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23/12/2022

AMD's Acquisition of Xilinx for $49bn

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Division:

Technology

M&A Analysts:

Elena Diz Caceres

Ryan Saccoh

Source: Wccftech

Market Analysts:

Arjun Kakkattel

Jude Crofts

June-Seo Chung

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DEAL INTRODUCTION

DETAILS ABOUT THE DEAL

On the 14th of February 2022, AMD announced the successful completion of its acquisition of Xilinx for $49 billion in an all-stock transaction, making it the largest chip deal in history.

The $49 billion price tag of this deal is $14 billion higher than the initial figure that was suggested in October 2020, primarily due to the growth in AMD's stock price since the announcement of the transaction.

AMD has stated that the merged company now has a total of over 15,000 engineers, and former Xilinx CEO Victor Peng is a part of this workforce as president of the newly formed Adaptive and Embedded Computing Group (AECG).

REASONS FOR M&A

The merger will accelerate AMD's ability to create highly efficient and adaptive high-performance computing solutions for rapidly growing connected devices and data-intensive applications.

AMD can offer a robust portfolio of advanced computing solutions by harnessing Xilinx's technology capabilities, ranging from industry-leading FPGAs to AI engines and software expertise. This is a significant step up from AMD's previous offerings, which mainly consisted of CPU and GPU technologies.

AMD will also benefit from Xilinx's customers and markets, as the target company has a footprint in industries such as defence, broadcast and consumer electronics. Consequently, the merger will enable AMD to capture a larger share of the $135 billion market opportunity across cloud, edge and intelligent devices.

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INDUSTRY OVERVIEW - SEMICONDUCTORS

WHAT IS THE SEMICONDUCTOR INDUSTRY?

The semiconductor market is part of the electronics industry and it includes the subdivisions of Data Processing, Communications, Consumer Electronics, Industrial Devices, Automotive, Military and Civil Aerospace. The subdivision represents accredited to their high electron mobility, wide temperature limits, and low energy consumption, which are major innovations in the electronics industry.

Semiconductors are crucial for modern economy, especially for emerging technologies including artificial intelligence (AI), autonomous vehicles, and quantum computing. It has transformed to become an essential component of growth, security and innovation for economies. The use of semiconductors is presented in majority of electrical devices, such as cell phones, PCs, and pacemakers, to the internet, electric cars, aeroplanes, and hypersonic weapons. The digitalization of products and services, such as global e-commerce, is entirely reliant on this tiny yet most demanding product ever developed.

Source - HPCwire

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TRENDS FOR 2022 AND BEYOND

The consumer electronics segment is expected to drive significant demand next year, as the increased popularity and affordability of consumer electronics have influenced the growth of semiconductor materials. Consumer electronics, such as laptops, tablets, mobile phones, and smartwatches, require complex implementation of semiconductor materials, thus, driving the market's growth in the consumer electronics segment.

This year's supply chain disruptions due to geopolitical tensions created a worldwide semiconductor shortage - making the importance of secure semiconductor supply chains abundantly clear. This has in turn led to the increased efforts of European governments to research potential initiatives to grow the industry, and level up to the recent dominance of the Asia-Pacific region. This increased recognition of the significance of the industry will undoubtedly drive growth next year.

However, despite these trends, it will equally be interesting to see how regulatory restrictions and changes in tech export controls in the future will continue to impact the disparity in regional, and global industry growth. The Asia-Pacific region's dominance places the industry at the centre of global economic and trade discussions. The geopolitical implications of China and Taiwan's lead in the manufacturing of semiconductors (China now produces 25% of all semiconductors and is growing fast, while about 75% of all semiconductors are produced in East Asia (South Korea, Japan, China), most notably one Taiwanese company, the Taiwan Semiconductor Manufacturing Company (TSMC), accounting for 90% of all advanced semiconductors), will undoubtedly see global ramifications, and potential adverse impacts on general industry growth. Most recently, China launched a World Trade Organization (WTO) case against the United States over export controls imposed by the Biden administration, in efforts to slow down their military development.

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ACQUIRER OVERVIEW

TICKER: AMD

AMD

Advanced Micro Devices (AMD) is a global semiconductor company based in California, that develops computer processors and related graphics technologies for business and consumer markets.

BUSINESS MODEL

AMD is focused on high performance computing technology, software and product leadership. AMD reports its business under two segments: “Computing and Graphics” and “Enterprise, Embedded, and Semi-Custom". The “Computing and Graphics” segment primarily includes desktop and notebook processors, discrete and integrated GPUs, data centre and professional GPUs, and development services. Main products include microprocessors, motherboard chipsets, embedded processors, graphics processors, and FPGAs for servers, workstations, personal computers, and embedded system applications.

