of other big eurozone countries. Only Italy has done worse than Germany, but that's because of weak economic growth (see charts 2 and 3).

Chart 2

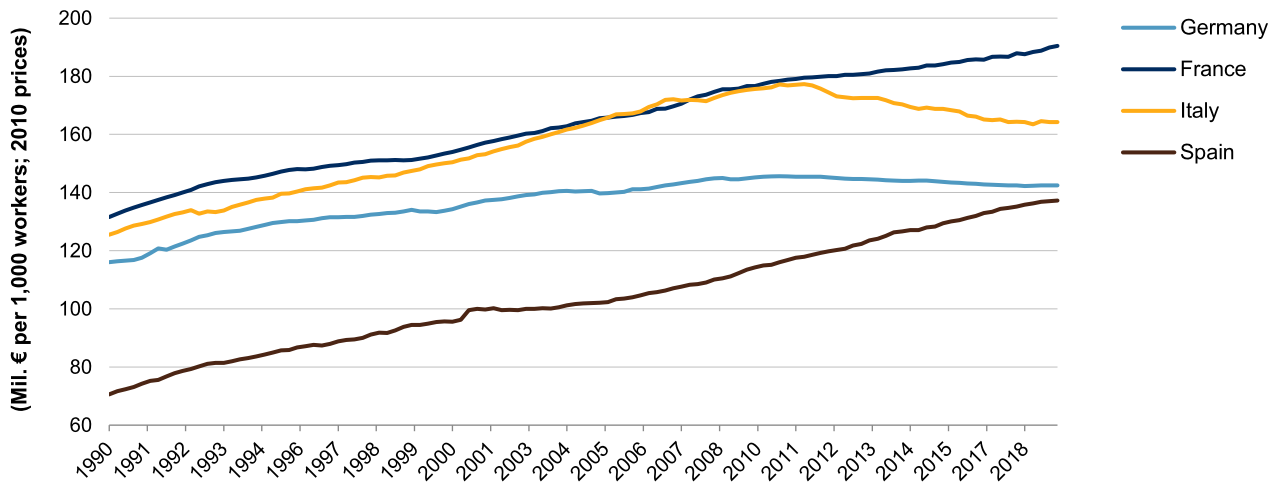
German Productive Investment Remains Negative, Net Of Depreciation



Source: S&P Global Ratings.
 Copyright © 2019 by Standard & Poor's Financial Services LLC. All rights reserved.

Chart 3

Stagnating Capital To Labor Ratio Weighs On Potential Output



Source: S&P Global Ratings.
 Copyright © 2019 by Standard & Poor's Financial Services LLC. All rights reserved.

Business investment in Germany has flagged in other ways too. The ratio of capital to labor has been flat since the financial crisis, contrary to the trend in France and Spain where it has

Economic Research: Low Business Investment Is Weighing On German Economic Growth

continued to increase (see chart 5). Due to this lack in investment, we estimate the loss in potential output by end-2018 (calculated as the difference with potential output, had the ratio of capital to labor continued to rise at the same pace as before the crisis) at €124 billion, which represents 4.2% of last year's GDP (see table 1). On the one hand, a lack of factor capital (for example, machines) has directly lowered potential output. On the other hand, weak business investment has also weighed on output technology, according to the basic Solow equation. Less or outdated technology limits workers' productivity and, ultimately, economic growth.

Table 1

How We Calculated Lost German GDP Due To Drop In Investment

(Bil. €)

