Research Update:

Ratings On Formosa Plastics Corp. And Three Associated Companies Affirmed At 'BBB+' On Low Debt Leverage; Outlook Stable

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Rating Action Overview

- Four Taiwan-based companies-- Formosa Plastics Corp., Nan Ya Plastics Corp., Formosa Chemicals & Fibre Corp., and Formosa Petrochemical Corp. are engaged in oil refining and the manufacture of a wide range of chemicals and electronic materials, generating a combined EBITDA of new Taiwan dollar (NT$) 115 billion in 2020.
- We have revised our rating approach for the four companies to correct a misapplication of our Group Rating Methodology. We now assess the group status of the four companies as highly strategic because of their looser linkage than a typical group. As such, the ratings on the four key companies are one notch below the four companies' proxy group credit profile (GCP).
- Strong profitability from chemical and electronic material sales, a reduced debt guarantee on the group's Vietnam steel mill, and lowered capital expenditure (capex) will enable the four companies to materially lower their debt and strengthen their credit metrics significantly beyond our previous assumption for the proxy GCP.
- We are affirming the 'BBB+' issuer credit ratings on the four companies as well as the 'BBB+' issue credit rating on the senior unsecured notes issued by Formosa Group (Cayman) Ltd.
- The rating outlook is stable to reflect our view that the four companies' strong operating cash flow and lower capex will enable the companies to cap their debt growth and maintain the ratio of debt to EBITDA below 1x over 2021-2022.

Rating Action Rationale

We now view the four companies' group status as highly strategic rather than core, indicating a lower likelihood of mutual support . We have revised our rating approach on the four companies to use our Principle of Credit Ratings criteria to assess and assign a proxy GCP. This replaces the Group Ratings Methodology we previously applied. We continue to assess the four companies' proxy GCP based on the pro forma consolidated financials of their audited consolidated statements in order to assess the credit quality of the four companies. This is based on our view that the four companies will support each other in times of financial stress, given that they share common ownership, integrated operations, common services on administrative affairs, significant coordination in their strategic direction, and shared group name and logo.

However, we now assess each of the four companies as a highly strategic unit rather than our previous assessment of core. As such, the rating on the four companies is one notch below the four companies' proxy GCP. This is based on our view that the linkage among the four companies is looser than in a typical group because there is no centralized parent or any binding mechanism, such as cross guarantees or pooling of cash, to ensure that support will continue to flow among the entities in times of financial stress. As such, we believe there is no certainty that the companies would provide financial support to each other under any foreseeable circumstances.

We are raising the four companies' proxy GCP to 'a-', considering strong free operating cash flow and a reduced debt guarantee have strengthened the four companies' debt leverage significantly beyond our previous expectation. Strong cash flow, the prolonged suspension of its U.S.-based chemical complex project, and faster reduction in the companies' guarantee on its Vietnam steel mill will enable the group to lower its debt by more than we previously assumed for the next two years. This will increase their financial buffer against industry volatility and the likely resumption of its expansion plans in the U.S.

We forecast the four companies' aggregate ratio of debt to EBITDA will fall below 1.0x over 2021-2022 and rise slightly to 1.2x-1.4x for 2023 if they decide to go ahead with a planned chemical complex project in the U.S. state of Louisiana. This is materially lower than our previous projection of 2.0x-3.0x for the same period. The four companies' debt could be lower still over the next two years if strong profitability helps the operator of the Vietnam steel mill, Formosa Ha Tinh Steel Corp., repay and refinance its debt faster without guarantee, or if the Louisiana project does not materialize. We have, therefore, raised the group credit profile to 'a-' and accordingly affirmed the 'BBB+' issuer credit ratings on the four key companies, incorporating our revision of their group status.

Profitability is likely to moderate during 2022 and 2023 from a high in 2021, but remain above four companies' historical mid-cycle level. The four companies' profitability is likely to remain above their typical mid-cycle level over 2022-2023, supported by still-strong demand for chemical and refining products amid an accelerating global economic recovery. This is despite significant capacity additions and recovering output that was interrupted by extreme weather in the first half of 2021. In addition, Nan Ya Plastics could continue to improve its revenue from electronic materials, given its strong market position, while largely sustaining its strong margins because of strong demand from new technologies such as 5G communication, electrical vehicles, cloud computing, and Internet of Things.

