A Work Project, presented as part of the requirements for the Award of a master's degree in management from the Nova School of Business and Economics.

Group Component:

From Design to Dominance: The ARM-SoftBank Acquisition
Group Component: A Cross-Border M&A Case Study in the Technology Sector

Individual Component:

Navigating ARM's IPO: Lessons in Market Dynamics and Strategic Decision-Making

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Abstract:

SoftBank's acquisition of ARM Holdings in 2016 for roughly $32 billion illustrates the complicated dynamics of integrating two multinational technology giants. SoftBank sought to leverage ARM's semiconductor leadership in IoT and chip design, in line with its vision for a connected future. Challenges included regulatory approvals, cultural integration, and alignment of strategic goals. The acquisition strengthened SoftBank's foothold in IoT and enabled synergies while maintaining ARM's autonomy. This strategic alignment has allowed ARM to thrive with increased R&D and global expansion. Further this report will analyze the geopolitical dynamics influencing this deal and the post-acquisition development such as further acquisition offers and IPO.

Keywords:

Revenue Strategies, Cost Synergies, Semiconductor Industry, Integrational challenges, Company valuation, Discounted Cash Flow Method, Cross-Border M&A, Brexit, IPO, Acquisition

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Case Study
Group Component

1 Introduction

Industries, economies, and cultures are changing because of the Fourth Industrial Revolution (4IR), in which technology is becoming a defining force as well as an enabler. ARM is among the few companies that best exemplifies innovation, which is the essential part driving this change. For this reason, on July 18th, 2016, a few weeks after the Brexit vote, SoftBank Group Corp. ("SBG") announced the mutually agreed takeover of ARM Holdings plc ("ARM") at a deal valuation of $32 billion - a choice that many believed would have a significant impact on investments in British technology. In hindsight, ARM's worldwide performance was unaffected by the referendum outcome (Kharpal 2016). Masayoshi Son, Chairman and CEO of SBG, made the following statement about the imminent acquisition:

> "W*e have long admired ARM as a world-renowned and highly respected technology company that is by some distance the market leader in its field. ARM will be an excellent strategic fit within the SoftBank group as we invest to capture the significant opportunities provided by the Internet of Things"* (SoftBank Group Corp. 2016)

There were a few reasons behind the choice to buy ARM "outright." At that point, SoftBank already owned several tech companies, including Boston Dynamics Robotics, SoftBank Telekom and Mobile Companies, Nvidia, and businesses in its Vision fund, all of which could have benefited from the chip architecture it had bought. The emergence of the internet of things (IoT) marked 2016. To help integrate new markets and support the promotion of new growth categories in sub-segments, SoftBank invoked its own extensive industry knowledge in its pre-sales statement (Massoudi, Fontanella-Khan und Waters 2016). SoftBank has always wanted to keep ARM free to act as an independent company. Both companies believed in bringing

together technology-driven cultures, long-term shared visions, and advancing a chip-based future. SoftBank assumed that such an investment strategy would be more feasible off-market in terms of long-term growth due to increased research and development (R&D) spending, relocation, and employee expansion. As a result, ARM was not even traded publicly, neither in London nor on the NASDAQ (Riley 2016).

The key challenges that had to be addressed were the strategic, historical and financial integration of ARM into SoftBank's portfolio, a Japanese tech conglomerate.

2 Industry Overview

Particularly in the wake of the 2008 financial crisis, firms such as Apple, Alibaba, Amazon, Facebook, and Google are creating semiconductor chips that are becoming more and more important to the tech value chain. Central Processing Units (CPU) are becoming more and more essential as the world becomes more digitalized and uses the cloud.

Some more recent technological advancements, such as blockchain technology, internet of things, and artificial intelligence (AI) applications, are significantly boosting production in tandem with traditional businesses. The microprocessor accounted for the majority of semiconductor industry revenue between 1997 and 2012, generating a total economic profit of $161,5 billion across all segments. Nearly every subsegment, including memory, analog and diversified IDM, and electronic design automation, saw revenue growth between 2013 and 2017. According to (Hannigan 2019), the total positive economic profit climbed to $284,6 billion.

This spike in the segment's growth attracted new investors who were looking to acquire companies that would give them an advantage in the semiconductor market. Subsequently, significant transactions involving semiconductor companies, were completed in the years leading up to the acquisition. According to Merger Market, 2015 saw a surge in completed transaction of about 56%, compared to 2014 totaling at 136 deals (117 disclosed value deals)

in 2015 and 124 deals (108 disclosed value deals) in 2016 with a total value of $90,9 billion and $126,5 billion in 2015 and 2016 respectively as seen in exhibit CS11 (Merger Market n.d.).

3 Historical context: Merger Participants and overall industry

3.1 ARM Holdings plc

Originally based in the UK, ARM (formerly known as Advanced RISC Machines Ltd.) is the world's top developer of semiconductor intellectual property (IP). In 1990, ARM was founded as a joint venture by VLSI Technology (now NXP Semiconductors N.V.), Apple Computers (now Apple Inc.) (43%), and Acorn Computers (43%) (ARM Ltd., 2023). Designing and licensing a wide range of primary power-efficient CPUs as well as other IP blocks like memory controllers, interconnects, and system peripherals are ARM's areas of expertise. Licensing and maintaining relationships with important clients like Apple, Samsung Electronics, Microsoft, Windows, and Nvidia is one of ARMs' main business operations. These partnerships have given the tech company a current market share in the semiconductor segment of about 99%.

These clients are considered semiconductor manufacturers, system-on-chip (SoC) designers, and original equipment manufacturer (OEMs) (Arm Holdings plc n.d.). Such license agreements allow other companies to integrate ARMs technology into their custom-designed chips (Furber 2000).

The company's success in the 1990s resulted in the announcement of a dual listing for ARM on the London Stock Exchange and the NASDAQ in April 1998. Despite the dotcom bubble and the tech-stock crash, the company consolidated its market eligibility because of the expanding smartphone market, with its integrated CPUs.

3.2 ARM´S business strategy

Rather than licensing completed products or services, ARM licenses processor designs to semiconductor companies, who subsequently incorporate the technology into computer chips

(Arm Holdings plc n.d.). ARM's licensing approach is built on the notion of Reduced Instruction Set Computing (RISC), a design philosophy that stresses a smaller set of instructions to accomplish tasks. This strategy resulted in more efficient processors, making ARM architectures particularly suitable for a wide range of devices, from smartphones and tablets to embedded systems and beyond.

The two-tiered structure of ARM's licensing strategy was one of its most important features: the first tier entailed licensing the architecture itself, while the second tier required licensing the actual processor designs based on that architecture. As a result, ARM was able to collaborate with a diverse set of firms, including semiconductor makers, original equipment manufacturers (OEMs), and system-on-chip (SoC) designers (Furber 2000).

At the architectural licensing level, ARM offered enterprises with access to their RISC Instruction Set architectural (ISA). This enabled licensees to construct their own processor implementations while adhering to ARM's basic design principles. This amount of adaptability was crucial for businesses that sought to design processors to their individual requirements, whether for power efficiency, performance, or a combination of the two (Arm Holdings plc n.d.). The second step entailed licensing individual processor designs, such as those in the Cortex family. These ideas were used to build everything from low-power microcontrollers to high-performance application processors. Companies might license these designs, alter them to their specifications, and incorporate them into the company's products. Because of this versatility and adaptability, ARM's solutions were extremely appealing to a wide range of sectors.

ARM's business strategy was based on royalties and upfront licensing payments. Architecture licensing payments were normally a one-time expenditure, while ARM's continual revenues derived from recurring royalties depending on the number of chips built utilizing their designs.

This created motivation for ARM to develop a collaborative ecosystem because the success of its licensees was directly related to their own success (Son und Seagers 2016).

ARM's business strategy involves a variety of stakeholders, including key business customers who rely on ARM's RISC CPU architecture in their own manufacturing. These include Apple, Qualcomm, Samsung Electronics, NVIDIA, and Microsoft. In addition, the sole owner and major stakeholder is the SoftBank Group Cooperation. There is also internal management and employees who have a stake in the success of the company.

The widespread adoption of the ARM architecture across a variety of industries and applications demonstrates the effectiveness of this licensing model. ARM processors are in use in billions of devices worldwide, from mobile phones to networking equipment to IoT devices with 25-year life cycles.

3.3 Softbank Group

Since its establishment, SoftBank Group Corporation, a multinational technology giant, has profoundly changed the landscape of technology, telecommunications, and investing. SoftBank was founded in Tokyo, Japan in 1981 by entrepreneur Masayoshi Son. Son redefined the landscape of the tech industry with his company and the spirit *"Pioneering Innovation and Investment"*. During his study in business and technology at the University of California, Berkeley, Son developed software systems and discovered the potential inherent in future software development.

SoftBank has been a significant brand in the global technology business since the 1990s, noted for its broad investments and wise backing of creative firms. SoftBank had already established itself as a key player in the telecoms, internet, and technology industries prior to its 2016 acquisition of ARM Holdings.

The company's early years were distinguished by its participation in the software market distribution. The turning point for SoftBank came with the establishment of the internet in the

1990s . In 1995 the company owned 37% of Yahoo´s shares. In 1997 Son invested in numerous internet companies and was therefore, one of the most established players in the new economy, while owning – at that time, 53% of SoftBank (The Economist 2021). At the peak of the dotcom crisis, SoftBank held an enterprise value of approximately $140 billion.

SoftBank launched in the software distribution business, but its later expansion was driven by a shift toward telecommunications. SoftBank undertook a risky acquisition of Vodafone Japan in 2006, establishing itself as an established player in the Japanese telecoms sector. Masayoshi Son's grandiose aim of transforming SoftBank into a worldwide technological powerhouse began with this acquisition (Massoudi, Fontanella-Khan und Waters 2016).

SoftBank's strategy, inspired by Son's leadership, was centered on the concept of the "Information Revolution." Son envisioned a future in which information would be a driving force behind economic and societal developments, and he aspired to position SoftBank as a leader in this transition. This concept expanded beyond traditional telecoms and included a wide range of technology-related initiatives (SoftBank Group Corp. 2022).

SoftBank has been recognized for their investment strategy that involves taking significant risks in innovative and disruptive companies. In addition to providing financing, SoftBank actively participates in managing and directing the strategic growth of their portfolio firms (SoftBank Group Corp. 2023). This hands-on approach is intended to accelerate the growth and success of their investments by utilizing SoftBank's experience and resources.

The acquisition of ARM Holdings in 2016 was an investment in strategy that aligned with SoftBank's larger ambition. SoftBank's emphasis on new technologies was strengthened by ARM's expertise in chip design and extensive deployment across multiple sectors. The purchase strategically positions SoftBank to play a significant role in the dynamic connected devices environment, the Internet of Things (IoT), and the broader smart technology ecosystem.

3.4 The semiconductor industry

The global semiconductor industry is a crucial part of the technology world, with semiconductors being essential for the functioning of various electronic devices. John Neuffer, CEO of Semiconductor Industry Association (SIA), gave a market insight into how sales in the semiconductor sector were performing.

> *"The industry posted its highest-ever quarterly sales total, with most regional markets and semiconductor product categories contributing to the gains. Indications are positive for increased sales in the coming months, but it remains to be seen whether the global market will surpass annual sales from last year."* (Semiconductor Industry Association 2016).

Global semiconductor sales in 2016 increased by 2,6% from $334,9 billion in 2015 to $339 billion. On third of global revenue in 2016 is made up of semiconductor placement within communication devices such as smartphones, followed by about 29% which come from PC/Computer devices. The remaining third is made up of industrial/governmental, consumer and automotive uses (World Semiconductors Trade Statistics 2023). Sales for the top 25 semiconductor producers grew by 10,5%, solidifying their position in the market. This resulted from the semiconductor industry's massive growth in mergers and acquisitions, which was fueled by controlled expansion, cheap borrowing costs, and the development of new business sectors. Apart from the purchase of ARM, Qualcomm also paid $47 billion to acquire NXP Semiconductors (European Comission n.d.). Among the biggest transactions of the year was Semiconductor's $2,4 billion acquisition of Fairchild Semiconductors (Semiconductor Intelligence, LLC 2015). The buyers wanted to increase its knowledge in fields like power electronics, automotive, IoT, and mobile. Together, Qualcomm, Samsung Electronics, and Intel produced a market share of more than 20% (Forni und van der Meulen 2017).

The industry noticed new opportunities brought about by advances in nanoelectronics, quantum computing, and artificial intelligence, which all required very large processing power. These advances also came with very high costs, complicated security protocols, and other drawbacks.

4 The acquisition process

4.1 Inside the Acquisition: Unraveling Transaction Particulars

On July 18th, 2016, the UK-listed and headquartered semiconductor design company ARM-Holdings plc ("ARM"; LON: ARM), which was listed on the London and New York Stock Exchange, received an offer from the Tokyo-listed and headquartered electronics and telecommunications conglomerate SoftBank Group Corp ("SoftBank") [TYO:9984]. The target possessed $16,7 billion in cash on hand at the time of the offer, but the bid had been predicated on a cash offer.

New debt had been issued, bringing the outstanding balance of $7,3 billion up to (Warren 2016). With a total price of £24 billion ($32 billion), the offer focused on the 98,55% of ARM share capital that the bidder did not already own. Each ARM share was being offered at a fixed price of £17 (ex-div). By the announced price per share, SoftBank was willing to grant a 43% premium on stock closing price, originally £11,89, on July 15th, 2016, the day before the official announcement, based on approximately 1.412 million outstanding shares (£24,3 billion), fully diluted (Merger Market n.d.). According to the asking price, ARM had £23,9 billion in total outstanding capital. As Son was asked which kind of synergies, he would see in combining SoftBank and ARM his answer was:

"Now is the time of discovery and technical explosion. The telecommunication sector is changing into IoT, combined with AI techniques we can screen much more data than we are used to know a day." (Son und Seagers 2016).

The following post-deal arrangements existed: Firstly, the acquirer planned for the target to operate as an independent entity under the SoftBank umbrella. Furthermore, the target was removed from the stock exchange following the scheme's effectiveness. In addition, the acquirer intended to carry out a squeeze-out procedure if the transaction continued as a takeover bid.

The post-merger agreement demonstrated that SoftBank felt strongly connected to ARM's British heritage, believing in its strength and autonomous operations. Maintaining the autonomous strategy strengthened the overall synergies (SoftBank Group Corp. 2016). Furthermore, business relationships should be maintained through ARM and its major customers. The planned increase in ARM's internal staff should also promote innovation and internal growth while keeping the flexibility.

Key dates of the acquisition:

- **July 15th, 2016:** ARM closed with a share price of £11,89 before the acquisition announcement.
- **July 18th, 2016:** SoftBank Group Corp. and ARM Holdings plc announced an agreement for SoftBank to acquire ARM for approximately GBP 24,0 billion (approximately USD 31,0 billion or JPY 3,3 trillion). Shares soared a record 40,78% and opened at £16,74 that morning.
- **August 3rd, 2016:** Documented scheme of acquisition terms and operational synergies was announced to the public.
- **August 3rd, 2016:** Approval of Resolution on Recommended Acquisition of ARM and ARM´s Court Meeting and General Meetings of Shareholders by SoftBank.
- **September 2nd, 2016:** Final approval of the offer by ARM at a court hearing. ARM's stock closed on its final trading day at £17,00.

- **September 5th, 2016:** The completion date of the acquisition; The Scheme of Arrangement in respect of the recommended acquisition came into effect, and ARM's entire issued and to-be-issued share capital was owned by SoftBank and its wholly owned subsidiaries.
- **September 6th, 2016:** ARM was delisted from the London Stock Exchange and ceased to be a listed company (SoftBank Group Corp. 2016)

While the transaction itself was completed within a relatively short period, suggesting a certain efficiency, it would not be accurate to characterize the process as straightforward or entirely smooth. Regulatory approvals across multiple countries, concerns about preserving ARM's British heritage, intricate financing arrangements, and the complex nature of valuing a tech company were among the hurdles faced during this acquisition. Additionally, the timing of the deal, shortly after the Brexit referendum, added an extra layer of uncertainty and potential complications. Therefore, despite its completion, the acquisition journey encompassed several intricate and challenging aspects that might not align with a straightforward or entirely smooth process.

4.2 Understanding Challenges faced throughout the Deal

SoftBank had to overcome various strategic, historical, and financial obstacles to acquire ARM. Because of ARM's crucial role in the semiconductor industry because of the profound effect of its renowned architecture, it was the authorities' job to investigate potential anti-competitive consequences. The difficulty was to preserve the architectural clearance guarantee while continuing to service both small businesses and industry major players.

The transaction prompted some concerns. SoftBank's long-term ambition for ARM has been questioned by analysts. The integration of ARM's semiconductor paradigm, including existing customer ties, into SoftBank's extremely varied portfolio must be balanced against both firms' strategic goals (Toh, 2022).

It is worth noting that ARM has been headquartered in Cambridge, England, since the 1990s. The acquisition of a Japanese technology group led to a fusion of different norms and values. The approval of ARM shareholders, many of whom had a vested interest in preserving the company's British heritage, was essential. The transaction required the majority support of ARM investors, and some were concerned about the potential impact on ARM's British roots (Farrell & Kollewe, 2016).

Considering the fair rating of the company, it is important to refer to the historical importance that the ARM represents for the British technology scene.

Of course, the portfolio integration and cultural differences of both companies could not be ignored. SoftBank's idea was to use the market power of ARM, to become a leading competitor in the IoT space, but it was uncertain whether SoftBank's network would want to and be able to rely on ARMs' architecture in the long term (Elliott 2016).