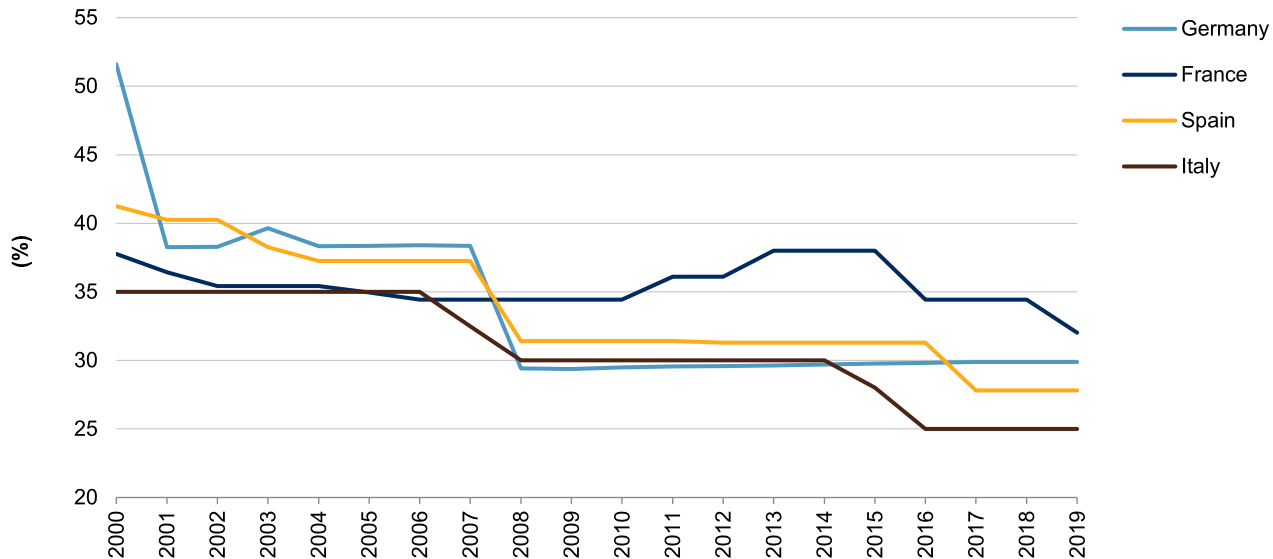
Potential GDP 2018	2972.02
Potential GDP 2018 (with continued rise in investment)	3096.09
Difference	124.07
Share of 2018 GDP	4.17

Source: S&P Global Ratings.

One reason for the brake on business investment is Germany's relatively high corporate tax rate, compared with rates in other eurozone countries. Germany reduced its average tax rate on corporate earnings to 29.5% in 2008 from 51.6% in 2000. However, since then it has risen slightly to 29.9% this year, while other European countries have reduced it further. The EU average stood at 21.3% last year. As a result, the German corporate rate is only slightly lower than the French rate (currently at 32%; see chart 4). With France implementing cuts in corporate tax rates starting this year, Germany is likely to become the eurozone country with the highest tax rates by 2021.

Chart 4

After Cuts In France, Germany Will Have The Highest Corporate Tax Rates Among Big Eurozone Countries



Sources: OECD, S&P Global Ratings.

Copyright © 2019 by Standard & Poor's Financial Services LLC. All rights reserved.