Moreover, the Chinese government's more stringent environmental requirements and carbon neutral push will curb chemical production that uses more polluting processes, particularly coal-based chemicals. This could slightly alleviate the negative effect on EBITDA margins of aggressive new capacity additions of chemicals such as polyethylene, polypropylene, styrene monomer and pure terephthalic acid in China and support some of the four companies' commodity products such as polyvinylchloride over the next two to three years.

The companies' shift toward investments in differentiated chemicals and electronic materials could also help to better sustain their profitability through business cycles. They have significantly shifted the applications for its polyester and plastics such as propylene towards functional and industrial uses to avoid competition from Chinese players.

The four companies will also invest heavily in eco-friendly products such as recycled polyethylene terephthalate and fibers. Faster growth in non-refining revenue could also alleviate the business volatility caused by fluctuating oil prices going forward. However, these factors won't fully offset the negative impact of softening prices and margins for major commodity chemicals, in our view. We project the four companies to generate EBITDA of NT$284 billion in 2021 and NT$217 billion in 2022 compared with NT$115 billion in 2020. Our base-case scenario forecasts operating income from Nan Ya Plastics' electronics material sales could account for 14%-20% of the group's total revenue for 2021-2023.

A further delay in the Louisiana chemical complex, if the project is not cancelled, gives the four companies more time to strengthen the financial buffer for the ratings. We see diminishing probability that the planned mega project in Louisiana will go ahead, given the changing political atmosphere in the U.S. A decision by U.S. officials in August 2021 to order an environmental impact statement for the project cast significant doubt over its future. The project has been on hold since November 2020 when the U.S. government suspended a permit amid protests from local environmental groups. Formosa Petrochemical Corp. planned to review the project's feasibility by the end of 2021. This was based on further potential delays as a result of the impact statement, sharply higher construction costs due to high inflation in material prices and wages, hefty tariffs on imported equipment from China, and lower availability of local labor due to the pandemic.

Nonetheless, we continue to factor in some capex related to the project in 2023, which is one year beyond our previous assumption, assuming Formosa Petrochemical can clear all regulatory hurdles and restart the project. The cancellation of the project could prevent deterioration in the group's debt leverage during what would have been the construction period; however, a decision to cancel could strip the four companies of the opportunity to materially diversify their assets, feedstock, and markets, and further reduce their business volatility. The companies' production facilities using crude oil as feedstock will remain concentrated in Taiwan and China over the next few years. In general, the companies depend heavily on China and Taiwan markets for most of their chemical products, although they have gradually increased sales to other Asian countries in recent years.

Shifting investment focus to electronic materials and specialty applications could prevent leverage shocks from future mega projects. We believe the four companies will find it increasingly challenging to pursue mega expansion projects in the commodity chemical field because of surging global pressure to reduce carbon emissions as well as chemical and plastic pollution worldwide, just as Formosa Petrochemical has already experienced in the U.S. The four companies are likely to shift their focus to specialty products, particularly electronic materials for emerging applications such as electric vehicles. This could help smooth their capex cycles without sharp swings in their free operating cash flow and debt levels. However, we do not expect their capex to decline materially from the current level, given their still-significant appetite for new growth drivers.

In addition, the four companies are likely to maintain high capex to implement environmental initiatives, such as potentially converting their coal-fired co-generation power plants to gas or other relatively eco-friendly fuels. This, together with the companies' high dividend payout ratio, is likely to prevent further reduction in their debt leverage over the long term.

Outlook

The stable rating outlook reflects our view that the four companies' strong operating cash flow and delayed spending will enable them to sustain lower debt and maintain the ratio of debt to EBITDA below 1x on a pro forma consolidated basis during 2021-2022 before rising moderately in 2023. We anticipate lower leverage even though profitability could moderate from the high level likely in full year 2021. Our base case assumptions also factor in capex in 2023 for the companies' planned Louisiana project. However, a delay in the project could reduce their leverage below our current projection and provide an additional financial buffer for the ratings.