5 Strategic Evolution and Acquisition Dynamics

5.1 Strengthening SoftBank's position on the Internet of Things (IoT) market

Malicious tongues claimed that Son wanted to buy ARM because of the strengthening of the Japanese yen versus the weak English pound sterling, especially in the second half of 2016 after the Brexit referendum (refer to Case Study C for further details), when equipment billing activity accelerated.

One main reason for the acquisition was that ARM was, seen as a strategic reinforcement of the Vision Fund in IoT (ARM, 2016). With its market share of 99% in Mobile devices, ARM had already established a dominant position in an industry that was central to the digital era. This provided SoftBank with a foothold in the mobile technology market, which was essential for the company's vision of a future connected world.

The prevalence of ARM-based designs in smartphones meant that SoftBank could tap into the vast and diverse user base these devices represented. Further, SoftBank noticed ARM´s existing diversification into emerging markets such as artificial intelligence (AI), automotive, and cloud computing. SoftBank's established technology portfolio, with its profound industry expertise and global network, provided breeding ground for leveraging ARM's expertise to position SoftBank as a key player in shaping the future by expanding its reach and influence (Tennant 2016). Another important aspect was ARM's licensing business model, which would allow SoftBank to benefit from a broader ecosystem of technology companies and innovators. To achieve this, SoftBank intended to sustain ARM´s long-term focus on generating more value per device and driving licensing wins and future royalty streams in new growth categories, especially “Enterprise and Embedded Intelligence” (SoftBank Group Corp. 2016). To achieve this long-term growth vision, SoftBank had to increase its investments driving innovation. To guarantee that ARM could keep a competitive advantage in research and development over both current and potential rivals, SBG planned to invest in engineering expertise and complementing acquisitions, to assist with ARM's numerous expansion ambitions. SBG considered that, as an unlisted company, it would be easier to implement such an investment plan for long-term growth.

5.2 A Shared vision for the future of the internet and its growth

At the time of the bidding and the intended takeover of SoftBank, ARM had no intention of selling the company. Due to its market power in the CPU manufacturing sector, ARM had created a strategically clever negotiating position for itself (Farrell und Kollewe 2016). Simon Segars, ARM's CEO, explained in an interview that the two main arguments in favor of a lucrative sale were certainly fulfilled (Seagers 2016). Firstly, the offer price, which was very accommodating for both ARM and its shareholders. With a premium of over 40% on each share, the shareholders agreed to the deal shortly after it was announced. The second approach

is the shared vision. Both companies share a future of the internet and its growth. Through ARM's licensing model and SoftBank's financial support, ARM would achieve a greater impact in the market than standing alone. Both are interested in local growth, for example by increasing the number of employees, as well as global growth. This will be achieved through SoftBank's development, invention and the development of a shared ecosystem. As ARM's core business does not overlap with SoftBank's and ARM will continue to operate autonomously under SoftBank's umbrella, the day-to-day business will not suffer. Segars emphasized that a higher level of investment improves the speed of innovation (Seagers 2016).

5.3 ARM's Tech Advantage Meets SoftBank's Resources

For Simon Seagers, it was not inevitable that ARM would be sold and privatized once more. Creating a global ecosystem with a high level of investment and innovation for future growth was of primary importance for the former CEO of ARM. ARM found a partner in SoftBank that shared its values and future vision (Seagers 2016).

Through the ARM-SoftBank alliance, ARM underwent significant operational transformations that were subtle yet impactful. SoftBank's infusion of financial support empowered ARM to bolster its research and development endeavors, introducing cutting-edge features into its products and expanding its product line (Seagers 2016). The arrangement, while under SoftBank's umbrella, allowed ARM to maintain operational autonomy, preserving its clientele and protecting its established brand identity. This collaboration also accelerated ARM's global expansion efforts, fostering accelerated growth rates and a more extensive international presence. Furthermore, SoftBank's support facilitated ARM's diversification, reducing its vulnerability to market fluctuations by broadening its product range.

On the other hand, SoftBank gleaned substantial advantages from the collaboration. Aligned in long-term vision, SoftBank strategically positioned itself as a significant player in the semiconductor industry, leveraging the acquisition to fortify its expansive technology portfolio.

The partnership with ARM also opened avenues for SoftBank to harness ARM's expertise in artificial intelligence and robotics, fostering synergistic collaborations and innovative advancements (Farrell und Kollewe 2016). Integrating ARM's technological prowess into its existing portfolio presented SoftBank with opportunities to create fresh value propositions, solidify its market presence in the tech and semiconductor sectors, and explore new avenues in smart home, automotive, and industrial solutions (Riley 2016).

As there was no overlap between the core businesses of SoftBank and ARM, both companies had an enormous benefit from mutual synergy effects, whether in financial, structural or operational terms.

6 Conclusion

Finally, the transaction provides an intriguing example of the extent to which organizations with disparate aims, cultures, and techniques may unite. Structure integration, strategic decisions, and retaining culture are all challenges that give important insights into the dynamics of both firms. The preservation of all interests is given special consideration.

The primary challenge was the art of balancing innovation and cutting-edge technology between two multinational corporations and global market interest. Maintaining British history, protecting Arm's independence, and correctly integrating it into the SoftBank portfolio highlight the various problems of a merger. The conclusion underlines the significance of strategic planning, adaptability, and intercultural sensitivity in an ever-changing global economic environment.

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Appendix

Exhibit CS 1: ARM's Income Statements 2013-2015

For the year ended 31 December
All values in million £ (except per share data and %)

	31.12.13	31.12.14	31.12.15
Revenue[1]	**714,60**	**795,20**	**968,30**
Royalties - Processors	*317,50*	*326,00*	*463,10*
Royalties - Physical IP	*40,80*	*36,50*	*46,90*
Licensing - Processors	*244,40*	*309,10*	*326,60*
Licensing - Physical IP	*41,20*	*52,10*	*54,00*
Software and tools	*36,40*	*35,00*	*37,30*
Services	*34,30*	*36,50*	*40,40*
Cost of Revenues	**-39,30**	**-37,80**	**-39,30**
Gross Profit	**675,30**	**757,40**	**929,00**
Operating Expenses			
Research and development	-202,90	-224,20	-278,00
Sales and marketing	-89,40	-93,20	-106,10
General and administrative	-128,20	-131,00	-138,80
Total operating expenses before exceptional items	**-420,50**	**-448,40**	**-522,90**
Exceptional items	-101,30	0,00	0,00
Total operating expenses after exceptional items	**-521,80**	**-448,40**	**-522,90**
Profit from operations	**153,50**	**309,00**	**406,10**
Investment income	13,30	11,30	12,10
Interest payable and similar charges	-0,20	-0,30	-0,30
Shares of results in joint venture	-4,00	-3,50	-3,10
Profit before tax	**162,60**	**316,50**	**414,80**
Tax (including exceptional items)	-57,80	-61,10	-75,10
Profit for the year	**104,80**	**255,40**	**339,70**
Earnings per share			
Basic and diluted earnings	104,80	255,40	339,70
Number of shares (millions)			
Basic weighted average number of shares	1.396,40	1.406,20	1.407,40
Effect of dilutive securities: Employee incentive schemes	15,40	14,90	12,90
Diluted weighted average number of shares	**1411,80**	**1421,10**	**1420,30**
Basic EPS	0,08	0,18	0,24
Diluted EPS	0,07	0,18	0,24
Calculated Metrics			
EBITDA	190,80	352,40	457,10
EBIT	162,80	316,80	415,10

(Arm Holdings plc 2015) (Arm Holdings plc 2016)

Exhibit CS 2: ARM's Balance Sheet 2013-2015

All values in million £ (except per share data and %)

	31.12.13	31.12.14	31.12.15
Assets			
Current assets			
Cash and cash equivalents	43,80	54,10	40,50
Short-term deposits and similar instruments	544,10	620,80	617,80
Fair value of currency exchange contracts	5,10	0,00	0,00
Embedded derivatives	0,00	2,60	6,90
Accounts receivable	*136,20*	*138,60*	183,70
Available-for-sale financial assets	*1,20*	*0,00*	*23,10*
Prepaid expenses and other assets	*39,80*	*43,20*	*51,60*
Current tax assets	*6,90*	*8,90*	*22,90*
Inventories	*3,00*	*2,70*	*1,80*
Total current assets	**780,10**	**870,90**	**948,30**
Non-current assets			
Long-term deposits and similar instruments	125,60	191,40	298,00
Loans and receivables	3,00	3,00	6,00
Available-for-sale financial assets	13,90	23,70	11,60
Investment in joint venture	6,50	3,00	2,60
Prepaid expenses and other assets	*1,60*	*1,70*	1,40
Property, plant and equipment	*33,60*	*43,40*	*61,60*
Goodwill	*525,90*	*567,00*	*650,70*
Other intangible assets	*82,90*	*77,20*	*92,00*
Deferred tax assets	*65,30*	*55,90*	*48,00*
Total non-current assets	**858,30**	**966,30**	**1.171,90**
Total assets	**1.638,40**	**1.837,20**	**2.120,20**
Liabilities			
Current liabilities			
Accounts payable	7,00	11,70	12,70
Fair value of currency exchange contracts	0,00	4,80	3,20
Embedded derivatives	*7,00*	0,00	0,00
Accrued and other liabilities	*88,10*	*80,60*	*100,70*
Finance lease liabilities	*2,70*	*3,90*	*5,20*
Current tax liabilities	*18,80*	*31,90*	*30,60*
Deferred revenue	*156,70*	*127,40*	*110,10*
Total current liabilities	**280,30**	**260,30**	**262,50**
Non-current liabilities			
Accrued and other liabilities	*2,60*	*0,00*	*6,30*
Finance lease liabilities	*1,50*	*2,60*	*6,10*
Deferred tax liabilities	*0,10*	*0,40*	*3,20*
Deferred revenue	*42,50*	*45,60*	*44,50*
Total non-current liabilities	**46,70**	**48,60**	**60,10**
Total liabilities	**327,00**	**308,90**	**322,60**
Net assets	**1.311,40**	**1.528,30**	**1.797,60**
Capital and reserves attributable to owners of the Company			
Share capital	0,70	0,70	0,70
Share premium account	18,10	24,90	27,20
Capital reserve	*354,30*	*354,30*	354,30
Share option reserve	*61,40*	*61,40*	*61,40*
Retained earnings	*820,60*	*991,80*	*1.213,30*
Revaluation reserve	*0,00*	*4,30*	*17,70*
Cumulative translation adjustment	*56,30*	*90,90*	*123,00*
Total equity	**1.311,40**	**1.528,30**	**1.797,60**
Total liabilities and shareholder's equity	**1.638,40**	**1.837,20**	**2.120,20**

(Arm Holdings plc 2015) (Arm Holdings plc 2016)

Exhibit CS 3: ARM's OCI Statement 2013-2015

For the year ended 31 December

All values in million £ (except per share data and %)

	31.12.13	31.12.14	31.12.15
Profit for the year	**104,80**	**255,40**	**339,70**
Other comprehensive income			
Unrealized holding gains on available-for-sale financial assets reclassified to income statement	0,00	0,00	-4,30
Unrealized holding gains on available-for-sale financial assets	0,00	4,30	17,70
Currency translation adjustment*	-17,90	34,60	32,10
Other comprehensive income for the year	**-17,90**	**38,90**	**45,50**
Total comprehensive income for the year	**86,90**	**294,30**	**385,20**

(Arm Holdings plc 2015) (Arm Holdings plc 2016)

Exhibit CS 4: ARM's Cash Flow Statement 2013-2015

For the year ended 31 December
All values in million £ (except per share data and %)

	31.12.13	31.12.14	31.12.15
Profit before tax	**162,60**	**316,50**	**414,80**
Investment income (net of interest payable and similar charges)	-13,10	-11,00	-11,80
Share of results in joint venture	4,00	3,50	3,10
Profit from operations	**153,50**	**309,00**	**406,10**
Adjustments for:			
Depreciation and amortization of property, plant and equipment and intangible assets	28,00	35,60	42,00
Compensation charge in respect of share-based payments	59,20	68,50	70,50
Provision for impairment of available-for-sale financial assets	66,30	1,00	0,30
Profit on disposal of available-for-sale financial assets	-3,30	-0,30	-5,60
Loss on disposal of property, plant and equipment	0,60	0,10	0,20
Provision for doubtful debts	4,00	0,30	-0,10
Non-cash foreign currency losses/(gains)	-3,60	3,40	2,90
Movement in fair value of currency exchange contracts	-3,70	9,90	-1,60
Movement in fair value of embedded derivatives	4,40	-9,60	-4,30
Changes in working capital			
Accounts receivable	-19,80	-4,00	-37,20
Inventories	-0,70	0,30	0,90
Prepaid expenses and other assets	-8,80	-9,90	-17,40
Accounts payable	1,10	4,50	0,40
Deferred revenue	53,10	-24,80	-26,20
Accrued and other liabilities	8,30	-11,60	22,50
Cash generated by operations before tax	**338,60**	**372,40**	**453,40**
Income taxes paid	-23,30	-30,80	-73,90
Net cash from operating activities	**315,30**	**341,60**	**379,50**
Investing activities			
Interest received (net of interest paid of £0.3 million (2013: £0.2 million))	13,20	13,30	11,10
Purchases of property, plant and equipment	-13,50	-20,40	-30,50
Purchases of other intangible assets	-31,80	-10,00	-10,50
Purchases of available-for-sale financial assets	-8,90	-5,00	-3,80
Proceeds on disposal of available-for-sale financial assets	5,50	2,20	6,40
Purchase of short- and long-term deposits and similar instruments, net	-188,50	-145,10	-102,80
Purchase of subsidiaries, net of cash and borrowings acquired	-21,10	-12,80	-62,30
Investment in joint venture	-3,70	0,00	-2,70
Provision of long-term loan	-0,70	0,00	-2,90
Net cash used in investing activities	**-249,50**	**-177,80**	**-198,00**
Financing activities			
Proceeds received on issuance of shares	5,90	6,80	2,30
Proceeds received on issuance of shares from treasury	0,00	0,00	7,10
Purchase of own shares	0,00	-66,90	-92,20
Dividends paid to shareholders	-68,90	-86,10	-107,80
Repayment of borrowings	-1,10	-1,20	0,00
Repayment of finance lease liabilities	-3,30	-6,40	-5,10
Net cash used in financing activities	**-67,40**	**-153,80**	**-195,70**
Net increase/(decrease) in cash and cash equivalents	**-1,60**	**10,00**	**-14,20**
Cash and cash equivalents at beginning of the year	46,30	43,80	54,10
Effect of foreign exchange rate changes	-0,90	0,30	0,60
Cash and cash equivalents at end of the year	**43,80**	**54,10**	**40,50**

(Arm Holdings plc 2015) (Arm Holdings plc 2016)

Exhibit CS 5: ARM's Changes in Shareholder's equity 2013-2015

For the fiscal years 2013, 2014, 2015

All values in million £ (except per share data and %)

	Share capital	Share premium account	Capital reserve*	Share option reserve**	Retained earnings	Revaluation reserve***	Cum. translation adjustment	Total
Balance at 1 January 2013	**0,70**	**12,20**	**354,30**	**61,40**	**703,30**	**0,00**	**74,20**	**1.206,10**
Profit for the year	0,00	0,00	0,00	0,00	104,80	0,00	0,00	104,80
Other comprehensive loss								
Currency translation adjustment	0,00	0,00	0,00	0,00	0,00	0,00	-17,90	-17,90
Total comprehensive income for the year	**0,00**	**0,00**	**0,00**	**0,00**	**104,80**	**0,00**	**-17,90**	**86,90**
Shares issued on exercise of share options and awards	0,00	5,90	0,00	0,00	0,00	0,00	0,00	5,90
Dividends	0,00	0,00	0,00	0,00	-68,90	0,00	0,00	-68,90
Credit in respect of employee share schemes	0,00	0,00	0,00	0,00	59,20	0,00	0,00	59,20
Movement in tax arising on share options and awards	0,00	0,00	0,00	0,00	22,20	0,00	0,00	22,20
	0,00	**5,90**	**0,00**	**0,00**	**12,50**	**0,00**	**0,00**	**18,40**
Balance at 31 December 2013	**0,70**	**18,10**	**354,30**	**61,40**	**820,60**	**0,00**	**56,30**	**1.311,40**
Balance at 1 January 2014	**0,70**	**18,10**	**354,30**	**61,40**	**820,60**	**0,00**	**56,30**	**1.311,40**
Profit for the year	0,00	0,00	0,00	0,00	255,40	0,00	0,00	255,40
Other comprehensive income								
Unrealized holding gain on available- for-sale financial assets	0,00	0,00	0,00	0,00	0,00	4,30	0,00	4,30
Currency translation adjustment	0,00	0,00	0,00	0,00	0,00	0,00	34,60	34,60
Total comprehensive income for the year	0,00	0,00	0,00	0,00	255,40	4,30	34,60	294,30
Shares issued on exercise of share options and awards	0,00	6,80	0,00	0,00	0,00	0,00	0,00	6,80
Dividends	0,00	0,00	0,00	0,00	-86,10	0,00	0,00	-86,10
Purchase of own shares	0,00	0,00	0,00	0,00	-66,90	0,00	0,00	-66,90
Credit in respect of employee share schemes	0,00	0,00	0,00	0,00	68,50	0,00	0,00	68,50
Movement in tax arising on share options and awards	0,00	0,00	0,00	0,00	0,30	0,00	0,00	0,30
	0,00	**6,80**	**0,00**	**0,00**	**-84,20**	**0,00**	**0,00**	**-77,40**
Balance at 31 December 2014	**0,70**	**24,90**	**354,30**	**61,40**	**991,80**	**4,30**	**90,90**	**1.528,30**
Balance at 1 January 2015	**0,70**	**24,90**	**354,30**	**61,40**	**991,80**	**4,30**	**90,90**	**1.528,30**
Profit for the year	0,00	0,00	0,00	0,00	339,70	0,00	0,00	339,70
Other comprehensive income								
Unrealized holding gain on available- for-sale financial assets	0,00	0,00	0,00	0,00	0,00	17,70	0,00	17,70