Their strategy is to create and deliver the world’s leading high-performance CPUs and GPUs, and to integrate these CPUs and GPUs with hardware and software to build differentiated solutions. High performance CPUs are invested in for client systems, high performance computing solutions, cloud infrastructure and the private and public cloud environment. High performance GPUs and software are invested in for markets such as gaming, compute, artificial intelligence, cloud gaming, and virtual and augmented reality. High-performance CPUs and GPUs are combined to deliver solutions that are differentiated at the chip level, such as semi-custom SoCs and APUs, and at the solution level, such as PC and server platforms.

Its fastest-growing segment is its Enterprise, Embedded, and Semi-Custom products.

ESG PRACTICES

AMD works towards their sustainable computing goals and initiatives through supply chain and manufacturing responsibility. They work with their manufacturing suppliers to advance environmental sustainability across a variety of metrics, namely purchased goods and services (scope 3 emissions). They have recently been recognised by CDP as a Supplier Engagement Leader for their actions to reduce emissions and manage climate risks in their global supply chain.

AMD's products are also being directly used to address climate change and energy crises. One of the most energy-efficient supercomputers in the world (number 3 on the Green500 List – June 2022) is powered by AMD technology and is being used to advance climate research. The supercomputer is also part of the European Green Deal and European Digital Strategy, the supercomputer is being used in the Destination Earth project (DestinE), which is funded by the EU's Digital Europe Programme.

KEY FINANCIALS

Revenue: For the full year 2022, AMD expects revenue to be approximately $23.5 billion, plus or minus $300 million, an increase of approximately 43% over 2021

EBITDA: EBITDA for the quarter ending September 30, 2022 was $1.126B, a 6.23% increase year-over-year, and for the twelve months ending September 30, 2022 was $5.963B, a 73.19% increase year-over-year.

	TTM	31/12/2021	31/12/2020	31/12/2020	31/12/2018
Total Revenue	22,828,000	16,434,000	9,763,000	6,731,000	6,475,000

	TTM	31/12/2021	31/12/2020	31/12/2020	31/12/2018
EBITDA	---	4,166,000	1,676,000	724,000	621,000

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TARGET OVERVIEW

Ticker: XLNX

XILINX

Xilinx is responsible for the design and development of programmable logic semiconductor devices known as field programmable gate arrays (FPGAs). This type of chip has a vast array of uses as the name suggests “field-programmable” means that once the chip is delivered to a client it can be reprogrammed to serve any purpose they may desire. It made history with the first extendable system-on-chip (SoCs) by tightly integrating a processor system with programmable logic. More recently, in 2019, Xilinx introduced an adaptive computing technology that delivers breakthrough AI inference and signal processing performance. And its innovations in developer tools have fuelled developers’ ambitions for more than two decades.