Downside scenario

We could lower the long-term rating on the four companies if their consolidated ratio of debt to EBITDA stays above 2x for an extended period. Scenarios that could lead to this include:

- Prolonged weak market conditions due to either a much weaker regional economy hurting demand or capacity additions, particularly in China, that lead to sustained oversupply; or
- The four companies make more aggressive cash dividend payouts, capex, or other investments that are substantially above our base case.

Upside scenario

We view the likelihood of an upgrade as low over the next one to two years, given the four companies' high business volatility, capex, and dividend payments. However, we may raise the rating if:

- The four companies further diversify their geographical revenue and asset concentration, reduce their dependence on oil refining, and improve their product differentiation such that generates a material rise in profitability and operating stability through business cycles, and
- The four companies maintain a consolidated ratio of debt/EBITDA below 1.5x.

Our Base-Case Scenario

- Taiwan and China's economy to expand 5.5% and 8.0% over 2021, respectively, and 2.9% and 5.1% during 2022. Asia-Pacific GDP to grow 6.7% in 2021 and 5.2% in 2022. Taiwan and China will outperform their closest peers because of better COVID-19 containment and strong exports coupled with a strong economic recovery in the U.S. and Europe. Recovery in the global supply chain could slow export growth from Taiwan and China.
- Brent oil price of US$75 per barrel for the rest of 2021, US$65 for 2022 and US$55 for 2023.
- Refining margin likely to improve moderately and refining utilization to rise materially amid recovering demand for the second half of 2021 and 2022, particularly in developed markets, because of accelerating programs for COVID-19 vaccination, despite the proliferation of the delta variant.
- We expect chemical demand to remain strong over the second half of 2021, though supply and demand could become more balanced in 2022 when capacity additions delayed by the pandemic resume. Downstream manufacturers within the Formosa group will continue to

benefit from better spreads on some product lines because of firm product prices and smaller growth in input costs.

- Revenue of the four companies could rise by 50%-55% during 2021. This forecast mainly reflects our expectation of higher oil prices and very strong product prices across the group's product portfolio, particularly electronic materials and related chemicals, through the end of 2021. The four companies' total sales remain largely flat for 2022 because lower product prices amid lower crude oil prices, along with more balanced supply and demand, will offset higher output volumes due to capacity additions.
- Recovering demand and restoration of Formosa Petrochemical's refining units will lift its refining utilization rate to 73% for 2021, with a recovery back to pre-pandemic levels of 85%-90% in 2022. The Olefin utilization rate will remain high at 95%-98% over 2021-2022 to support the other three companies' downstream production.
- The four companies' consolidated gross margin before depreciation and amortization to rise to 24%-25% for 2021 from 18.3% during 2020 amid surging product prices, but could normalize to 19%-20% for 2022. Increasing sales from specialty products and electronic materials will not fully offset softening chemical prices.
- Working capital outflow of NT$40 billion-NT$50 billion during 2021 because of sharply rising revenue.
- Capex plus investments to rise slightly to NT$76 billion-NT$78 billion in 2021, partly due to delayed expenditure from 2020. We assume this amount will decline slightly to NT$72 billion-NT$74 billion during 2022. We also assume no major spending on the Louisiana project in 2022 even if Formosa Petrochemical decides to go ahead with the project.
- The four companies' guarantee on the Vietnam steel mill will decrease significantly from about NT$110 billion at the end of 2020 to about NT$54 billion in 2021 and NT$47 billion in 2022, through faster debt repayments and refinancing without guarantees by its shareholders.
- Average tax rate to rise to 18%-20% over 2021 and 2022.
- Cash dividend payout to remain at about 70%-72% of the previous year's net income for the next few years.

Based on these assumptions, we arrive at the following credit measures:

- EBITDA margin of 20%-21% in 2021 and 15%-16% in 2022, versus 12.6% in 2020.
- Ratio of debt to EBITDA of 0.5x-1.0x during 2021-2022, versus 2.7x in 2020.
- Ratio of free operating cash flow to debt of 65%-70% for 2021 and 55%-60% over 2022, versus 23.2% in 2020.