Unrealized holding gain on available-for- sale financial assets reclassified to income statement	0,00	0,00	0,00	0,00	0,00	-4,30	0,00	-4,30
Currency translation adjustment	0,00	0,00	0,00	0,00	0,00	0,00	32,10	32,10
Total comprehensive income for the year	0,00	0,00	0,00	0,00	339,70	13,40	32,10	385,20
Shares issued on exercise of share options and awards	0,00	2,30	0,00	0,00	0,00	0,00	0,00	2,30
Dividends	0,00	0,00	0,00	0,00	-107,80	0,00	0,00	-107,80
Purchase of own shares	0,00	0,00	0,00	0,00	-92,20	0,00	0,00	-92,20
Proceeds from sale of own shares	0,00	0,00	0,00	0,00	7,10	0,00	0,00	7,10
Credit in respect of employee share schemes	0,00	0,00	0,00	0,00	70,50	0,00	0,00	70,50
Movement in tax arising on share options and awards	0,00	0,00	0,00	0,00	4,20	0,00	0,00	4,20
	0,00	**2,30**	**0,00**	**0,00**	**-118,20**	**0,00**	**0,00**	**-115,90**
Balance at 31 December 2015	**0,70**	**27,20**	**354,30**	**61,40**	**1.213,30**	**17,70**	**123,00**	**1.797,60**

(Arm Holdings plc 2015) (Arm Holdings plc 2016)

Exhibit CS 6: Notes to the Financial Statements

Notes to Financial Statements	
1	The majority of the Group's revenues come from the licensing of IP and subsequent receipt of royalty revenues and there are therefore very few direct costs associated with the sale of goods; where there are direct costs of revenues, these are measured with reference to the purchasing agreements in place with the Group's suppliers. Many license agreements are for products which are designed to meet the specific requirements of each customer. Revenue from the sale of such licenses is recognized on a percentage-of-completion basis over the period from signing of the license to completion of ARM's contractual obligations. In addition to license fees, contracts generally contain an agreement to provide post-delivery service support (in the form of support, maintenance and training) which consists of the right to receive services and/or unspecified product upgrades or enhancements that are offered on a when-and- if-available basis. Fees for post-delivery service support are generally specified in the contract. Revenue related to post-delivery service support is recognized based on fair value, which is determined with reference to contractual renewal rates. Sales of software, including development systems, which are not specifically designed for a given license (such as off-the-shelf software) are recognized upon delivery when the significant risks and rewards of ownership have been transferred to the customer. Revenue comprises the value of sales of licenses to ARM technology, royalties arising from the resulting sale of licensees' ARM technology-based products, revenues from support, maintenance and training and the sale of development boards and software toolkits.
*	These items may be reclassified to the income statement if certain conditions are met.
**	Capital reserve. In 2004, the premium on the shares issued in part consideration for the acquisition of Artisan Components Inc. was credited to reserves on consolidation in accordance with Section 131 of the Companies Act 1985.The reserve has been classified as a capital reserve to reflect the nature of the original credit to equity arising on acquisition.
***	Share option reserve. This represents the fair value of options granted on the acquisition of Artisan Components Inc. in 2004.
****	Revaluation reserve. The Company includes on its balance sheet equity investments, which are classified as available-for-sale financial assets. These are carried at fair value. Unrealized holding gains or losses on such investments are included, net of related taxes, within the revaluation reserve (except where there is evidence of permanent impairment, in which case losses would be recognized within the income statement).

(Arm Holdings plc 2015) (Arm Holdings plc 2016)

Exhibit CS 7: Comparable Companies Description

Ams-OSRAM AG	AMS Osram AG is an Austrian electronics company that designs and manufactures sensors for small form factor, low power, highest sensitivity, and multi-sensor applications. It is a global leader in intelligent sensors and emitters, offering a unique product and technology portfolio for sensing, illumination, and visualization. (ams OSRAM AG, n.d.)
u-blox Holding AG	U-blox Holding AG is a Swiss company that specializes in creating wireless semiconductors and modules for consumer, automotive, and industrial markets. The company is engaged in the development, manufacture, and marketing of products and solutions that enable precise positioning and wireless connectivity for people, vehicles, and machines. U-blox operates as a fabless IC (integrated circuit) and module supplier, and it is considered a global leader in its field with a vital local knowledge of key markets due to its worldwide presence. (u-blox AG, n.d.)
Elmos Semiconductor SE	Elmos Semiconductor SE is a German manufacturer of semiconductor products, with its headquarters in Dortmund, Germany. The company specializes in developing, producing, and marketing semiconductors, primarily for use in the automotive industry since 1984. Elmos is known for creating innovative microelectronics-based solutions to enhance people's lives, shape future mobility, and contribute to a greener and safer world. It is considered a leading manufacturer of automotive mixed-signal semiconductors and has been a figurehead for the profound structural change in Dortmund. (Elmos Semiconductor SE, n.d.)
Nordic Semiconductor ASA	Nordic Semiconductor ASA is a Norwegian fabless technology company founded in 1983, with its headquarters in Trondheim, Norway. The company specializes in wireless communication technology that powers the Internet of Things (IoT). Nordic Semiconductor is known for designing, marketing, and delivering integrated circuits (ICs) for wireless innovation. (Nordic Semiconductor ASA, n.d.)
Melexis N.V.	Melexis N.V. is a global supplier of micro-electronic semiconductor solutions, specializing in the design, development, testing, and marketing of integrated circuits for automotive electronics systems. Melexis offers a wide range of semiconductor integrated circuits, covering various sensor technologies, drivers, and transceivers. Their products find applications in diverse industries, including automotive, industrial, and IoT sectors. The company focuses on enabling the best imaginable future through its innovative solutions and commitment to excellence. (Melexis N.V., n.d.)
STMicroelectronics N.V.	STMicroelectronics N.V. is a multinational corporation and technology company of French-Italian origin that is headquartered in Plan-les-Ouates near Geneva, Switzerland. It is a global semiconductor company that creates semiconductor technologies for a smarter, greener, and more sustainable future. The company develops and markets a wide range of products, including discrete and integrated circuits. Their products are to be found in products as diverse as electric cars and key fobs, giant factory machines and data centers, washing machines and hard disks, and smartphones and toothbrushes. (STMicroelectronics N.V., n.d.)
Infineon Technologies AG	Infineon Technologies AG is Germany's largest semiconductor manufacturer, (50,280 employees), making it one of the ten largest semiconductor manufacturers worldwide. The company is a global leader in power systems and IoT, enabling solutions for green and efficient energy, clean mobility. Infineon designs, develops, manufactures, and markets application-specific ICs, positioning itself as a semiconductor solutions provider for communi-cations, auto and memory markets. (Infineon Technologies AG, 2002)
NXP Semiconductors N.V.	NXP Semiconductors N.V. is a Dutch semiconductor designer and manufacturer headquartered in Eindhoven, Netherlands. The company employs approximately 31,000 people in more than 30 countries. NXP focuses on designing purpose-built, rigorously tested technologies that enable devices to sense, think, connect, and act intelligently to improve people's daily lives. As a world leader in secure connectivity, NXP aims to enable a smarter, safer, and more sustainable world through innovation in sectors like

	automotive, communication, industrial, mobile, smart city and smart home. (NXP Semiconductors N.V., n.d.)

(Elmos Semiconductor SE n.d.) (Infineon Technologies AG 2002) (Melexis N.V. n.d.) (NXP Semiconductors N.V. n.d.) (Nordic Semiconductor ASA n.d.) (STMicroelectronics N.V. n.d.) (ams OSRAM AG n.d.) (u-blox AG n.d.)

Exhibit CS 8: Comparable Companies Financials 2015

All values in million $ (except per share data, % and ratios/multiples)	**ams-OSRAM AG**	**u-blox Holding AG**	**Elmos Semi-conductor SE**	**Nordic Semi-conductor ASA**	**Melexis N.V.**	**STMicro-electronics N.V.**	**Infineon Technologies AG**	**NXP Semiconductors N.V.**
Revenue	691,65	351,73	243,79	193,07	444,15	6.897,00	6.657,53	6.101,00
EBITDA	214,73	78,96	56,63	43,41	144,76	845,00	1.510,73	2.532,00
EBIT	161,53	53,32	24,69	34,98	119,44	109,00	637,61	2.015,00
Current Assets	370,58	219,83	172,13	122,51	215,30	4.680,00	4.601,39	4.812,00
Cash/Cash Equivalents	112,55	112,42	54,33	29,29	80,23	1.771,00	752,55	1.614,00
Current Liabilities	266,87	55,42	50,22	45,34	58,68	1.560,00	1.772,35	2.548,00
Debt	299,39	59,30	40,01	10,00	16,50	1.612,00	2.004,93	9.212,00
Market Cap	2.477,47	1.443,10	342,97	797,12	2.183,96	5.900,50	12.559,17	28.813,75
Enterprise Value	2.620,78	1.378,32	285,55	777,82	2.120,24	5.467,50	12.314,28	36.699,75
Earnings-Per-Share	0,88	5,77	0,91	0,15	2,72	0,12	0,64	6,36
Shares Outstanding	200,28	6,73	19,73	162,44	40,05	878,54	1.123,27	342,00
Share Price	13,09	204,93	14,47	4,79	52,93	6,22	10,96	107,31
Price-to-Earnings	**14,89**	**35,52**	**15,90**	**31,92**	**19,45**	**51,86**	**17,04**	**16,87**
EV/EBITDA	**12,21**	**17,46**	**5,04**	**17,92**	**14,65**	**6,47**	**8,15**	**14,49**
EV/EBIT	**16,23**	**25,85**	**11,57**	**22,24**	**17,75**	**50,16**	**19,31**	**18,21**
EV/Sales	**3,79**	**3,92**	**1,17**	**4,03**	**4,77**	**0,79**	**1,85**	**6,02**

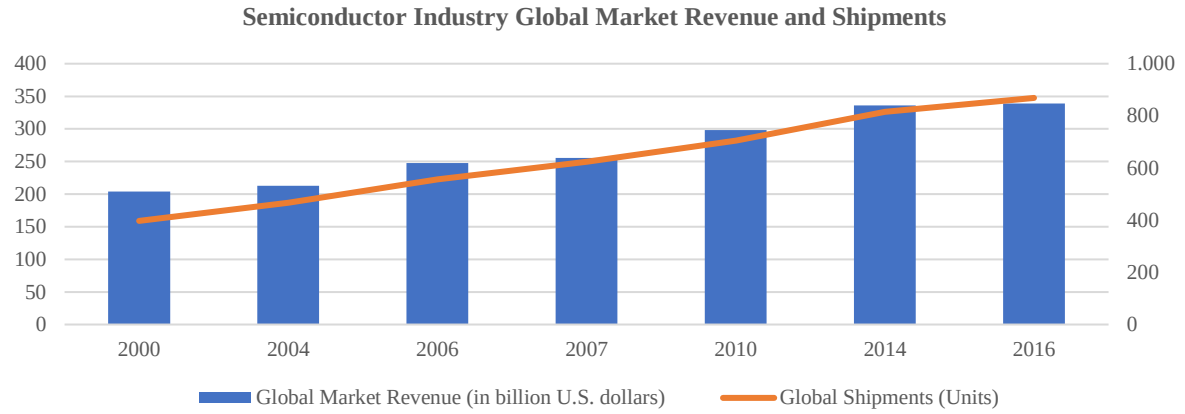
(Bloomberg L.P. n.d.)

Exhibit CS 9: Comparable Companies Betas, Cost of Debt and Market Capitalisation

Company Name	Beta (5-year-monthly 2015)	Cost of Debt 2015	Market Cap (in millions USD)
u-blox Holding AG	1,021	-0,070	1443,100
ams-OSRAM AG	1,292	0,860	2477,500
Elmos Semi-conductor SE	0,754	0,600	343,000
Nordic Semiconductor ASA	1,125	0,490	797,100
Melexis N.V.	1,193	0,680	2184,000
STMicro-electronics N.V.	1,140	3,560	5900,500
Infineon Technologies AG	1,022	0,800	12559,200
NXP Semiconductors N.V.	1,970	3,840	28813,800

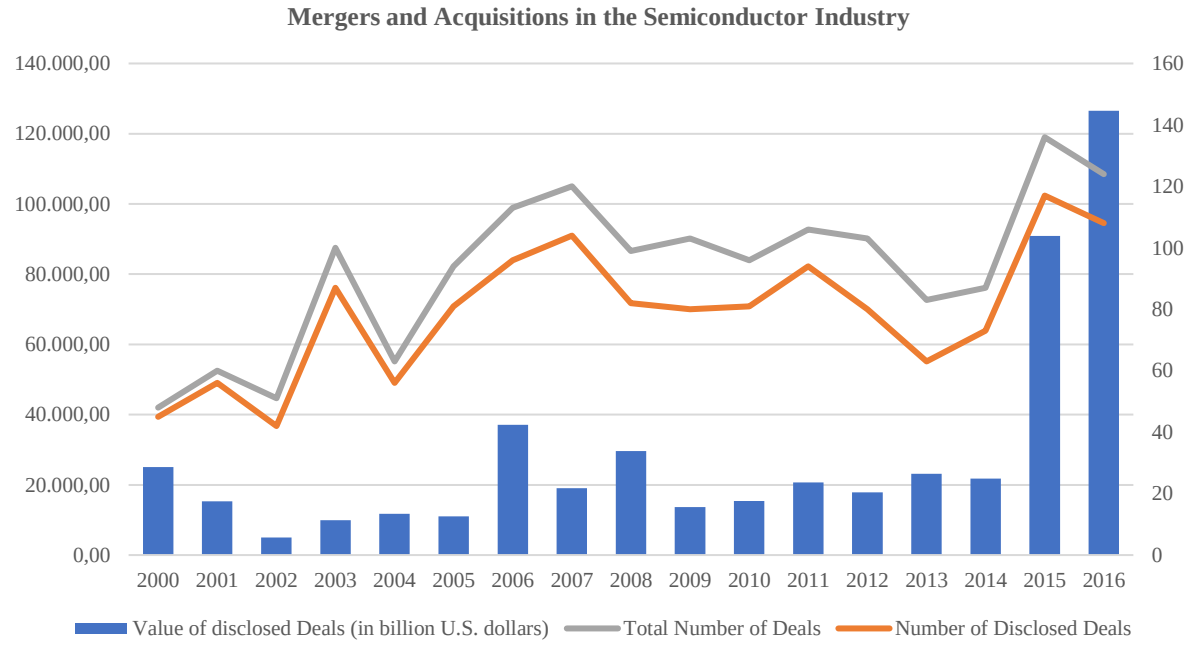
(Bloomberg L.P. n.d.)

Exhibit CS 10: Semiconductor Industry Global Market Revenue and Shipments 2000-2016



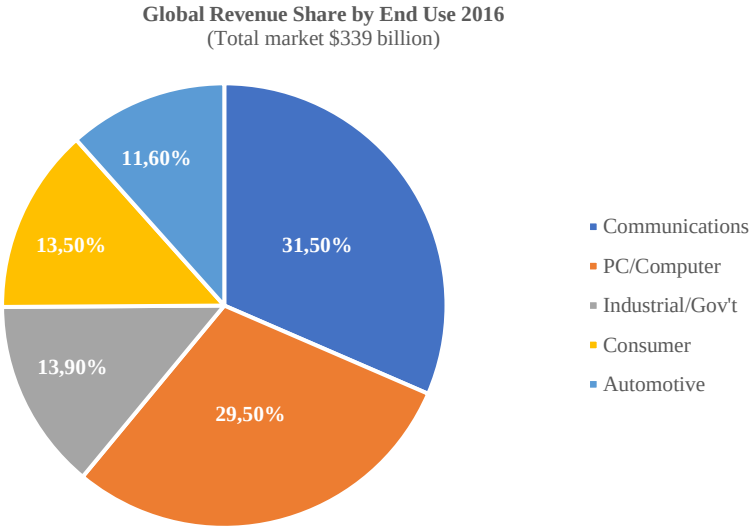
(Forni und van der Meulen 2017) (Semiconductor Industry Association 2016)

Exhibit CS 11: Mergers and Acquisitions in the Semiconductor Industry



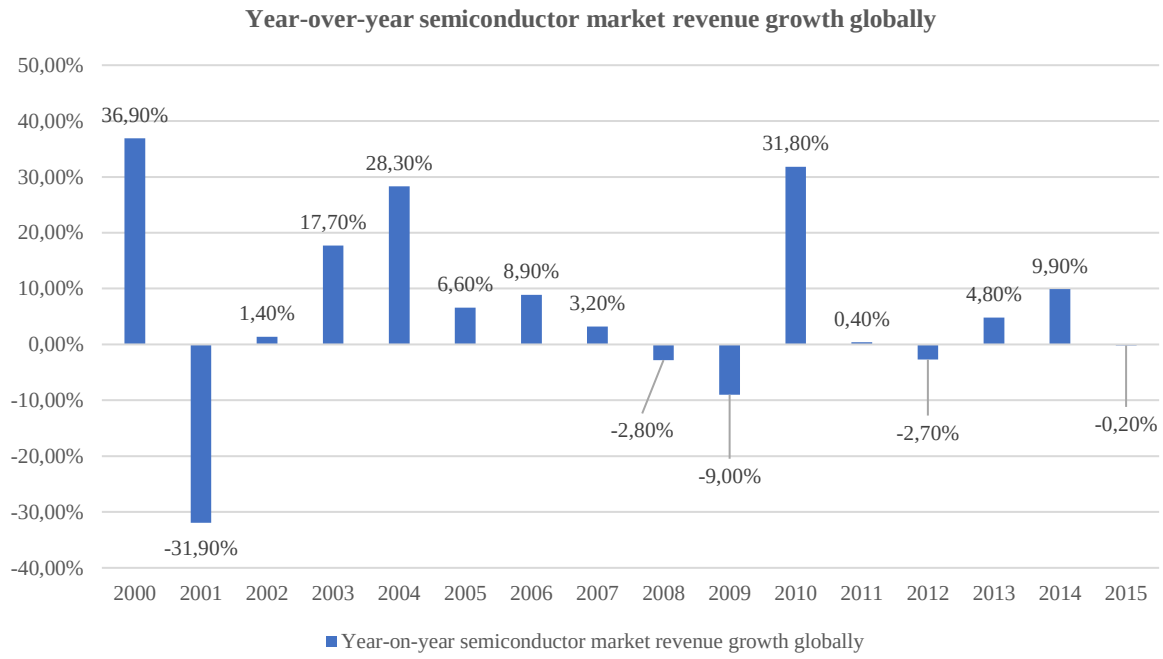
(Merger Market n.d.)