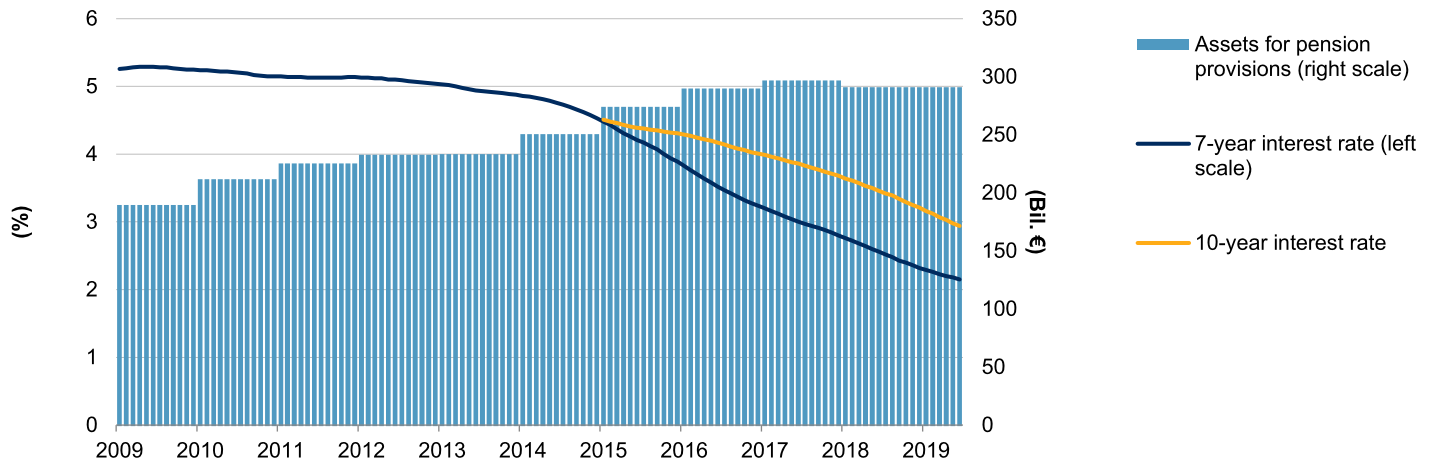
Rules for pension provisions also hamper more dynamic business investment, particularly in a low interest rate environment

Building up pension provisions is one of the favored options German companies have to provide for their employees' retirement, especially for large firms. Pension provisions, which total about €290 billion and concern 7.8 million employees, are the most prevalent form of pension financing on the firm level in Germany. These provisions need to be the equivalent of the present value of future pension payouts. The German Commercial Code stipulates the rate used to discount the present value of future payouts as the average market interest rate plus a risk premium. Until 2016, the period for calculating the average interest rate had been seven years but has now been extended to 10 years. In the context of low market interest rates, the discount rate has continuously decreased to 2.9% in June (see chart 5). Given the calculation period of 10 years, it is set to decrease further even if interest rates increased, which we do not expect to happen before 2021.

In a survey conducted by the Deutsche Industrie- und Handelskammer (DIHK) in 2015, 10% declared that they had to reduce investment due to higher pension provisions. That figure was 23% of firms with more than 1,000 employees, as especially large firms opt for pension provisions.

Chart 5

Lower Discount Rates Have Increased Pension Provisions By 25% Since End -2013



Sources: Bundesbank, S&P Global Ratings.
 Copyright © 2019 by Standard & Poor's Financial Services LLC. All rights reserved.

Our model shows weak external demand is why German business investment has stalled

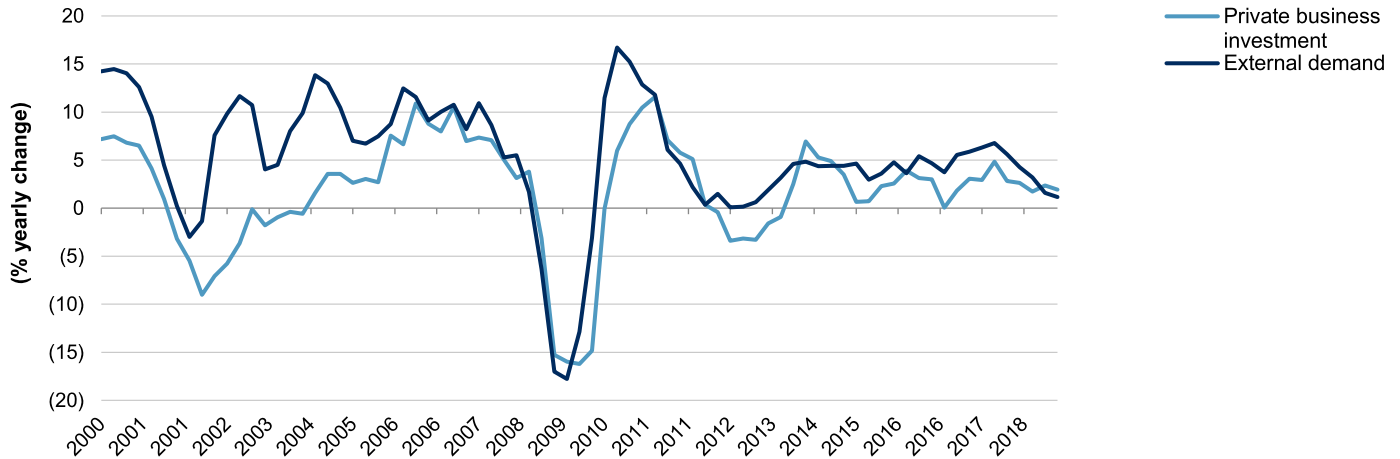
We modeled the main factors driving business investment in Germany and found that since the financial crisis, export demand is the main determinant in the short run (see Appendix). In the long run—when growth rates approach equilibrium, both external demand and interest rates are significant determinants for investment. Counterintuitively, we find a positive relationship between interest rates and business investment, which is in line with other research. The reason is that higher interest rates are usually a result of solid economic growth and indicate a point in the cycle where demand for financing is strong. As such, higher interest rates appear to be a proxy for the economic situation and point in the cycle.