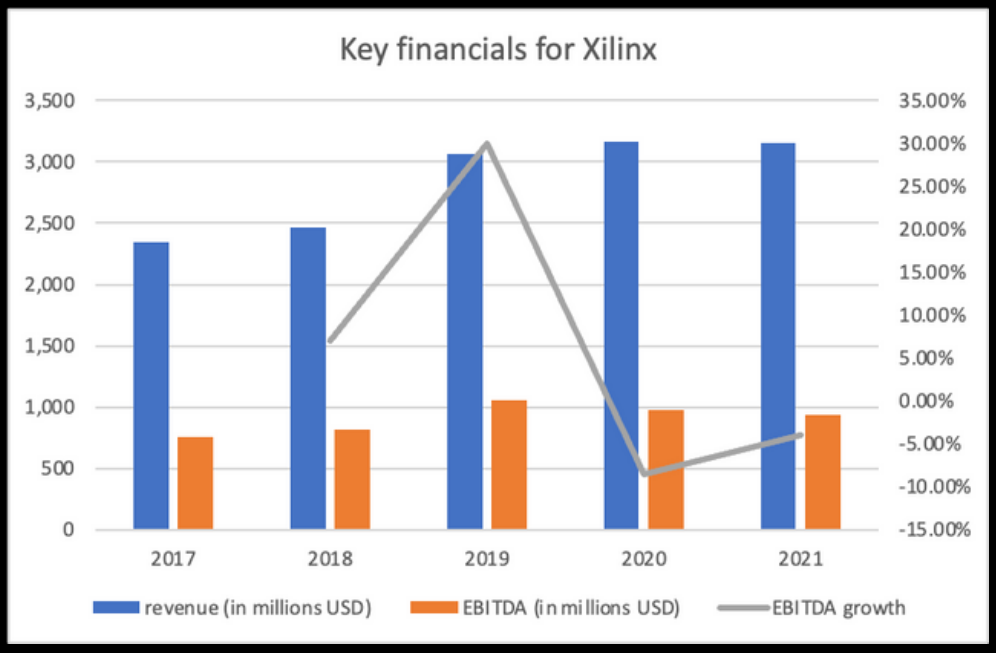
BUSINESS MODEL

Xilinx is a technology company that designs and sells programmable logic devices, such as field-programmable gate arrays (FPGAs) and complex programmable logic devices (CPLDs). These devices are used in a variety of applications, including telecommunications, automotive, industrial automation, and aerospace. The company's business model is based on the sale of these programmable logic devices and the development of software tools that enable customers to program and configure them for specific applications. Xilinx also offers a range of services, such as training and technical support, to help customers use its products effectively.

ESG PRACTICES

Xilinx's corporate responsibility strategy and initiatives are in alignment with the United Nations Sustainable Development Goals. This consists of 17 global calls to action to end poverty, protect the planet and ensure all people enjoy peace and prosperity by 2030. Xilinx is making strides to achieve all goals set out by the UN, as a technology firm some of its biggest commitments relate to emissions and the efficiency of its products. For example, by 2025 Xilinx aims to reduce scope 1 and 2 GHS emissions by 25% to meet its overall goal of a 50% reduction by 2030. Additionally, Xilinx is improving the power efficiency of its products through careful selection of silicon processes and power-conscious architecture design.

KEY FINANCIALS



As displayed by the above visuals Xilinx has seen steady growth in its revenue since 2017 rising to a high in 2021. However, the 2019 EBITDA growth has been negative suggesting the firm was experiencing some issues surrounding its profitability in the run-up to this acquisition.

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DEAL ANALYSIS

STRENGTHS

The acquisition strengthens AMD's financial model as they now have diversified revenue streams across multiple high-margin businesses, facilitated by Xilinx's stable run rate and favourable margins.

AMD can offer differentiated solutions to Xilinx's customer base and distribution platform with its existing portfolio – CPUs and GPUs – as well as its expanded portfolio, including FPGAs and Adaptive SoCs.

The $3.8 billion in combined R&D investment will cultivate high levels of innovation across chiplet and interconnect technologies.

OPPORTUNITIES

Xilinx's footprint in markets such as defence, broadcast and consumer electronics will enable growth in AMD's total addressable market from $80 billion to $135 billion – almost a 70% increase in market reach.

Xilinx's comms expertise and deep relationships in the field, combined with the adoption of AMD EPYC processors in wired and wireless infrastructure, will allow AMD to address the 5G and wired communications markets.

WEAKNESSES

Although the acquisition offers diversification prospects to AMD, the new addressable markets consist of high-volume applications, meaning that ASICs may perform better than Xilinx's FPGAs in these markets. This combats AMD's plans to offer FPGAs as part of their upgraded portfolio of tools and solutions to expand into new markets

THREATS

AMD has not made any significant acquisitions over the last decade, unlike competitors such as Intel which has regularly acquired around 3-4 companies yearly since 2012. Thus, AMD's lack of experience in managing diverse technologies may prove to be an obstacle here.

AMD is paying double the price that Intel did for Altera back in 2015. Additionally, Intel paid around 15% of its market cap to acquire Altera – one of Xilinx's competitors – whereas AMD is paying one-third of its market cap to acquire Xilinx; AMD is placing a much larger bet on diversifying its portfolio of advanced computer solutions compared to Intel back in 2015 after a comparable transaction.

Source - New Electronics

VALUATION ANALYSIS

DISCOUNTED CASH FLOW ANALYSIS (DCF)

Enterprise Value	34,529
(+) Cash	3,702
(-) Debt	(1,494)
Equity Value	36,737
No. of Shares	248
Implied Share Price	148.13
Share Price as per acquisition	197.58
Premium Paid	**33%**

Please click on the table to access full model.

As calculated by the Discounted Cash Flow (DCF) Analysis, the Xilinx stock was overvalued at the time of AMD's offer of acquisition ($197.49). The valuation derived in the DCF analysis using the base case suggests that AMD paid a 33% premium for Xilinx as an optimistic implied share price of $148.13 was calculated and AMD paid $197.58 per share.

The sensitivity analysis of the model suggests that Xilinx share price was in between $52.58 - $148.13. However, Xilinx's yearly share price ranged from $114.24 - $239.79 at the time of AMD's offer of $197.58, which lies within Xilinx's share price values in the previous year.

To build the model, various assumptions were taken into consideration, including the Terminal Growth Rate (4.5% in the optimistic case), and the Weighted Average Cost of Capital (WACC) (7.3% in the optimistic case). Therefore, it must be noted that the share price obtained from the model was affected by these assumptions.