Exhibit CS 12: Global Revenue Share by End Use of Semiconductors 2016



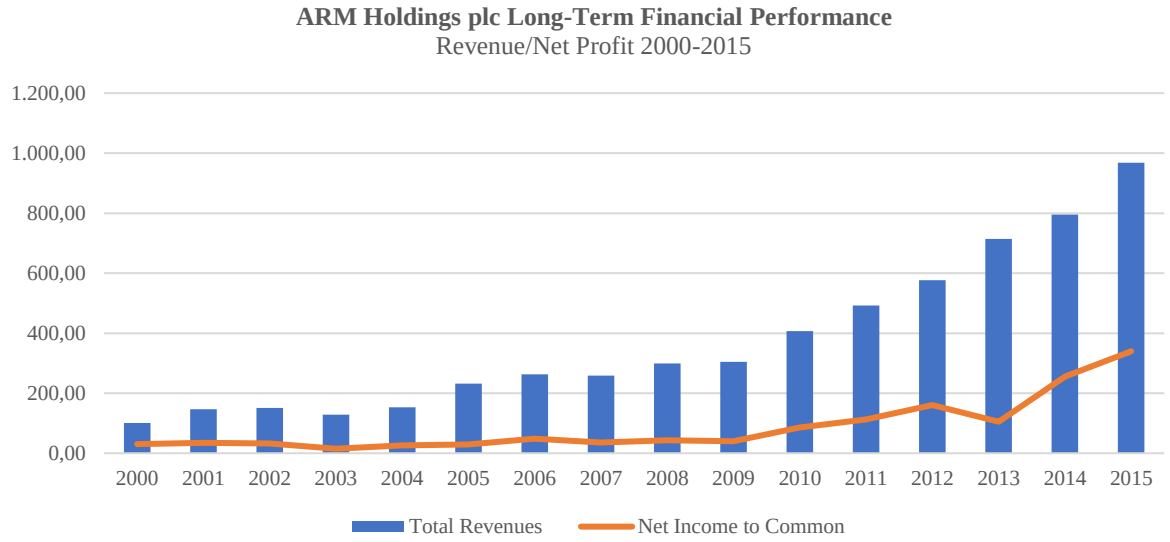
(Semiconductors Industry Association 2017)

Exhibit CS 13: Year-Over-Year Semiconductor Market Revenue Growth Globally 2000-2015



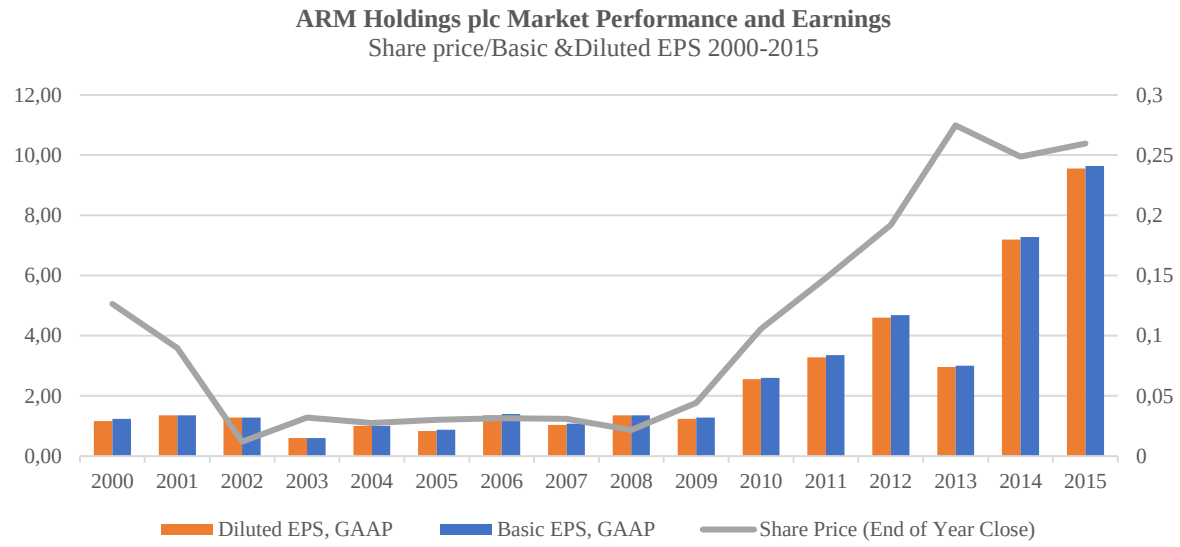
(World Semiconductors Trade Statistics 2023)

Exhibit CS 14: ARM Holdings plc Long-Term Performance 2000-2015



(Bloomberg L.P. n.d.)

Exhibit CS 15: ARM Holdings plc Market Performance and EPS



(Bloomberg L.P. n.d.)

Teaching Note
Group Component

1 Synopsis

In 2016, SoftBank's acquisition of ARM Holdings brought about a significant shift in the semiconductor and electronic devices sector. This $32 billion strategic move took place against the backdrop of the Fourth Industrial Revolution, where technology is shifting from an enabler to a defining force across industries. The acquisition was primarily motivated by ARM's strong market position and potential on the Internet of Things (IoT) space, according to Masayoshi Son, Chairman and CEO of SoftBank.

SoftBank was attracted to ARM, a well-known semiconductor design developer with a commanding market share, because of its ability to develop efficient central processing units (CPUs) and its alliances with major technology companies such as Apple, Samsung, Microsoft and Nvidia. Through the acquisition, ARM's technology would be used in several industries, including consumer electronics, smartphones, and newer areas such as augmented reality, autonomous driving, and the Internet of Things.

The industry overview highlighted the importance of semiconductor chips in the technology value chain, particularly in the wake of the 2008 financial crisis. The semiconductor industry experienced a significant increase in revenue due to the growth of blockchain, cloud usage, IoT, AI applications, and digitalization in general. This led to a surge in M&A transactions, with 304 significant deals totaling $171,3 billion in 2016 and 2017 (Merger Market, 2023).

ARM's history, from its founding in 1990 to its initial public offering and eventual acquisition by SoftBank in 2016, demonstrated the company's resilience and value. However, there were challenges during the acquisition process, including securing regulatory approvals in multiple countries, concerns about preserving ARM's British heritage, challenging valuation issues, and complicated financing arrangements. A SWOT analysis revealed that market dependency and

integration difficulties were weaknesses, while strategic synergies and a global market presence were strengths.

SoftBank's goals included establishing a presence on the Internet of Things, leveraging ARM's licensing program, and broadening its technology offering. ARM, which initially had no plans to sell, saw advantages in SoftBank's independence, financial strength, global reach and product breadth.

There were significant strategic implications for both companies; ARM was able to invest more in R&D, become independent, expand internationally, and diversify, while SoftBank gained a stronger market position, a broader technology portfolio, opportunities for synergies, and greater influence in the semiconductor and technology industries.

In summary, this case study revolves around understanding the strategic motivations behind an acquisition and the complex process of valuation. Understanding the strategic rationale behind an acquisition, such as SoftBank's purchase of ARM Holdings, reveals the complexity of such strategic moves in the technology industry. Examining valuation methodologies, particularly discounted cash flow (DCF) analysis, sheds light on the intricate financial assessments that guide acquisition decisions. Unraveling the factors that drive valuations-synergies, revenue projections, market premiums-enriches the understanding of how companies assess the value of an acquisition target and the potential impact on both parties. It provides comprehensive insight into the strategic thinking and financial methodologies used to evaluate and justify such significant business transactions.

2 Positioning

The ARM Holdings Acquisition case study provides an immersive learning experience for students specializing in finance or management with a focus on mergers, acquisitions and restructuring (M&A). This case study not only delves into the intricacies of strategic decision-making, but also engages students in the quantitative aspects of financial analysis. Students

will engage in extensive financial modeling using Discounted Cash Flow (DCF) and multiple valuation methodologies. In addition, the challenge of making sound assumptions and projections about ARM's future performance, requiring precise judgment and a deep understanding of industry and market trends, will be a focus and will require the development of critical thinking skills deemed necessary for successful business decision-making.

3 Pedagogical Objectives

The ARM Holdings acquisition case study offers multifaceted pedagogical objectives, combining strategic, financial, and geopolitical dimensions. Students engaging in this study will delve into the complexities of mergers and acquisitions in the technology sector, dissecting motivations, financial modeling, and the impact of geopolitical events like Brexit. Here are the key pedagogical objectives:

- **Strategic Thinking and Critical Decision Making:**
    - Analyzing the motivations behind the ARM Holdings acquisition from both SoftBank and ARM's perspectives.
    - Evaluating the strategic implications, by analyzing the long-term vision and strategic positioning as well as risks, and benefits for both parties involved within the tech industry amidst rapid technological advancements.
    - Exploring the role of cultural integration and heritage preservation in cross-border acquisitions.
- **Financial Modeling and Valuation Techniques:**
    - Applying various valuation methods, including DCF and multiple valuation models, to assess ARM's value
    - Developing and justifying sound assumptions for forecasting future company performance

- Calculating complex financial metrics such as WACC, dissecting its components—cost of equity, cost of debt, and beta calculations—to derive a precise assessment of the company's required rate of return
- The determination of a terminal growth rate, a critical component in forecasting future cash flows, will be a focal point

- **Regulatory Implications:**
  - Understanding the impact of geopolitical events like Brexit on global mergers and acquisitions.
  - Assessing how regulatory changes, economic uncertainties, and currency fluctuations influenced the acquisition decision and subsequent outcomes.

4 Analysis

4.1 Navigating the ARM Acquisition: Process and Motivations

This section explains the exact background, the process and the motivations of both companies based on the acquisition. Before entering this section of the case, the instructor should introduce different motives to merge or acquire companies. It will help students analyze the specific motives in this study. In July 2016 the announcement of the agreement occurred in the media, initiating the whole acquisition process. Due to the temporary timing, a few weeks after the Brexit referendum, the historical context and the intercultural embedding, the acquisition was not a conventional one. It involves several key stages and financial considerations to go through this process. On July 18th , 2016, ARM Holdings plc and SoftBank Group Corp. announced in a joint statement that they have mutually agreed to acquire Arm through an all-cash offer of the entire issued and to be issued share capital of the company (SoftBank Group Corp. 2016). SoftBank will receive 1,412 million shares of Arm for a total consideration of nearly $32 billion (£ 24 billion). The deal was the largest technology deal in UK and the second largest Japanese

outbound deal. The overall deal integrates three aspects: the price tag, the funding by SoftBank and possible resulting synergies. The set deal price by $32 billion marks a 43% premium of the closing share price on July 15th, 2016, of $15,67. The offered price equals the asking price by twenty times ARM's expected 2016 revenue, twenty-four times its $1,28 billion in revenue from 2015, and fifty-seven times its $568 million net income from 2015.

While the acquisition time SoftBank already had a large debt amount of nearly $113 billion. For this reason, SoftBank sold a stake of its China´s Alibaba shares and Finland´s Supercell for a total amount of $17 billion (Sen 2023).

A further $9 billion was raised again through a loan to finance the takeover. According to an article in the Wall Street Journal, SoftBank had been speculating about a takeover since 2014. There were several reasons for SoftBank to incorporate Arm into its portfolio and create mutual synergies. Firstly, it was Arm's strong footprint in the IoT and intellectual property sector. This was confirmed by SoftBank's CEO, Masayoshi son with the following statement:

"ARM is a market leader and the next big paradigm shift, the Internet of Things, is coming. I believe that the Internet of Things is a great opportunity".

Another reason was the shared culture and long-term vision of both companies. Both firms believed, and still believing, in a technology-oriented culture which is growing every single day. The long-term vision should respond to needs of cultural innovation and the commitment to the future changes. Furthermore, SoftBank wanted to support ARM in expanding its R&D division and maintaining its British heritage while investing in multiple Arm growth initiatives. Another synergy is that Arm's own innovation can flourish under SoftBank's leadership. SoftBank provides Arm with the network and financial resources and in return SoftBank takes ownership of Arm's intellectual property to integrate it into its portfolio companies.

After both companies announced the documented scheme of acquisition terms and operational synergies on August 3rd, 2016, this was followed by the "Approval of Resolution on Recommended Acquisition of ARM and ARM´s Court Meeting and General Meetings of Shareholders". On September 2nd, the final approval of the offer was given by the approval of ARM at court hearing. As of September 6th, 2016, following the completion of the Acquisition, ARM was delisted from the London Stock Exchange and discontinued to be a listed company. The financial results of ARM were merged and included in the consolidated financial statements of SBG after the final acquisition date of September 5th, 2016. (SoftBank Group Corp. 2016)

4.2 Valuation Results

This chapter includes a comprehensive examination of ARM Holdings' valuation through two fundamental methodologies: the Discounted Cash Flow (DCF) analysis and the Comparable Company Analysis (CCA). The DCF meticulously scrutinizes ARM's future cash flows, discounting them to present value, offering an intrinsic perspective on the company's worth. Conversely, the CCA method contextualizes ARM's valuation by comparing it against industry peers, utilizing key financial multiples to assess relative performance and market positioning. By linking these analyses, this chapter offers a multifaceted view of ARM's valuation, leveraging both intrinsic and market-driven perspectives to discern the company's financial standing and potential within the industry landscape.

To move forward with the DCF students will have to calculate a discount rate (WACC) which demands an in-depth analysis, considering factors such as the cost of equity, cost of debt, corporate tax rate, and capital structure weights. (Fernando, Khartit und Perez 2023) (Hargrave, Kindness und Kvilhaug 2023) (Goedhart, Koller und Wessels 2005)

4.2.1 DCF valuation

To derive the company's valuation via the Discounted Cash Flow (DCF) method, it was essential to make forward-looking assumptions concerning the company's future trajectory post-2015. Students should follow a comparable approach like the method illustrated in Figures 1 & 2. The case study supplies comprehensive exhibits including actual figures from the Income Statement, Balance Sheet, Cash Flow Statement, Statement of Other Comprehensive Income, and Changes in Shareholders' Equity. Alongside these, a set of predefined assumptions are given, supporting students in forecasting the company's values through 2020. To compute the Weighted Average Cost of Capital (WACC) and the Terminal Growth Rate accurately, students were provided with specified sources, enabling precise calculations necessary to the valuation process. (Arm Holdings plc 2015) (Arm Holdings plc 2016)

i. **Revenues:** From 2016 through 2017 revenues are estimated to grow at 21% and 13% respectively. These estimations were derived from Bloomberg and analysts' estimations. For the following years, revenues are expected to grow at the average rate from the past three years. Therefore, revenues grew from £968,3 million in 2015 to approximately £2.147,43 million in 2020.

ii. **Cost of Goods Sold (COGS):** As the COGS are directly linked with the sale of products and services it is obvious that they will remail closely linked with revenues in the forecast. For 2016 it is expected that COGS will be the average share of revenue for the actual COGS from 2013 to 2015. From 2016 on it is expected this number will grow by 3% each year due to inflation and general price increases. In the case of ARM Holdings plc. COGS remain at a very low amount, as the company mainly sells licenses and architecture designs.

iii. **Research and Development Expenditure (R&D):** Especially for tech companies Research and Development expenditure usually present a larger share of the cost side.