Interestingly, the relationship between external demand and business investment has become more pronounced since the financial crisis (see chart 6). If we look before 2008 or at the whole sample period from 2000 to 2019, we find that other determinants of investment matter. GDP growth and the depreciation rate of capital are significant in the short run, as well as GDP in the long run when looking at the whole sample.

The fact that external demand drives German investment means that Germany's potential output is highly dependent on activity in the rest of the world. For that reason, we believe that a global economic slowdown or recession would have a long-lasting negative impact on the German economy. As we can currently see, although being widely praised after the eurozone crisis, the German "export-driven" model also has its limits.

Chart 6

Business Investment Is Predominantly Coming From External Demand For German Exports



Source: S&P Global Ratings.

Copyright © 2019 by Standard & Poor's Financial Services LLC. All rights reserved.

Appendix: How We Modeled The Main Factors Driving Business Investment In Germany

We used an error correction model to capture both long-term and short-term determinants of business investment. We modeled quarterly changes in investment (or dlog) for stationarity purposes and also eased the interpretation of coefficients as elasticities.

$$\ln \Delta IPNR = \beta_1 * \ln \Delta GDP_{t-1} + \beta_2 * \Delta DEPRATE + \beta_3 * \ln \Delta WT - \beta_4 * (\ln IPNR_{t-1} - C - \beta_5 * \ln GDP_{t-1} - \beta_6 * INTEREST - \beta_7 * \ln WT_{t-1})$$

Where GDP is Real Gross Domestic Product; DEPRATE: depreciation rate of productive capital; WT: demand for German exports from the rest of the world; IPNR: Real Business Investment; INTEREST: corporate interest rate (nominal); C: Constant.

We also tested other measures of financing conditions, the health of corporates, the economic cycle and economic conditions, as well as economic sentiment indicators, but they were not significant.

Table 2

S&P Global Ratings' Estimation Results: Testing Factors Behind Business Investment In Germany

	2000-2019	Precrisis (2000-2008)	Postcrisis (2009-2019)
Short-term relationship			
DLOG(GDP(-1))	0.662 ***	1.206 ***	
D(DEPRATE)	0.127 **	0.177 ***	
DLOG(WT)	0.588 ***	0.245 **	0.657 ***
Long-term relationship (error correction term)			
LOG(IPNR(-1))	0.207 *	0.22 *	0.657 ***
Constant	-3.67 *	2.111 ***	0.778 **
LOG(GDP(-1))	0.964 **		
INTEREST	0.043 ***	0.048 ***	0.035 ***
LOG(WT(-1))	0.36 **	0.454 ***	0.764 ***
R-squared	0.628	0.622	0.863
Adjusted R-squared	0.59	0.544	0.848
N	77	36	41

***Statistically significant at 1% confidence interval. **Statistically significant at 5% confidence interval. *Statistically significant at 10% confidence interval. IPNR--Real business investment. INTEREST--Corporate interest rate (nominal). DEPRATE-- Depreciation rate of productive capital. WT--Demand for German exports from the rest of the world.