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VALUATION ANALYSIS

MERGER MODEL ANALYSIS

Summary		
Enterprise Value		187,377
(+) Cash		9,570
(-) Debt		3,298
Equity Value		193,649
Diluted Shares		1,542
DCF-Implied Combined Share Price	$	125.58
AMD Undisturbed Share Price	$	82.98
% Share Price Upside (Downside)		**51.3%**
AMD DCF-Implied Share Price	$	118.84
% Share Price Upside (Downside)		**5.7%**

Summary	2023E	2024E	2025E	2026E	2027E	Average
% EPS Accretion (Dilution)	11.5%	18.2%	14.2%	18.2%	12.9%	15.0%
% CFPS Accretion (Dilution)	(5.6%)	1.1%	1.9%	6.0%	4.5%	1.6%

As shown in the target model, the DCF-implied value of the target company Xilinx is $111.71, which represents a 28% acquisition premium relative to the exchange value of AMD shares (1 Xilinx share = 1.7234 AMD shares).

Moving to the acquirer model, the DCF-implied value of the acquirer AMD is $118.84. This reflects a discount of 30.2% relative to the undisturbed share price at the time of deal announcement.

The financial statements of the two companies were merged to create a consolidated balance sheet, within which we've assumed a goodwill amount of ~$22.3 billion, after fair value and target balance sheet deductions amounting to ~$12.7 billion. This drove our pro forma model, which had a DCF-implied share price of $125.58 for the combined company. This suggests upside of 51.3% relative to AMD's undisturbed share price, and 5.7% upside compared to the AMD's DCF-implied share price.

Lastly, we conducted accretion/dilution analysis, which revealed that the deal was accretive to Earnings per Share (EPS) by an average of 15% over a five-year time horizon. The analysis also showed the deal was slightly accretive to Cash Flow per Share (CFPS) by 1.6% on average.

CONCLUSION

IMPACT ON KEY COMPETITORS

AMD's closest competitors in the CPU and GPU space are Intel and Nvidia, both of which are large firms with vast levels of market share, with Nvidia rumoured to have over 50% in the GPU market. This deal is unlikely to make a large difference to this dynamic, however with this acquisition AMD is expanding beyond its purview of CPUs and GPUs with a large portfolio of reprogrammable chips. AMD has stated that it will significantly expand the company's opportunities in data centres, embedded computing, and telecommunications. Xilinx also has a footprint in other markets, like defence, broadcast, and consumer electronics, which will help expand its total addressable market to $135 billion from $80 billion, according to AMD. As a result, Intel and Nvidia are unlikely to be directly affected in their specific markets, CPU and GPU respectively. However, this acquisition will allow AMD to expand its horizons and allow them to branch into new markets with less competition from larger incumbent firms.

IMPACT ON INDUSTRY

AMD's CEO Lisa Su said AMD will be able to increase its breadth in key markets like data centres where Xilinx has a strong network and AI presence, as well as in the 5G communications, automotive, industrial, aerospace and defence markets. "Those are all markets that AMD has had very little presence in, and they all need high-performance computing as well,". From Su's statement, I believe that AMD's goals surrounding this acquisition are centred around diversification. Suggesting that instead of attempting to fight a losing battle against monopolies, the firm is adapting and looking into alternative markets to increase its revenue streams. In terms of an industry impact, this makes it hard to reach a definitive conclusion, however, I suspect the newly formed Adaptive and Embedded Computing Group will see AMD significantly increase its market share in a variety of new sectors.

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GLOSSARY

Accretive: *Accretive in finance refers to the positive change in value after a transaction*

CPU: *Central processing unit is the part of a computer that is involved with the executions of operations*

EBITDA: *Earnings before Interest, Tax, Depreciation and Amortisation. A useful measure to compare companies profitability.*

EPS: *Earnings per share show the company's net profit divided by the total number of outstanding shares, which is used as a profitability measure*

Goodwill: *An intangible asset created when a company acquires another company for a price greater than its net asset*

GPU: *Graphics processing unit is a processor used to accelerate the rendering process for graphics in a computer system*

Market Cap: *Total value of a publicly traded company's outstanding common shares owned by the stockholders.*

Premium: *Increased amount paid per share in comparison to the share price at the time of the M&A transaction, often presented as a percentage.*

Sensitivity Analysis: *The analysis of how a change in assumptions (inputs) can impact the output of a financial model.*

Terminal Growth Rate: *A growth rate that a company is expected to grow at forever based on the market and industry conditions.*

Weighted Average Cost of Capital: *Cost of capital used to represent a firm's after-tax costs from all resources.*