The average for the years 2013-2015 amounted to a revenue share of around 28%. It is expected that R&D costs will decline between 2-3% each year until 2018. As of 2018 R&D costs will remain at a constant 20% share of revenue amounting to about £429,49 million. Even though Softbank wants to expand ARM's R&D division we do expect the efficiency to increase because of the specialized knowledge of processes that ARM has acquired of the years.

iv. **Sales, General, Marketing and Administrative Expenditure (SGM&A):** SGM&A expenditure ranged from 28% share of revenue in 2013 to 25% share of revenue in 2015. We expect this trend to continue over the following years. By leveraging economies of scale, ARM Holdings plc. can expect to lower their average SGM&A share of revenue, while increasing profitability through enhanced sales. We therefore expect SGM&A to decline by about 2-3% throughout the forecast. SGM&A expenses are expected to reach an all-time high in 2018 at £266,91 million before dropping to £236,22 million.

v. **Exceptional Items:** In 2013 ARM Holdings plc. incurred £101,3 million in Exceptional Items. They resulted from indemnification, settlement and license costs of £41,8 million and £59,5 million in impairment charges from valuing down available-for-sale financial assets. In the following years no further, exceptional items have been reported. Thus, it is expected that there will not be anything reported under this category in later years.

vi. **Depreciation and Amortization (D&A):** As there are no signs of material short-term or long-term investments depreciation is expected to remain as a constant share of revenue. This share is calculated as an average of the shares from 2013-2015 and it amounts to 4,24% revenue share.

vii. **Interest Expenses:** As no signs of added debt raising is mentioned in 2015 annual report it is assumed that interest expenses will remain constant at the amount of 2015 (£300 thousand) Also, no increase of interest rates soon was mentioned in annual reports or expected by stock analysts.

viii. **Other Income and Other Expenses**: Other Income as well as Other Expenses will continue to increase/decrease at the average rate of the past three years.

ix. **Tax Rate:** The corporate Tax Rate at the time of the acquisition in the United Kingdom was 19% percent. For the forecast we predict that this will remain constant.

x. **Net Working Capital and Changes in Net Working Capital (NWC):** As changes in revenue impact various components of working capital due to the operational demands of the business we expect it to develop as a share of revenue. Therefore, we expect the NWC to remain at a constant 73% share of revenues for the projection starting in 2016.

xi. **WACC** Because the WACC considers the cost of equity and the cost of debt, weighted by their respective proportions in the capital structure capturing the overall cost of funds a company uses to finance its operations it is a suitable discount rate. Students should therefore calculate the WACC based on these parameters:

   a. **Cost of Equity:** It is based on Nasdaq's 10-year average annual returns, the Japanese 10-year-government bond as the risk-free rate and ARM's 5-year-montly beta against the NASDAQ stock exchange.

   b. **Cost of Debt:** According to Bloomberg's data the cost of debt can be assumed to be 0,19%. Given the close-to-zero interest period over the years from 2014 onwards this number is very low.

   c. **Tax rate:** As mentioned before the tax rate should be assumed to be 19%.

xii. **Terminal Value Growth Rate:** This rate is assumed to stand at 5,86%. The value was derived by subtracting the global annual inflation rate since the year 2000 (4,04%) from

the average annual semiconductor industry growth rate (9,91%). We do assess the value to be rather high, however given the fact ARM operates in a significant growth potential sector, we deem this value accurate.

xiii. **Synergies:** We expect this acquisition to generate both revenue and cost synergies for the target company. Specifically, we expect revenue synergies of approximately 15% of ARM's total revenues. A Deloitte study on M&A in different industries suggests that such deals typically generate between 3% and 37% in revenue synergies in the Telecommunication, Media and Technology industry (TMT), with a median amount of 8%. Given SoftBank's strong presence in various technology sectors, and the strong potential for the semiconductor niche in particular, we expect this synergy to be around 15%. These synergies are expected to increase gradually over time, reaching 33%, 60%, 82%, 90%, and finally 100% in the first five years, in line with the findings of a McKinsey study on achievable targets. Conversely, we expect cost synergies to be approximately 3% of ARM's revenues, which is in line with the TMT industry average. McKinsey's research suggests that cost synergies will be realized more quickly than revenue synergies. As a result, we expect 65% of the cost synergies to be realized in the first year and 100% to be realized in the second year after the acquisition. (Kengelbach, et al. 2013) (Laamanen, et al. 2022) (Chartier, et al. 2018)

xiv. **General Assumptions:** The valuation is supposed to be calculated on a five-year forecast basis. Y1 should therefore be 2016 and Y5 2020.

In summary, the Discounted Cash Flow (DCF) analysis, considering various key assumptions, has provided a comprehensive valuation for ARM Holdings plc. The total discounted cash flows derived, excluding synergies and perpetuity, amount to £3.500,48 million. Including the discounted terminal value, the calculated enterprise value is £19.646,24 million. Based on 1.420,3 outstanding shares, this equates to an estimated value per share of £13,82. In

comparison, the prevailing share price prior to the announcement of the Offer on July 15th, 2016, was £11,89.

The proposed offer is £17 per share, representing a 23% premium to the estimated value per share and a significant 42,9% premium to the prevailing share price. Anticipated revenue synergies are expected to generate additional discounted cash flows of £3.470,91 million over the next five years, including terminal value. At the same time, expected cost synergies are estimated at £694,18 million.

Considering the standalone value of ARM Holdings plc and the revenue and cost synergies, and after deducting debt, the equity value is £24.270,12 million. This valuation indicates that Softbank's proposed offer of £17 per share slightly undervalues ARM Holdings plc based on our calculations. (Bloomberg L.P. n.d.) (Bloomberg L.P. n.d.) (Bloomberg L.P. n.d.) (Bloomberg L.P. n.d.) (Bloomberg L.P. n.d.) (Bloomberg L.P. n.d.) (Bloomberg L.P. n.d.) (Chartier, et al. 2018) (Kengelbach, et al. 2013) (Laamanen, et al. 2022)

4.2.2 Comparable multiple valuation

In complement to the discounted cash flow (DCF) valuation, this analysis embarks on a multiple valuation approach, offering an insightful comparison against industry peers. Leveraging the Bloomberg Industry Classification Standard (BICS), a diverse set of companies was meticulously selected to conduct a comprehensive evaluation based on key financial metrics: price to earnings ratio (P/E), enterprise value to earnings before interest, taxes, depreciation, and amortization (EV/EBITDA), enterprise value to earnings before interest and taxes (EV/EBIT), and enterprise value to sales (EV/Sales).

Exhibit TN 6 presents a detailed overview of the selected peer companies, illuminating their respective market positions, operational landscapes, and financial standings. This information serves as a critical backdrop to assess and benchmark our focal company against its industry counterparts. The calculated multiples will offer nuanced perspectives on relative valuations,

shedding light on potential market misalignments and opportunities for the target company. Further, exhibit TN-15 will provide financial data needed to calculate the values below. The analysis yielded a diverse range of trading multiples, ranging from 14,89 to 51,86 for the Price-to-Earnings ratio, 5,04 to 17,92 for the EV/EBITDA, 11,57 to 50,16 for the EV/EBIT and 0,70 to 6,02 for the EV/Sales ratios. (Bloomberg L.P. n.d.):

These multiples above were used to estimate ARM Holdings plc. share price and enterprise value. Taking ARM Holdings financial results into consideration the multiple values produced the various result as seen in exhibit TN 6.

The results of the Comparable Company analysis show major differences in the valuation of ARM Holdings plc. Only maximum multiples of the peer group come close the DCF results. Differences between the Multiple Valuation and Discounted Cash Flow (DCF) valuation often arise due to the fundamental variances in their methodologies and underlying assumptions. Multiple valuations rely on market-based metrics derived from comparable companies, emphasizing relative performance within an industry. In contrast, DCF focuses on forecasting future cash flows, demanding detailed projections and discounting them to present value. (Bloomberg L.P. n.d.)

First and foremost, multiple valuations mirror prevailing market sentiment, often influenced by short-term fluctuations, market trends, or even investor behavior, thereby leading to nuanced variations. Second, the inherent assumptions and inputs in the DCF model, including growth rates, discount rates, and terminal values, might diverge significantly from market expectations, consequently impacting the final valuation outcome. The DCF model's sensitivity is noteworthy, given that even slight alterations in long-term growth rates or discount rates can lead to significant disparities in the valuations produced. Additionally, the divergence in the nature of these valuation techniques is evident: multiple valuations amalgamate historical and existing performance, whereas DCF predominantly hinges on future forecasts.

However, integrating perspectives from both multiple valuation and DCF analyses can provide a more nuanced and comprehensive view of a company's true value, facilitating better-informed decisions for stakeholders. (Goedhart, Koller und Wessels 2005)

4.3 Strategic Decision Assessment and Integration Challenges

SoftBank's initial strategic decision assessment was to optimize diversification in its portfolio by adopting Arm's technology to leverage it in other portfolio businesses and create overall synergies in its ecosystem. SoftBank's Vision Fund already consisted mainly of fintech, health tech and logistics companies in 2016, all of which could benefit from its technology.

SoftBank is traditionally seen as a telecoms and internet services company that wanted to utilize Arm's expertise in the semiconductor industry to quickly gain a foothold in this market to address the growing IoT presence. SoftBank was able to take advantage of and adjust to the increasing demand for connected devices, the Internet of Things, and emerging technologies like artificial intelligence thanks to ARM's inventive technologies, especially in energy-efficient chip designs. SoftBank actively shaped the future technological landscape by focusing on this strategic area. (Arm Holdings plc n.d.).

SoftBank's current technology and financial resources could be combined to speed up future growth and development, increasing revenue for the combined business to reach a level of accelerated innovation.

Furthermore, at the time of the acquisition both companies had a shared vision, which included the growing presence of technology in the future. SoftBank took a bet with the acquisition of Arm on the rising presence of IoT, automotive, smart home and many other chip-based technology segments. If the bet paid off, SoftBank would be in a dominant position to leverage Arm's unrivaled capabilities for its own purposes. SoftBank also wanted to diversify its portfolio by expanding into the semiconductor structure to reduce the potential risks of defaults or economic fluctuations. The company, which has a strong affinity for telecommunications

and fintech, thus built up a completely new strand for risk management. Through the integration of ARM's semiconductor business into SoftBank's pre-existing infrastructure, the acquisition allowed the latter to realize economies of scale. Realizing cost reductions could be possible by pooling resources, coordinating R&D activities, and streamlining processes.

These strategic evaluations emphasized SoftBank's all-encompassing strategy to the acquisition, which included risk management, innovation, market positioning, and global reach. Synergies were created by both companies via strategic integration, sustainable resource utilization, and effective execution.

To achieve these goals, there were several integration hurdles that had to be overcome.

An essential aspect was the cultural integration of both companies. SoftBank, a Japanese conglomerate, and Arm, a British semiconductor architect, represented different corporate cultures. Effective collaboration was only possible if communication and tolerance prevailed on both sides. Son emphasized in several interviews that he holds enormous respect for the British culture and would embrace it to the best of his ability. Another hurdle was aligning the two technology spectrums. Integrating ARM's chip design capabilities into SoftBank's broader technology ecosystem was a challenge, and structured planning was required to create a seamless transition. SoftBank was faced with a new set of restrictions after acquiring a new portfolio sector. In addition to making sure that all applicable semiconductor industry rules were followed, SoftBank also had to take care of any antitrust issues that surfaced throughout the clearance process.

Talent retention and recruitment programs were also not expected to be affected by the integration process. The goal was to retain new talents at ARM to strengthen the newly created entity and retain the existing talent to the company. Son continued to pursue the plan to expand the existing headquarters in the UK SoftBank needed to navigate these integration difficulties

to be able to accomplish the desired synergies and strategic advantages of the ARM purchase. (SoftBank Group Corp. 2016)

5 Epilogue

The acquisition of ARM Holdings by SoftBank in 2016 set the stage for significant changes in the technology landscape. Following the acquisition, ARM continued to expand its presence and influence in the semiconductor sector. SoftBank's strategic support allowed ARM to focus on investing more in research and development, while increasing its efficiency and therefore reducing overall R&D head costs, accelerating its global expansion, and diversifying its technological offerings.

Post-acquisition, ARM's revenues witnessed steady growth, aligning with projections made during the valuation process. Additionally, the acquisition facilitated ARM's integration within SoftBank's expansive network. ARM's innovative chip technologies were leveraged across various industries, including consumer electronics, smartphones, IoT, augmented reality, and autonomous driving.

Nvidia, a prominent American technology company, announced plans to acquire ARM from SoftBank in 2020, aiming to combine Nvidia's capabilities in artificial intelligence (AI) with ARM's strength in chip design. However, this acquisition faced regulatory hurdles due to antitrust concerns in various countries. Finally, Softbank brought back a part of ARM to the publich as it announced plans for an IPO on the NASDAQ exchange in April 2023. (Sweney 2022) (CNBC 2023)

6 Suggested Assignment Questions

The following questions will address the predicted pedagogical objectives mentioned before:

- What were the key strategic motivations for SoftBank's acquisition of ARM, and how did they align with SoftBank's broader technology investment strategy?

- "SoftBank's acquisition of ARM Holdings involved purchasing ARM's shares at a 42% premium over its stock price. As a financial analyst, how would you assess the fairness of the premium offered by SoftBank for ARM's shares? Use a valuation method, such as a discounted cash flow (DCF) analysis or a comparable company analysis (multiple valuation), to determine whether the acquisition price was justified. Consider the financial and operational factors that should be considered in your analysis."
- Should Softbank proceed with this acquisition and what will it mean for them?
- Identify the challenges that SoftBank faced in integrating ARM into its portfolio. What were the potential pitfalls, and how did SoftBank mitigate them?

7 Teaching Plan

Based on the pedagogical objectives and the positioning a proposed teaching plan was created to give structure to professors and teaching assistants. The total time allotted for the completion of this case study should take no more than three hours (two classes). It is advisable to hold the classes back-to-back in order not to lose the students' attention and focus.

Time Frame: 20 minutes	**Section 1: Introduction and Overview** • Briefly recap the case study and its significance in the context of M&A and technology • Summarize the key elements of the ARM Holdings acquisition by SoftBank. • Explain the learning objectives and the structure of the session
Time Frame: 30 minutes	**Section 2: Strategic Thinking and Decision Making** • Introduce motives to merge and acquire • Discuss the strategic motivations behind SoftBank's acquisition of ARM and its alignment with SoftBank's broader technology investment strategy • Analyze the implications, both strategic and financial, for SoftBank following the acquisition • Engage students in a group discussion to evaluate the strategic significance of the acquisition and its impact on the tech industry

Time Frame: 80 minutes	**Section 3: Financial Modeling and Valuation Techniques** • Dive into the financial modeling aspects of the case study, focusing on DCF and multiple valuation methodologies • Present the Discounted Cash Flow (DCF) analysis and guide students through the assumptions made for forecasting ARM's future performance and synergies expected from this transaction • Discuss the application of valuation methods like DCF and Comparable Company Analysis (CCA), and calculated expected synergies that could arise from this acquisition • Conduct an interactive session allowing students to work on valuation exercises based on the provided financial data and assumptions.
Time Frame: 20 minutes	**Section 4: Macro- and Microeconomic Implications and Integration Challenges** • Discuss the integration challenges faced by SoftBank while merging ARM into its portfolio • Engage students in a debate or case discussion on how SoftBank might have mitigated these challenges
Time Frame: 30 minutes	**Section 6: Conclusion and Q&A** • Recap the key points and takeaways from the case study, emphasizing strategic, financial, and geopolitical aspects • Open the floor for a Q&A session, encouraging students to ask questions and share insights

Figure 1: Proposed Teaching Plan

The outlined teaching plan is structured to ensure comprehensive coverage of the case study's essential aspects within the allocated timeframe. Adjustments in time allocation for each section can be made based on the engagement and pace of the class discussion.

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Appendix

Exhibit TN 1: DCF Valuation without Synergies

		Actual			Projection				
		2013A	2014A	2015A	2016P (Y1)	2017P (Y2)	2018P (Y3)	2019P (Y4)	2020P (Y5)
Sales		714,60	795,20	968,30	1.171,64	1.323,96	1.570,07	1.845,30	2.147,43
			11%	*22%*	*21%*	*13%*	*19%*	*18%*	*16%*
Cost of Goods Sold *(as a % of sales)*		-39,30	-37,80	-39,30	-55,89	-65,06	-79,46	-96,19	-115,30
		5,50%	4,75%	4,06%	4,77%	4,91%	5,06%	5,21%	5,37%
Gross Margin		**675,30**	**757,40**	**929,00**	**1.115,75**	**1.258,90**	**1.490,61**	**1.749,11**	**2.032,13**
Research and development	*28%*	-202,90	-224,20	-278,00	-292,91	-304,51	-314,01	-369,06	-429,49
		28%	28%	29%	25%	23%	20%	20%	20%
SGM&A		-217,60	-224,20	-244,90	-257,76	-251,55	-266,91	-258,34	-236,22
		30%	*28%*	*25%*	*22%*	19%	17%	14%	11%
Exceptional Items		-101,30	0,00	0,00	0,00	0,00	0,00	0,00	0,00
EBITDA		**154,09**	**309,56**	**406,64**	**565,55**	**703,26**	**910,05**	**1.122,04**	**1.366,74**
Depreciation & Amortization	*4,24%*	-28,00	-35,60	-42,00	49,73	56,19	66,64	78,32	91,14
Operating EBIT		**126,09**	**273,96**	**364,64**	**615,27**	**759,45**	**976,69**	**1.200,36**	**1.457,88**
Interest Expenses and similar expenses		-0,20	-0,30	-0,30	-0,30	-0,30	-0,30	-0,30	-0,30
Other Income		13,30	11,30	12,10	11,62	11,16	11,12	10,82	10,56
			-15%	*7%*	*-4%*	*-4%*	*0%*	*-3%*	*-2%*
Other Expenses		-4,00	-3,50	-3,10	-2,73	-2,41	-2,12	-1,87	-1,65
			-13%	*-11%*	*-12%*	*-12%*	*-12%*	*-12%*	*-12%*
EBT		**135,19**	**281,31**	**373,41**	**623,82**	**767,86**	**985,39**	**1.208,98**	**1.466,47**
Taxes *(as a % of EBT)*	*19%*	-57,80	-61,10	-75,10	-118,53	-145,89	-187,22	-229,71	-278,63
Net Operating Profit After Taxes		**77,39**	**220,21**	**298,31**	**505,30**	**621,96**	**798,16**	**979,27**	**1.187,84**
Net Working Capital	*73%*	499,80	610,60	685,80	849,64	960,10	1.138,57	1.338,16	1.557,26
Change in Net Working Capital				110,80	75,20	163,84	110,45	178,48	199,59
Operating Cash Flow		**105,39**	**366,61**	**415,51**	**619,41**	**676,23**	**910,00**	**1.100,54**	**1.315,79**
Capital Expenditures *(as a % of sales)*		-45,30	-30,40	-41,00	-45,00	-45,00	-45,00	-45,00	-45,00
Unlevered Free Cash Flow		**60,09**	**336,21**	**374,51**	**574,41**	**631,23**	**865,00**	**1.055,54**	**1.270,79**
Discount Rate (WACC)		*10,84%*							
Terminal Value Growth Rate		*5,86%*							
Time					1	2	3	4	5
Discounted Cash Flow				**374,51**	**518,22**	**513,77**	**635,18**	**699,27**	**759,52**

(Arm Holdings plc 2016) (Arm Holdings plc 2015) (Bloomberg L.P. n.d.)