This report does not constitute a rating action.

Copyright © 2019 by Standard & Poor's Financial Services LLC. All rights reserved.

No content (including ratings, credit-related analyses and data, valuations, model, software or other application or output therefrom) or any part thereof (Content) may be modified, reverse engineered, reproduced or distributed in any form by any means, or stored in a database or retrieval system, without the prior written permission of Standard & Poor's Financial Services LLC or its affiliates (collectively, S&P). The Content shall not be used for any unlawful or unauthorized purposes. S&P and any third-party providers, as well as their directors, officers, shareholders, employees or agents (collectively S&P Parties) do not guarantee the accuracy, completeness, timeliness or availability of the Content. S&P Parties are not responsible for any errors or omissions (negligent or otherwise), regardless of the cause, for the results obtained from the use of the Content, or for the security or maintenance of any data input by the user. The Content is provided on an "as is" basis. S&P PARTIES DISCLAIM ANY AND ALL EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE, FREEDOM FROM BUGS, SOFTWARE ERRORS OR DEFECTS, THAT THE CONTENT'S FUNCTIONING WILL BE UNINTERRUPTED OR THAT THE CONTENT WILL OPERATE WITH ANY SOFTWARE OR HARDWARE CONFIGURATION. In no event shall S&P Parties be liable to any party for any direct, indirect, incidental, exemplary, compensatory, punitive, special or consequential damages, costs, expenses, legal fees, or losses (including, without limitation, lost income or lost profits and opportunity costs or losses caused by negligence) in connection with any use of the Content even if advised of the possibility of such damages.

Credit-related and other analyses, including ratings, and statements in the Content are statements of opinion as of the date they are expressed and not statements of fact. S&P's opinions, analyses and rating acknowledgment decisions (described below) are not recommendations to purchase, hold, or sell any securities or to make any investment decisions, and do not address the suitability of any security. S&P assumes no obligation to update the Content following publication in any form or format. The Content should not be relied on and is not a substitute for the skill, judgment and experience of the user, its management, employees, advisors and/or clients when making investment and other business decisions. S&P does not act as a fiduciary or an investment advisor except where registered as such. While S&P has obtained information from sources it believes to be reliable, S&P does not perform an audit and undertakes no duty of due diligence or independent verification of any information it receives. Rating-related publications may be published for a variety of reasons that are not necessarily dependent on action by rating committees, including, but not limited to, the publication of a periodic update on a credit rating and related analyses.

To the extent that regulatory authorities allow a rating agency to acknowledge in one jurisdiction a rating issued in another jurisdiction for certain regulatory purposes, S&P reserves the right to assign, withdraw or suspend such acknowledgment at any time and in its sole discretion. S&P Parties disclaim any duty whatsoever arising out of the assignment, withdrawal or suspension of an acknowledgment as well as any liability for any damage alleged to have been suffered on account thereof.

S&P keeps certain activities of its business units separate from each other in order to preserve the independence and objectivity of their respective activities. As a result, certain business units of S&P may have information that is not available to other S&P business units. S&P has established policies and procedures to maintain the confidentiality of certain non-public information received in connection with each analytical process.

S&P may receive compensation for its ratings and certain analyses, normally from issuers or underwriters of securities or from obligors. S&P reserves the right to disseminate its opinions and analyses. S&P's public ratings and analyses are made available on its Web sites, www.standardandpoors.com (free of charge), and www.ratingsdirect.com (subscription), and may be distributed through other means, including via S&P publications and third-party redistributors. Additional information about our ratings fees is available at www.standardandpoors.com/usratingsfees.

STANDARD & POOR'S, S&P and RATINGSDIRECT are registered trademarks of Standard & Poor's Financial Services LLC.