Liquidity

We assess liquidity for the four companies to be sufficient for their needs over the next 12 months. The companies' consolidated ratio of liquidity sources to liquidity uses is likely to be about 1.5x over the coming 12 months.

We believe the four companies would maintain positive liquidity, even if EBITDA were to decline by 15%. The companies continue to benefit from solid banking relationships and a generally high credit standing to support its financial flexibility, as indicated by the four companies' very low credit spread, including an 0.52%-0.53% rate on their seven-year New Taiwan dollar bonds issued in September 2021. In our view, the companies can easily meet the loose requirements of the financial covenants on liquidity ratio and tangible net worth related to bank borrowings of the four companies' overseas subsidiaries and their guarantee on Formosa Ha Tinh Steel in Vietnam.

Principal liquidity sources

- Cash and short-term investments of NT$266 billion at the end of June 2021.
- Funds from operations of NT$200 billion-NT$210 billion for the 12 months ending June 30, 2022.
- Undrawn long-term credit facilities maturing beyond June 30, 2022, of about NT$71 billion as of end-June 2021.

Principal liquidity uses

- Debt maturity plus short-term debt repayment of about NT$139 billion for the 12 months ending June 30, 2022.
- Capex of NT$74 billion-NT$76 billion for the 12 months ending June 2022.
- Cash dividend payout of 70%-72% of the previous year's net income.

Ratings Score Snapshot

BBB+/Stable/--

Business Risk: Satisfactory

- Country risk: Intermediate
- Industry risk: Moderately High
- Competitive position: Satisfactory

Financial Risk: Modest

- Cash flow/Leverage: Modest

Anchor: bbb+

Modifiers

- Diversification/Portfolio effect: Neutral (no impact)
- Capital structure: Positive (+1 notch)
- Financial policy: Neutral (no impact)
- Liquidity: Adequate (no impact)
- Management and governance: Satisfactory (no impact)
- Comparable rating analysis: Neutral (no impact)

Stand-alone credit profile (SACP): The four companies have not been assigned an SACP

- Group credit profile: a-
- Entity status within group: Highly Strategic

Related Criteria

- General Criteria: Group Rating Methodology, July 1, 2019
- Criteria | Corporates | General: Corporate Methodology: Ratios And Adjustments, April 1, 2019
- General Criteria: Methodology For National And Regional Scale Credit Ratings, June 25, 2018
- Criteria | Corporates | General: Reflecting Subordination Risk In Corporate Issue Ratings, March 28, 2018
- General Criteria: Guarantee Criteria, Oct. 21, 2016
- Criteria | Corporates | General: Methodology And Assumptions: Liquidity Descriptors For Global Corporate Issuers, Dec. 16, 2014
- Criteria | Corporates | Industrials: Key Credit Factors For The Oil Refining And Marketing Industry, March 27, 2014
- General Criteria: Country Risk Assessment Methodology And Assumptions, Nov. 19, 2013
- General Criteria: Methodology: Industry Risk, Nov. 19, 2013
- Criteria | Corporates | General: Corporate Methodology, Nov. 19, 2013
- General Criteria: Methodology: Management And Governance Credit Factors For Corporate Entities, Nov. 13, 2012
- General Criteria: Principles Of Credit Ratings, Feb. 16, 2011

Ratings List

Ratings Affirmed	
Formosa Plastics Corp.	
Nan Ya Plastics Corp.	
Formosa Petrochemical Corp.	
Formosa Chemicals & Fibre Corp.	
Issuer Credit Rating	BBB+/Stable/--
Formosa Group (Cayman) Ltd.	
Senior Unsecured	BBB+

Certain terms used in this report, particularly certain adjectives used to express our view on rating relevant factors, have specific meanings ascribed to them in our criteria, and should therefore be read in conjunction with such criteria. Please see Ratings Criteria at www.standardandpoors.com for further information. Complete ratings information is available to subscribers of RatingsDirect at www.capitaliq.com. All ratings affected by this rating action can be found on S&P Global Ratings' public website at www.standardandpoors.com. Use the Ratings search box located in the left column.