Exhibit TN 2: DCF Enterprise Value Calculation

Enterprise value without perpetuity	3.500,48
Terminal value present value	16.145,76
Enterprise value with perpetuity	**19.646,24**

Exhibit TN 3: DCF Share Price Calculation

Enterprise Value	19.646,24
Debt	11,30
Equity Value	**19.634,94**
Outstanding Shares (mil, diluted	1.420,30
Value per Share	**13,82**
Price paid by Acquirer (per share)	17,00
Premium	**23%**

Exhibit TN 4: DCF Enterprise Value Calculation

	Discount Factor (WACC)							
Terminal Value Growth Rate	**19.646,24**	8,00%	9,00%	10,00%	10,84%	11,00%	12,00%	13,00%
	3,00%	21.591,50	17.852,88	15.188,78	13.475,43	13.196,01	11.650,57	10.418,08
	4,00%	26.261,86	20.853,75	17.255,38	15.044,17	14.690,85	12.772,26	11.284,08
	5,00%	34.045,79	25.355,06	20.148,61	17.149,91	16.683,98	14.214,42	12.366,58
	5,86%	46.614,80	31.544,58	23.768,69	**19.646,24**	19.027,11	15.836,33	13.544,28
	6,00%	49.613,65	32.857,25	24.488,45	20.125,30	19.474,35	16.137,31	13.758,37
	7,00%	96.317,22	47.861,62	31.721,53	24.649,28	23.659,90	18.829,35	15.614,09
	8,00%	#DIV/0!	92.874,75	46.187,69	32.356,13	30.635,83	22.867,41	18.212,09

Exhibit TN 5: DCF Valuation Synergy Calculation and Equity Value Calculation

Year	2013A	2014A	2015A	2016P (Y1)	2017P (Y2)	2018P (Y3)	2019P (Y4)	2020P (Y5)
Revenue	714,60	795,20	968,30	1171,64	1323,96	1570,07	1845,30	2147,43
Revenue synergies								
Achievement (in %)				33%	60%	82%	90%	100%
Incremental revenue synergies	15,00%			58,00	119,16	193,12	249,12	322,12
Taxes	19,00%			11,02	22,64	36,69	47,33	61,20
Revenue synergies after tax				46,98	96,52	156,43	201,78	260,91
Terminal value (g=1.3%)	5,86%							5.546,45
Discount rate (cost of equity)	10,84%							
Discounted revenue synergies				**42,38**	**78,56**	**114,87**	**133,68**	**3.470,91**
Cost synergies								
Achievement (in %)				65%	100%	100%	100%	100%
Incremental cost synergies (3% of Revenue)	3,00%			22,85	39,72	47,10	55,36	64,42
Taxes	19,00%			4,34	7,55	8,95	10,52	12,24
Cost synergies after tax				18,51	32,17	38,15	44,84	52,18
Terminal value (g=1.3%)	5,86%							1.109,29
Discount rate (cost of debt)	10,84%							
Discounted cost synergies				**16,70**	**26,19**	**28,02**	**29,71**	**694,18**
PV Free Cash Flows incl. PV Terminal Value			**374,51**	**518,22**	**513,77**	**635,18**	**699,27**	**16.905,28**
Discounted Cash Flows (with synergies)			**374,51**	**577,30**	**618,52**	**778,06**	**862,66**	**21.070,38**

Enterprise value with perpetuity	**19.646,24**
Total synergies with perpetuity	4.635,18
Enterprise value with synergies	**24.281,42**
Debt	11,30
Equity value	**24.270,12**
Outstanding shares (mil, diluted)	1.420,30
Value per share	**17,09**
Offer price by acquirer	17,00
Premium	**-0,515%**

Exhibit TN 6: Multiple Valuation

Trading Multiples 2015

	Price-to-Earnings	EV/EBITDA	EV/EBIT	EV/Sales
Mean	25,43x	12,05x	22,67x	3,29x
Median	18,24x	13,35x	18,76x	3,85x
Min	14,89x	5,04x	11,57x	0,79x
Max	51,86x	17,92x	50,16x	6,02x

Estimated Enterprise Value 2015

	Price-to-Earnings	EV/EBITDA	EV/EBIT	EV/Sales
Mean	8.718,45	5.507,15	9.408,26	3.188,06
Median	6.254,12	6.102,20	7.788,64	3.731,80
Min	5.104,61	2.305,04	4.801,69	767,61
Max	17.778,92	8.189,99	20.821,64	5.824,68

Estimated Share Price 2015

	Price-to-Earnings	EV/EBITDA	EV/EBIT	EV/Sales
Mean	6,14	3,88	6,62	2,24
Median	4,40	4,30	5,48	2,63
Min	3,59	1,62	3,38	0,54
Max	12,52	5,77	14,66	4,10

(Bloomberg L.P. n.d.)

Exhibit TN 7: Yearly Market Returns (FTSE100, S&P500, Nikkei 225, Nasdaq Composite, FTSE TechMARK Index)

FTSE 100			**S&P 500**			**Nikkei 225**			**Nasdaq Composite**			**FTSE TechMARK Index**		
Date	Last Price	Yearly Return	Date	Last Price	Yearly Return	Date	Last Price	Yearly Return	Date	Last Price	Yearly Return	Date	Last Price	Yearly Return
12/31/1991	2.493,10		12/31/1991	417,09		12/31/1991	22.983,77		12/31/1991	330,86		12/31/1991		
12/31/1992	2.846,50	14%	12/31/1992	435,71	4%	12/31/1992	16.924,95	-26%	12/31/1992	360,18	9%	12/31/1992		
12/31/1993	3.418,40	20%	12/31/1993	466,45	7%	12/31/1993	17.417,24	3%	12/31/1993	398,28	11%	12/31/1993		
12/30/1994	3.065,50	-10%	12/30/1994	459,27	-2%	12/30/1994	19.723,06	13%	12/30/1994	404,27	2%	12/30/1994		
12/29/1995	3.689,30	20%	12/29/1995	615,93	34%	12/29/1995	19.868,15	1%	12/29/1995	576,23	43%	12/29/1995		
12/31/1996	4.118,50	12%	12/31/1996	740,74	20%	12/31/1996	19.361,35	-3%	12/31/1996	821,36	43%	12/31/1996	914,67	
12/31/1997	5.135,50	25%	12/31/1997	970,43	31%	12/31/1997	15.258,74	-21%	12/31/1997	990,80	21%	12/31/1997	954,02	4%
12/31/1998	5.882,60	15%	12/31/1998	1.229,23	27%	12/31/1998	13.842,17	-9%	12/31/1998	1.836,01	85%	12/31/1998	1.456,01	53%
12/31/1999	6.930,20	18%	12/31/1999	1.469,25	20%	12/31/1999	18.934,34	37%	12/31/1999	3.707,83	102%	12/31/1999	3.779,41	160%
12/29/2000	6.222,50	-10%	12/29/2000	1.320,28	-10%	12/29/2000	13.785,69	-27%	12/29/2000	2.341,70	-37%	12/29/2000	2.564,05	-32%
12/31/2001	5.217,40	-16%	12/31/2001	1.148,08	-13%	12/31/2001	10.542,62	-24%	12/31/2001	1.577,05	-33%	12/31/2001	1.472,73	-43%
12/31/2002	3.940,40	-24%	12/31/2002	879,82	-23%	12/31/2002	8.578,95	-19%	12/31/2002	984,36	-38%	12/31/2002	648,78	-56%
12/31/2003	4.476,90	14%	12/31/2003	1.111,92	26%	12/31/2003	10.676,64	24%	12/31/2003	1.467,92	49%	12/31/2003	1.015,01	56%
12/31/2004	4.814,30	8%	12/31/2004	1.211,92	9%	12/31/2004	11.488,76	8%	12/31/2004	1.621,12	10%	12/31/2004	1.196,43	18%
12/30/2005	5.618,80	17%	12/30/2005	1.248,29	3%	12/30/2005	16.111,43	40%	12/30/2005	1.645,20	1%	12/30/2005	1.431,72	20%
12/29/2006	6.220,80	11%	12/29/2006	1.418,30	14%	12/29/2006	17.225,83	7%	12/29/2006	1.756,90	7%	12/29/2006	1.512,38	6%
12/31/2007	6.456,90	4%	12/31/2007	1.468,36	4%	12/31/2007	15.307,78	-11%	12/31/2007	2.084,93	19%	12/31/2007	1.641,08	9%
12/31/2008	4.434,17	-31%	12/31/2008	903,25	-38%	12/31/2008	8.859,56	-42%	12/31/2008	1.211,65	-42%	12/31/2008	1.217,00	-26%
12/31/2009	5.412,88	22%	12/31/2009	1.115,10	23%	12/31/2009	10.546,44	19%	12/31/2009	1.860,31	54%	12/31/2009	1.704,82	40%
12/31/2010	5.899,94	9%	12/31/2010	1.257,64	13%	12/31/2010	10.228,92	-3%	12/31/2010	2.217,86	19%	12/31/2010	2.039,99	20%
12/30/2011	5.572,28	-6%	12/30/2011	1.257,61	0%	12/30/2011	8.455,35	-17%	12/30/2011	2.277,83	3%	12/30/2011	2.064,06	1%
12/31/2012	5.897,81	6%	12/31/2012	1.426,19	13%	12/31/2012	10.395,18	23%	12/31/2012	2.660,93	17%	12/31/2012	2.479,84	20%
12/31/2013	6.749,09	14%	12/31/2013	1.848,36	30%	12/31/2013	16.291,31	57%	12/31/2013	3.592,00	35%	12/31/2013	3.197,32	29%
12/31/2014	6.566,09	-3%	12/31/2014	2.058,90	11%	12/31/2014	17.450,77	7%	12/31/2014	4.236,28	18%	12/31/2014	3.522,00	10%
12/31/2015	6.242,32	-5%	12/31/2015	2.043,94	-1%	12/31/2015	19.033,71	9%	12/31/2015	4.593,27	8%	12/31/2015	4.027,41	14%
25-year-verage		**5,06%**			**8,41%**			**1,89%**			**16,88%**			**15,93%**
15-year-average		**1,24%**			**4,70%**			**5,22%**			**8,53%**			**7,89%**
10-year-average		**2,13%**			**6,86%**			**4,82%**			**13,72%**			**12,28%**
5-year-average		**1,42%**			**10,73%**			**15,70%**			**16,18%**			**14,95%**

(Bloomberg L.P. n.d.)

Exhibit TN 8: Global Semiconductor Growth 1988-2015

1988	36,400%
1989	8,900%
1990	4,100%
1991	7,800%
1992	9,100%
1993	28,300%
1994	32,500%
1995	41,200%
1996	-8,300%
1997	3,800%
1998	-8,000%
1999	18,300%
2000	36,900%
2001	-31,900%
2002	1,400%
2003	17,700%
2004	28,300%
2005	6,600%
2006	8,900%
2007	3,200%
2008	-2,800%
2009	-9,000%
2010	31,800%
2011	0,400%
2012	-2,700%
2013	4,800%
2014	9,900%
2015	-0,200%
Average	**9,91%**

(World Semiconductors Trade Statistics 2023)

Exhibit TN 9: Global Inflation Rate 2000-2015

2000	4,860%
2001	4,580%
2002	3,680%
2003	3,890%
2004	3,800%
2005	4,030%
2006	4,060%
2007	4,290%
2008	6,360%
2009	2,720%
2010	3,690%
2011	5,070%
2012	4,080%
2013	3,620%
2014	3,230%
2015	2,750%
Average	**4,04%**

(International Monetary Fund 2023)

Exhibit TN 10: Government Bond Yields 2015-2023

UK-10-Year Government Bond	
Date	Yearly Return
11/22/2023	4,20%
12/30/2022	3,67%
12/31/2015	1,96%

Japan-10-Year-Government Bond	
Date	Yearly Return
11/22/2023	0,72%
12/30/2022	0,42%
12/31/2015	0,27%

US-3-month-Treasury Yield	
Date	Yearly Return
11/22/2023	5,42%
12/30/2022	4,41%
12/31/2015	0,18%

(Bloomberg L.P. n.d.)

Exhibit TN 11: Beta Calculations ARM Holdings (FTSE100, S&P500, NASDAQ)

ARM Holdings plc X FTSE 100	
Raw BETA	1,170
Adjusted BETA	1,113

ARM Holdings plc X S&P 500	
Raw BETA	1,032
Adjusted BETA	1,021

ARM Holdings plc X NASDAQ	
Raw BETA	0,791
Adjusted BETA	0,861

(Bloomberg L.P. n.d.)

Exhibit TN 12: WACC Calculation and Components

Cost of Equity

	Value
Risk Free Rate as per 31st December 2015	0,27%
Market Rate of Return	13,72%
Raw BETA	79,10%
Cost of Equity	**10,91%**

Cost of Debt

	Value
Cost of Debt	0,19%

Capital Structure

	Amount	Weight
Equity	1.797,60	99,38%
Debt	11,30	0,62%

Tax Rate

	Value
Corporate Tax Rate	19,00%

Weighted Average Cost of Capital

	Value
Cost of Equity	10,91%
Equity Weight	99,38%
Cost of Debt	0,19%
Debt Weight	0,62%
Tax Rate	19,00%
WACC	**10,84%**

Terminal Growth Rate Estimation

	Value
Average Global Industry Growth	9,91%
Average Global Inflation	4,04%
Terminal Value Growth Rate	**5,86%**

(Bloomberg L.P. n.d.) (Bloomberg L.P. n.d.) (Bloomberg L.P. n.d.) (Bloomberg L.P. n.d.) (Bloomberg L.P. n.d.) (Bloomberg L.P. n.d.)

Exhibit TN 13: Comparable Companies Description

Ams-OSRAM AG	AMS Osram AG is an Austrian electronics company that designs and manufactures sensors for small form factor, low power, highest sensitivity, and multi-sensor applications. It is a global leader in intelligent sensors and emitters, offering a unique product and technology portfolio for sensing, illumination, and visualization. (ams OSRAM AG n.d.)
u-blox Holding AG	U-blox Holding AG is a Swiss company that specializes in creating wireless semiconductors and modules for consumer, automotive, and industrial markets. The company is engaged in the development, manufacture, and marketing of products and solutions that enable precise positioning and wireless connectivity for people, vehicles, and machines. U-blox operates as a fabless IC (integrated circuit) and module supplier, and it is considered a global leader in its field with a vital local knowledge of key markets due to its worldwide presence. (u-blox AG n.d.)
Elmos Semiconductor SE	Elmos Semiconductor SE is a German manufacturer of semiconductor products, with its headquarters in Dortmund, Germany. The company specializes in developing, producing, and marketing semiconductors, primarily for use in the automotive industry since 1984. Elmos is known for creating innovative microelectronics-based solutions to enhance people's lives, shape future mobility, and contribute to a greener and safer world. It is considered a leading manufacturer of automotive mixed-signal semiconductors and has been a figurehead for the profound structural change in Dortmund. (Elmos Semiconductor SE n.d.)
Nordic Semiconductor ASA	Nordic Semiconductor ASA is a Norwegian fabless technology company founded in 1983, with its headquarters in Trondheim, Norway. The company specializes in wireless communication technology that powers the Internet of Things (IoT). Nordic Semiconductor is known for designing, marketing, and delivering integrated circuits (ICs) for wireless innovation. (Nordic Semiconductor ASA n.d.)
Melexis N.V.	Melexis N.V. is a global supplier of micro-electronic semiconductor solutions, specializing in the design, development, testing, and marketing of integrated circuits for automotive electronics systems. Melexis offers a wide range of semiconductor integrated circuits, covering various sensor technologies, drivers, and transceivers. Their products find applications in diverse industries, including automotive, industrial, and IoT sectors. The company focuses on enabling the best imaginable future through its innovative solutions and commitment to excellence. (Melexis N.V. n.d.)
STMicroelectronics N.V.	STMicroelectronics N.V. is a multinational corporation and technology company of French-Italian origin that is headquartered in Plan-les-Ouates near Geneva, Switzerland. It is a global semiconductor company that creates semiconductor technologies for a smarter, greener, and more sustainable future. The company develops and markets a wide range of products, including discrete and integrated circuits. Their products are to be found in products as diverse as electric cars and key fobs, giant factory machines and data centers, washing machines and hard disks, and smartphones and toothbrushes. (STMicroelectronics N.V. n.d.)
Infineon Technologies AG	Infineon Technologies AG is Germany's largest semiconductor manufacturer, (50,280 employees), making it one of the ten largest semiconductor manufacturers worldwide. The company is a global leader in power systems and IoT, enabling solutions for green and efficient energy, clean mobility. Infineon designs, develops, manufactures, and markets application-specific ICs, positioning itself as a semiconductor solutions provider for communi-cations, auto and memory markets. (Infineon Technologies AG 2002)
NXP Semiconductors N.V.	NXP Semiconductors N.V. is a Dutch semiconductor designer and manufacturer headquartered in Eindhoven, Netherlands. The company employs approximately 31,000 people in more than 30 countries. NXP focuses on designing purpose-built, rigorously tested technologies that enable devices to sense, think, connect, and act intelligently to improve people's daily lives. As a world leader in secure connectivity, NXP aims to enable a smarter, safer, and more sustainable world through innovation in sectors like

	automotive, communication, industrial, mobile, smart city and smart home. (NXP Semiconductors N.V. n.d.)

(Melexis N.V. n.d.) (NXP Semiconductors N.V. n.d.) (Nordic Semiconductor ASA n.d.) (STMicroelectronics N.V. n.d.) (ams OSRAM AG n.d.) (u-blox AG n.d.) (Elmos Semiconductor SE n.d.) (Infineon Technologies AG 2002)

Exhibit TN 14: Comparable Companies Financial Performance

	ams-OSRAM AG	u-blox Holding AG	Elmos Semi-conductor SE	Nordic Semi-conductor ASA	Melexis N.V.	STMicro-electronics N.V.	Infineon Technologies AG	NXP Semiconductors N.V.
Revenue	691,65	351,73	243,79	193,07	444,15	6.897,00	6.657,53	6.101,00
EBITDA	214,73	78,96	56,63	43,41	144,76	845,00	1.510,73	2.532,00
EBIT	161,53	53,32	24,69	34,98	119,44	109,00	637,61	2.015,00
Current Assets	370,58	219,83	172,13	122,51	215,30	4.680,00	4.601,39	4.812,00
Cash/Cash Equivalents	112,55	112,42	54,33	29,29	80,23	1.771,00	752,55	1.614,00
Current Liabilities	266,87	55,42	50,22	45,34	58,68	1.560,00	1.772,35	2.548,00
Debt	299,39	59,30	40,01	10,00	16,50	1.612,00	2.004,93	9.212,00
Market Cap	2.477,47	1.443,10	342,97	797,12	2.183,96	5.900,50	12.559,17	28.813,75
Enterprise Value	2.620,78	1.378,32	285,55	777,82	2.120,24	5.467,50	12.314,28	36.699,75
Earnings-Per-Share	0,88	5,77	0,91	0,15	2,72	0,12	0,64	6,36
Shares Outstanding	200,28	6,73	19,73	162,44	40,05	878,54	1.123,27	342,00
Share Price	13,09	204,93	14,47	4,79	52,93	6,22	10,96	107,31
Price-to-Earnings	**14,89**	**35,52**	**15,90**	**31,92**	**19,45**	**51,86**	**17,04**	**16,87**
EV/EBITDA	**12,21**	**17,46**	**5,04**	**17,92**	**14,65**	**6,47**	**8,15**	**14,49**
EV/EBIT	**16,23**	**25,85**	**11,57**	**22,24**	**17,75**	**50,16**	**19,31**	**18,21**
EV/Sales	**3,79**	**3,92**	**1,17**	**4,03**	**4,77**	**0,79**	**1,85**	**6,02**

(Bloomberg L.P. n.d.)

Navigating ARM's IPO: Lessons in Market Dynamics and Strategic Decision-Making

Case Study Charlotte Kaut (53210)

1 Introduction

This case study focuses on ARM's initial public offering (IPO) in September 2023, which has been one of the most notable in the technology industry in recent years. In 2016, SoftBank (SoftBank Group Corp.), a global technology conglomerate, acquired in a cash-only buyout the UK-based company ARM (originally ARM Holding plc.) – the *"crown jewels of British technology"* (Jack, S. 2020) for a $32 billion transaction price. This strategic decision was not just a turning point in technical history; it was also critical to SoftBank's position in the rapidly developing field of semiconductor and chip research. SoftBank tried to diversify its portfolio through technological adoption in their own firms to decrease sector risks, increase existing portfolio companies, and acquire ARM's semiconductor competence. ARM considered SoftBank's financial support and shared perspectives as an opportunity to strengthen its research and development department and achieve rapid and efficient growth. Although ARM was already represented in 99% of cell phones with their CPU chips at that time, the company was striving for innovation progress on the Internet of things (IoT) (SoftBank Group Corp., 2016). Because SoftBank thought that an off-market investment approach would be more achievable in terms of long-term growth ARM was never publicly listed, either in London or on the US-NASDAQ (BBC news, 2023). After seven years of offshore expansion, SoftBank intended to return to the US Stock Exchange in July 2023 to reestablish ARM's market value.

2 The time after the acquisition

Following the acquisition in 2016, SoftBank concentrated all its efforts on marketing ARM's revolutionary capabilities. The emphasis was on refining the chip technology to integrate it into a broader range of end devices for IoT, AI (Artificial Intelligence), and autonomous driving.

In 2017 SoftBank launched its Vision Fund I (SVF1), which represents a vintage venture capital fund investing in AI, robotics, deep learning and the IoT market. The fund's goal was to invest up to $100 billion in creative start-ups and tech companies using equity and capital loans of anker investors, the Saudi Arbian investment funds and the Abu Dhabi's Mubadala Investment Company, to set up a unique ecosystem (Pitchbook, n.d.). Along with the incorporation of other technology businesses such as OneConnect and NVIDIA, a 25% stake of ARM was added to the portfolio to benefit from the advantages of the conglomerate and its investments. Masayoshi Son, CEO of SoftBank commented as follows:" *We believe constant evolution is our most powerful competitive advantage"* (SoftBank Vision Fund, n.d.). SoftBank focused on strategic alliances with ARM, NVIDIA, and NXP Semiconductors in addition to streamlining the licensing business. The collaboration was built on ARM-licensed technology in direct manufacturers NVIDIA or NXP chips. On September 13, 2020, NVIDIA and SoftBank announced that NVIDIA will acquire ARM in a transaction valued $40 billion. By combining NVIDIAs AI computing platform and ARMs ecosystem, Jensen Huang, CEO, and founder of NVIDIA wanted to create a premier computing company in the age of AI (Caulfield, B.2020).

"In the years ahead, trillions of computers running AI will create a new internet-of-things that is thousands of times larger than today's internet-of-people. Our combination will create a company fabulously positioned for the age of AI." (Huang, J., 2020).

In 2022, the takeover was prevented by US antitrust regulators – the Federal Trade Commission (FTC) and other powerful companies such as Google, Microsoft, and Qualcomm with the following justification:

"The combined firm would have the means and incentive to stifle innovative next-generation technologies, including those used to run datacenters and driver-assistance systems in cars."

This statement was intended to preserve the neutrality of ARM's licensing process. As a result, NVIDIA would be in direct rivalry with other customers and may acquire an edge over the competition (Iyengar, Rishi, 2022).

A further growth strategy followed quickly. Despite the failure of the takeover and strategic cooperation, SoftBank stated in August 2023 that it will look for an initial IPO of ARM on the US-NASDAQ rather than at the London Stock Exchange, where the headquarters is situated. Following the unsuccessful acquisition of NVIDIA, ARM changed its margin-generating license strategy to enhance its internal balance sheet. A valuation of $60 billion was intended for, but no issue price was revealed until just before the IPO in September.

3 The renewed Initial Public Offering of ARM

Not only private investors, but also Apple, Samsung, Alphabet, Nvidia, AMD, and Intel, want to take shares in chip creator ARM - but why? Before the IPO on September 13, 2023, many analysts speculated about ARMs NASDAQ valuation based on its issuing price. SoftBank was rumored to be internally assuming an off-market valuation of up to $70 billion, which would have been an outstanding deal in comparison to the $32 billion purchase price in 2016. With the unsuccessful sale to NVIDIA in 2020 for an estimated $40 billion, SoftBank is attempting to capitalize from the AI trend and raise the company's value through an IPO. To preserve a strong relationship with ARM, future anchor investors like Apple, Samsung, and Alphabet sought to obtain share packages valued between $25 and $100 million in advance. Because of the early hype, experts considered a higher issue price than the intended range of $47 to $51.

> *“In the short term, growth at ARM will only come from increasing license fees for mobile devices, not from AI. In the long term, ARM will focus on AI, but at the moment it's not a major part of the business model."*(Kharpal, A. 2023).

Said Jamie Mills O Brien, Head of investment of the Scottish investment bank Abrdn. Some investors are optimistic that ARM will follow in the footsteps of NVIDIA this year. Within the past year alone, the share price has increased by 203%. In 2023, the price/earnings ratio increased from 59.37 in 2022 to 116.89 (Wallstreet Journal, 2023). Investors should keep in mind, however, that ARM still has a considerably lower market share and is not involved in high-performance processors such as GPUs, which will be the foundation of the next AI generation.

Before the initial IPO, SoftBank bought back the outstanding 25% of ARM stake that it had sold to its Vision Fund in 2017 for about $64 billion (Sen A. 2023). The proceeds from the 25% stake allowed SoftBank to generate capital growth for additional investment networks (Alpeyev, P., Nair, D., 2017). ARM's upcoming Initial Public Offering (IPO) coincided with yet another sluggish IPO year (Figure 2). Following an unprecedented record year in 2021, during which the United States alone witnessed an impressive 416 IPOs with a total volume exceeding $155 billion, offerings markedly declined in 2022. EY reports a daunting 78% decline in the number of IPOs and a staggering 94% decline in the issue volume in the US (Chan, G. 2023). Before its initial public offering, SoftBank sold shares of ARM Holdings (ARM), at $51 each. On September 14, the first day of trading, ARM's share price increased by almost 25%. At the start of trading, ARM's value was approximately $60 billion. ARM sold around 95.5 million of its shares. Roughly 90% of the existing shares are still under the ownership of SoftBank. The price of ARM's shares was at the upper end of the anticipated range the day before the IPO. Following the announcement, the stock opened at $56.10 and ended the day at $63.59.

Market opinion is divided, with experts stating that the valuation was overrated like Daniel Morgan, Senior Portfolio Manager at Synovus Trust:

" With the deal six times oversubscribed, it looks like investors treated the ARM IPO like a KI game and forgot to look at the price tag" (Morgan, D., 2023).

According to the latest estimates from Gartner, Inc., there will be better times to go public in the semiconductor business by the beginning of 2023. The global semiconductor market's short-term fundamentals imply an 11.2% revenue drop in 2023. The market is expected to exceed $599.6 billion in 2022, reflecting a 0.2% increase over 2021 (Figure 1).

The semiconductor industry's decline will accelerate this year due to an excess of chips, which will push down chip prices and raise inventory levels. The PC, tablet, and smartphone semiconductor markets are all stagnating. The combined markets are expected to contribute $167.6 billion, or around 31% of semiconductor sales, by 2023. Due to market saturation, such large-scale markets have evolved into replacements with no revolutionary technological advances (Gartner, Inc. 2023). Private wealth manager Bernstein commented on ARM's valuation:

"The market for cell phones is saturated, increasing competition and direct competition from China make the share appear overvalued" (Heibel S., 2023).

3.1 Proportionate IPO as market launch strategy

SoftBank, as the holding company, decided before the IPO that only 10% of ARM's shares would be available for free trading, which represents around 9% of the company's capital. The holding company will retain the remaining 91% of the shares temporarily. No official reasons have been disclosed, but there are several justifications for a pro rata IPO.

SoftBank stated its intention to raise more capital through an estimated $4.87 billion issuance upon release of 10% of the shares. For SoftBank, ARM was its first portfolio company in its Vision Fund based in the Semiconductor segment. The tech group therefore also had to deal with market acceptance. Another significant factor is ARM's challenging dominance,

particularly in the sales industry in China. SoftBank retains no portion of its subsidiary ARM China, which is 52% controlled by Chinese investors. The structural and technology disagreement between Beijing and Washington makes it difficult for SoftBank to influence China's distribution structure. SoftBank, as the main stakeholder, may keep an eye on the balance between the Chinese and the rest of the semiconductor industry (Bloomberg, 2023).

Another aspect could be the minimalization of volatility in the share price. Through sales in a portion of ARM in various stages, large changes can be prevented. Given that ARM must face revenue decreases in 2023, a partial IPO may be an alternative to test market resonance and progressively place additional shares to raise the entire value of the firm (ARM, 2023).

SoftBank may have opted against an "all-in" investment due to continuously high interest rates, a drop in sales across the whole semiconductor market, and macroeconomic uncertainty. The partial placement protects ARM from market volatility and maintains its financial flexibility (Beltran, L., 2023). It should also be noted that a partial IPO allows the company to reach new investors and to attract the interest of institutional investors. Since ARM was first listed in the 1990s and has been privately traded since 2016, a certain level of market acceptance must be achieved, also in terms of the economic cycle. After the initial IPO, SoftBank may then decide to place additional shares in ARM to raise further capital.

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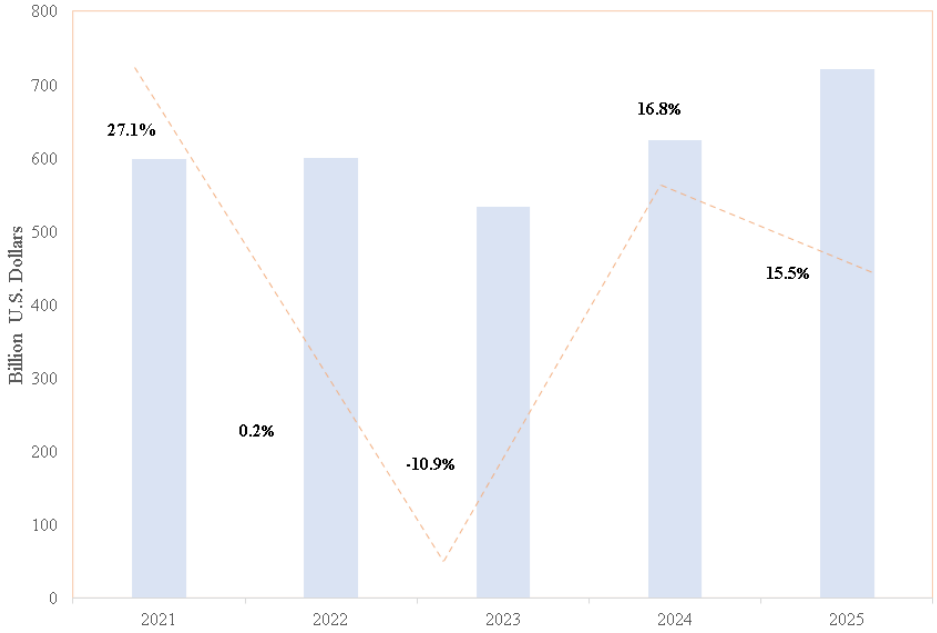
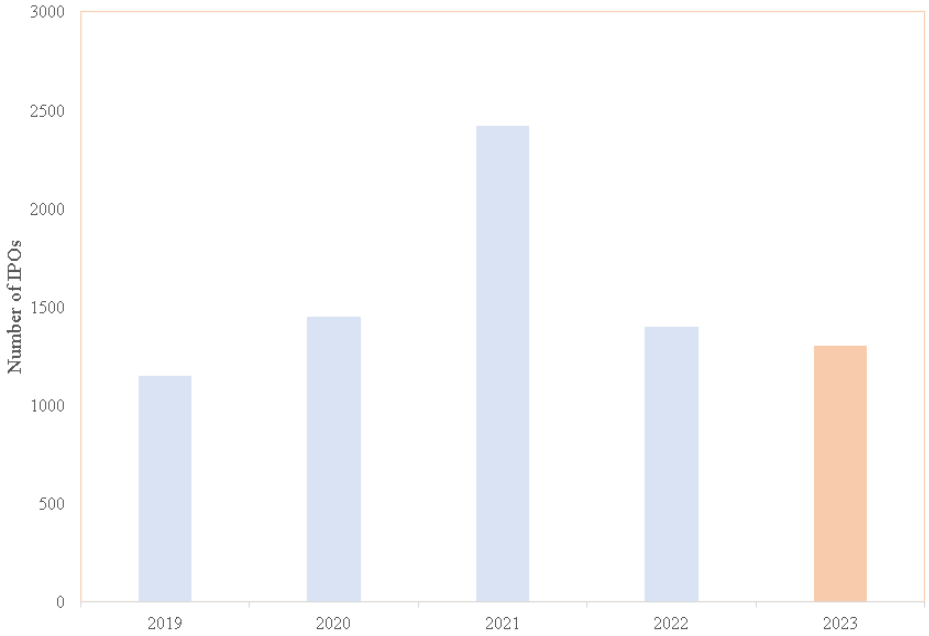
Appendix

Exhibit CKCS 1: Semiconductor Market Performance Outlook



(Ernst & Young, 2023)

Exhibit CKCS 2: IPO Performance 2019-2023



(Ernst & Young, 2023)

Exhibit CKCS 3: ARM Holdings Income Statement 2021-2023

	Actual		
	2021	2022	2023
Net Revenues	**2.027**	**2.703**	**2.679**
Growth in %	-	33%	-1%
Cost of Revenue	(145)	(131)	(106)
Growth in %	-	-10%	-19%
Gross Profit	**1.882**	**2.572**	**2.573**
Operating Expenses (incl. D&A)	(1.643)	(1.939)	(1.902)
Growth in %	-	18%	-2%
EBIT	**239**	**633**	**671**
D&A	201	185	170
Growth in %	-	-8%	-8%
EBITDA	**440**	**818**	**841**
D&A	(201)	(185)	(170)
Growth in %	-	-8%	-8%
EBIT	**239**	**633**	**671**
Interest Income	2	2	42
Growth in %	-	0%	2000%
Other Income	456	151	(42)
	476	141	(45)
	(20)	10	3
Growth in %	-	-70%	-132%
Profit Before Tax	697	786	671
Income Tax	(153)	(110)	(147)
19% of Profit before tax	-	-28%	34%
Net Income	**232**	**422**	**524**

(ARM Holdings plc.2023)

Navigating ARM's IPO: Lessons in Market Dynamics and Strategic Decision-Making

Teaching Note Charlotte Kaut (53210)

1 Synopsis

This teaching note examines the financial characteristics of ARM's September 2023 IPO (Initial Public Offering), supplying a detailed assessment of the strategic choices, and financial judgments that defined ARM's transition from a privately owned to a publicly traded company.

SoftBank purchased the *"crown jewels of British technology"* -ARM Holdings (Jack, S. 2020), in 2016 with a cash-only buyout approved by both sides at a $32 billion valuation. Both entities, SoftBank and ARM Holdings, aimed at achieving individual synergies through a merger. SoftBank's objective was to acquire ARM's distinctive CPU (Central Processing Unit) technology and its licensing framework to highlight its superior position and dominance in the emerging IoT (Internet of Things) sector (SoftBank, 2016). ARM viewed SoftBank's financial support and shared outlook as a chance to enhance its research and development division and ease rapid and efficient growth. After the acquisition ARM was delisted from the London and New York Stock Exchanges. Considering the competitive market environment and macroeconomic trends, the complexity of the IPO is illustrated. Market trends, intermediate growth strategies, and the competitive environment are examined to emphasize the strategic acumen necessary in scheduling such a financial event. Students should pay particular attention to the (fair) valuation of the company under the assumptions given of the issued share price.

2 Positioning

The IPO provides a critical opportunity for students studying finance or management with an emphasis on Mergers, Acquisitions, and Restructuring to obtain a deeper knowledge of the interacting strategies between target and acquirer. In this section of the case study, students will conduct a qualitative study of the extent to which the pre-market value is connected to the

share price at initial public offering. Students will also be challenged to identify the various growth strategies that SoftBank has utilized to strengthen ARM's technology in the market. By making precise assumptions and estimates about ARM's future performance, students will gain an in-depth understanding of the semiconductor industry and further market trends. Analytical thinking abilities are essential for making successful business decisions.

3 Pedagogical Objectives

The ARM IPO case study combines strategic, financial, and macroeconomic components to achieve varied instructional goals. This research will investigate the involvements of mergers and acquisitions in the technology sector, deconstructing motives, financial models, and the influence of the demand for semiconductors.

- **Assessing different growth strategies:** Examine the different growth strategies of ARM over time, starting with the acquisition by SoftBank, followed by the unsuccessful takeover by NVIDIA and finally the IPO.
- **Initial Public Offer Valuation:** Prepare a pre-market valuation to analyze a fair price by considering given and individually made assumptions.
- **Reasoning for IPO:** Discuss the reasons for the renewed IPO of ARM. Evaluate benefits of an IPO for a company and its potential.
- **Partial market flotation:** Evaluate reasons why SoftBank itself remains the largest shareholder of ARM and only sold 10% of the company.

4 Analysis

4.1 The renewed IPO in 2023

In a time of rising interest rates, decreasing consumer spending and economic and geopolitical market uncertainty, SoftBank decided to take Arm public again after seven years of private activity - but why exactly now? Son Masayoshi, CEO of SoftBank argued as follows:

"AI continues to evolve towards superintelligence – We searched for ARM, concluded its value, and integrated ARM into our ecosystem. Through the continuous development of the IoT and its global presence, we create value with ARM that creates sustainable development. With the upcoming publication, we will all be able to take part in the development." (Son, Masayoshi, 2023).

Through ARMs delisting in 2016 SoftBank aimed to enable a more efficient integration into its corporate structure. After the successful acquisition ARM managed to steadily grow revenues till 2022 (Figure CKTN 2), also due to the increase in R&D investments by SoftBank. After 4 years of process optimization, expanding the license model, and the chip technology through the integration of new processors, ARM received a $40 billion acquisition offer from NVIDIA. SoftBank was willing to sell, but the deal was banned by the U.S. Federal Trade Commission (FTC) due to antitrust concerns (Hofer, J. 2021).

After the unsuccessful acquisition, a certain saturation of the CPU market has already been achieved. ARM technology has now integrated into 99% of the world's mobile phones. SoftBank knew that NVIDIA's GPU chips were the basis for data centers and gaming, which accounted for the largest part of global demand. NVIDIA managed to meet the biggest demand of the technology market, which was reflected in its stock performance by an increase of 189% in 2023 and its price to earnings ratio of 2.16 (NASDAQ, n.d.). Based on NVIDIA's success, the IPO may have been a deliberate decision by Arm to re-demonstrate its position and competitiveness.

After sales, margin and profit had increased between 2019 and 2022, Softbank decided to take Arm public (Hernandez, R. 2023).

"Arm is poised to become a bigger and more profitable business. Not just because of the industrywide boom in cloud computing and artificial intelligence, but also due to a major

change in how it operates. This is why we want to share our mission in public" (Haas, Rene; CEO of ARM, 2023).

One more aim of SoftBank´s is to reinvest the money raised from the IPO in R&D (Research & Development) to build on the success already achieved.

4.2 IPO valuation

" With the deal six times oversubscribed, it looks like investors treated the ARM IPO like a KI game and forgot to look at the price tag" (Daniel Morgan, 2023).

Many market analysts, like Daniel Morgan, Senior Portfolio Manager at Synovus Trust, expressed concern about a massive overvaluation of the stock ahead of its opening on September 13 this 2023. SoftBank saw never-ending growth and a higher price-to-earnings ratio than NVIDIA despite its smaller market capitalization.

To evaluate such estimates follows the company's valuation using the Discounted Cash Flow (DCF) technique, making forward-looking assumptions about the future development of the company after the year of the IPO are necessary. Students should follow the same approach as depicted in Figures CKTN 2 and CKTN 3. The case study includes exhibits such as income statement, balance sheet, cash flow statement, statement of other comprehensive income, and statement of changes in equity real data. A set of pre-defined assumptions is also offered to help students estimate the company's worth until 2028. Students have been given sources for calculating the weighted average cost of capital (WACC) and terminal growth rate, allowing them to do the precise calculations necessary for the share price valuation.

i. **Revenues:** In terms of revenue, ARM achieved a 33% increase from 2021 to 2022. In 2023, revenues decline by only 1% to £2,679 bn. In terms of future cash flows, based on several analyst statements and market assumptions, it is assumed that post-IPO revenues will increase by 11% by the end of 2024. The following analysis assumes a more conservative 10.5%. By 2025, revenues will increase by 15% to £3,404 bn.

Between 2026 and 2028, a constant revenue increase of 13% is assumed due to the elimination of inflation and the increasing demand for IoT but without any significant growth. The assumptions are based on Rene Haas, ARM CEO, expectations of an increasing revenue growth of 20% in 2025. Again, the assumptions will be more cautious.

ii. **Cost of Revenue:** Cost of revenue is related to the sale of goods and services; it makes sense that they will be strongly tied to revenues in the projection. As was the case before the IPO, the growth of ARM's cost of sales is assumed to be moderate and constant at between 3% and 5%. As the core business of licensing and chip architectures has not changed significantly, a constant development of 5% has been estimated.

iii. **Operating Expenses (incl. D&A):** For operating expenses, the assumptions were based on an average growth from t-1 and t0. In 2022, there were relatively high expenses of £1,939 bn. due to increased research and development costs. In 2023, however, the costs decrease to £1,902 bn. due to the IPO and possible capital restrictions for the liquidity analysis.

iv. **EBIT (Earnings before Interest Tax):** The EBITDA (Earnings before Interest Tax Depreciation and Amortization) calculation step is not needed for students. As in 2022 and 2023, the Cashflow calculation for 2024 to 2028 is based on the same depreciation and amortization rate of -8%. These are decisive for both the EBITDA and EBIT calculations. The latter is sufficient for students.

v. **Interest Income:** Because ARM had an increase of 2000% in interest income the calculation is assuming a growth of 1% between 2024 and 2028. The same was assumed in other income growth. Comparative values from previous years were used for this purpose.

vi. **Income Tax:** The projections assume that the tax liability will be 19% according to the average corporate tax in the UK, as ARM's headquarters are still found in Cambridge.

vii. **Capex (Capital Expenditures):** Due to the fluctuating capex growth between 2021 and 2023, the projected growth rates are based on estimates and expectations according to MarketScreener. Students view Figure 2 in this regard.

viii. **Changes in Net Working Capital:** Changes in the NWC result from the changes in current assets and current liabilities from Y-1 and Y0. Students can see the changes in Figure 3, taking a critical look at the changes in both positions.

ix. **WACC:** Because the WACC considers the cost of equity and the cost of debt, weighted by their respective proportions in the capital structure, capturing the overall cost of funds a company uses to finance its operations, it is a suitable discount rate. Students should therefore calculate the WACC based on these parameters:

x. **Cost of Equity:** It is based on S&P 22-year average annual returns, the US treasury 10-year-government bond as the risk-free rate and ARM's beta average peer group, which students has to calculate (unlevered Beta= levered beta / ((1+(1-tax rate)) *debt/equity)). Furthermore 3.80% cost of debt via Bloomberg, and a consistent 19% tax rate across calculations.

xi. **Cost of Debt:** According to Bloomberg's data the cost of debt can be assumed to be 3.80%

xii. **Tax rate:** As mentioned before the tax rate should be assumed to be 19%.

xiii. **Terminal Value Growth Rate:** This rate is assumed to stand at 5.38%. The value was derived by subtracting the global annual inflation rate since the year 2008 (2.45%) from the NASDAQ 100.

xiv. **General Assumptions:** The valuation is supposed to be calculated on a five-year forecast basis. Y1 should therefore be 2024 and Y5 2028.

Subsequently, the DCF analysis, considering the many main assumptions described above, has generated an analytical value for ARM Holdings Inc. Without perpetuity, the total discounted cash flow obtained from the predictions is $4,753 million. After the discounted terminal value is included, the resulting Enterprise Value is $32,888 million. With 1,025 outstanding shares, it is projected to be valued at $36 a share. The initial share price of the stock was fixed at 51 dollars on 13 September, what should confirm analysts' assumptions (Bloomberg L.P., n.d.) (Arm, 2023).

4.3 Reasoning for IPO

SoftBank, the parent company, decided prior to the IPO that just 10% of ARM's shares, or around 9% of the business's capital, would be available to free float. The remaining 90% of the shares will be temporarily kept by the holding company (SoftBank). Although no official explanations have been given, there are various grounds for a pro rata IPO. SoftBank announced plans to raise more money through an expected $4.87 billion upon the release of 10% of the shares (SoftBank, 2023). The exact reason for SoftBank to only sell a minority stake in Arm is unknown. However, when one examines the company's history, some reasons appear. The free float of 10% of the shares issued will remain low for the time being in order to test the market's appetite. (Heibel, S. 2023). Arm could find it difficult to prove itself in the market, especially given NVIDIA's excellent share price performance. To assure their sustained commitment, anchor investors like Qualcomm, Apple, and Alphabet control around 15% of the issued shares. The high pre-market valuation set a precedent for SoftBank - the partial issue of shares can be used to decide the level of interest in the semiconductor company to issue shares later at a higher price.

Another key point was the creation of added liquidity. Through the issue, SoftBank generated $5 bn. additional funds to make further investments. Furthermore, SoftBank had to make high losses in 2022 in its Vision Fund. Due to the aggressive investment strategy, the SoftBank share

price itself fell drastically by almost 50% to its all-time high in March 2021 (Hyuga, T., Jeong Li, M., 2022). The partial IPO was intended to help SoftBank free up resources.

An additional issue to consider is reducing share price volatility, which may be accomplished by selling sections of ARM in stages. Significant volatility in the share price can be avoided by using a gradual strategy. Given the expected reduction in ARM revenue in 2023, an incremental initial public offering (IPO) might be a reasonable alternative to evaluate market reaction. This strategy allows the corporation to gradually issue new shares to increase its total worth (ARM, 2023). SoftBank's choice to skip a large-scale investment might be driven by persistently high borrowing rates, a decline in semiconductor industry sales, and current macroeconomic uncertainty. Choosing a partial placement protects ARM from market volatility while keeping its financial flexibility (Beltran, L. 2023). It is also worth mentioning that a partial IPO allows ARM to reach out to new investor bases and generate interest from institutional investors.

5 Suggested Assignment Questions

The following questions will address the predicted pedagogical objectives mentioned before:

- Why did SoftBank want to trade Arm public again after seven years of private trading.
- Based on contradicting market pronouncements, were the ultimate issue price and corresponding business valuation reasonable or overvalued? Use the discounted cash flow (DCF) valuation method, to decide whether the issuing price was justified. Consider the financial and operational factors that should be considered in your analysis.
- Why did SoftBank choose a partial IPO of 10% of ARM?

6 Teaching Plan

A recommended teaching plan was developed based on the pedagogical objectives and positioning to provide structure to professors and teaching assistants. The total time given to complete this case study should not exceed one and a half hours (one class). It is best to schedule the sessions consecutively to avoid losing the students' attention and focus.

Time Frame: 5 minutes	**Section 1: Introduction and Overview** • Briefly recap the case study and its significance in the context of M&A and technology • Summarize the key elements of the IPO of ARM • Explain the learning objectives and the structure of the session
Time Frame: 5 minutes	**Section 2: Strategic Thinking and Decision Making** • Discuss the strategic motivations behind the IPO of ARM by SoftBank • Analyze the implications of a proportionate IPO • Evaluate ARMs IPO valuation due to its issued stock price • Engage students in a group discussion to evaluate the strategic significance of the acquisition and its impact on the tech industry
Time Frame: 20 minutes	**Section 3: Financial Modeling and Valuation Techniques** • Dive into the financial modeling aspects of the case study, focusing on DCF method to evaluate the fair share price. • Present the Discounted Cash Flow (DCF) analysis and guide students through the assumptions made for forecasting ARM's future performance after the IPO. • Discuss the application of valuation methods like DCF with other financial inputs to analyze the WACC to decide the company's Enterprise Value. • Conduct an interactive session allowing students to work on valuation exercises based on the supplied financial data and assumptions.
Time Frame: 10 minutes	**Section 4: Macro- and Microeconomic implications and Various growth strategies** • Highlight the different growth strategies of ARM over the years. • Engage students in a debate why SoftBank decided to go public with only 10% of the firm's stake
Time Frame: 5 minutes	**Section 5: Conclusion and Q&A** • Recap the key points and takeaways from the case study, emphasizing strategic and financial challenges regarding future market acceptance.

	• Open the floor for a Q&A session, encouraging students to ask questions and share insights

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Appendix

Exhibit CKTN 1: Semiconductor Revenue Forecast, Worldwide, 2022-2024 (Billions of U.S. Dollars)

	2022	2023	2024
Revenue	599,6	532,2	630,9
Growth (in %)	0,2	-11,2	18,5

Exhibit CKTN 2: DCF Valuation Model

	2021	2022	2023	2024	2025	2026	2027	2028
Net Revenues	**2.027**	**2.703**	**2.679**	**2.960**	**3.404**	**3.847**	**4.347**	**4.912**
Growth in %	-	33%	-1%	*10,5%*	*15,0%*	*13,0%*	*13,0%*	*13,0%*
Cost of Revenue	(145)	(131)	(106)	(111)	(117)	(123)	(129)	(135)
Growth in %	-	-10%	-19%	5%	5%	5%	5%	5%
Gross Profit	**1.882**	**2.572**	**2.573**	**2.849**	**3.287**	**3.724**	**4.218**	**4.777**
Operating Expenses (incl. D&A)	(1.643)	(1.939)	(1.902)	(2.055)	(2.016)	(2.178)	(2.245)	(2.314)
Growth in %	-	18%	-2%	8%	-2%	8%	3%	3%
EBIT	**239**	**633**	**671**	**794**	**1.272**	**1.546**	**1.973**	**2.463**
D&A	201	185	170	156	144	132	122	112
Growth in %	-	-8%	-8%	-8%	-8%	-8%	-8%	-8%
EBITDA	**440**	**818**	**841**	**950**	**1.415**	**1.678**	**2.095**	**2.575**
D&A	(201)	(185)	(170)	(156)	(144)	(132)	(122)	(112)
Growth in %	-	-8%	-8%	-8%	-8%	-8%	-8%	-8%
EBIT	**239**	**633**	**671**	**794**	**1.272**	**1.546**	**1.973**	**2.463**
Interest Income	2	2	42	42	43	43	44	44
Growth in %	-	0%	2000%	1%	1%	1%	1%	1%
Other Income	456	151	(42)	(45)	(46)	(46)	(47)	(47)
	476	141	(45)	(45)	(46)	(46)	(47)	(47)
	(20)	10	3					
Growth in %	-	-70%	-132%	1%	1%	1%	1%	1%
Profit Before Tax	697	786	671	791	1.268	1.543	1.970	2.459
Income Tax	(153)	(110)	(147)	(150)	(241)	(293)	(374)	(467)
19% of Profit before tax	-	-28%	34%	19%	19%	19%	19%	19%
Net Income	**232**	**422**	**524**	**641**	**1.027**	**1.250**	**1.596**	**1.992**

Arm Holdings plc., 2023

Exhibit CKTN 3: Unlevered Free Cash Flow

	Actual			Projected				
	2021	2022	2023	2024	2025	2026	2027	2028
				1	2	3	4	5
EBIT	**239**	**633**	**671**	**794**	**1.272**	**1.546**	**1.973**	**2.463**
-Taxes	(153)	(110)	(147)	(150)	(241)	(293)	(374)	(467)
+D&A	201	185	170	156	144	132	122	112
-Capex	(340)	(619)	(138)	(148)	(170)	(192)	(217)	(246)
Growth in %	-	82%	-78%	5%	5%	5%	5%	5%
-Change in WC	(169)	(524)	73	(107)	(160)	(159)	(180)	(203)
Growth in %	-	210%	-114%	-246%	50%	0%	13%	13%
Unlevered free cash flow	**(222)**	**(435)**	**629**	**545**	**844**	**1.033**	**1.323**	**1.658**

Arm Holdings plc., 2023

Exhibit CKTN 4: DCF Share Price Calculation

Discount rate	8,20%
Terminal Value growth rate	5,38%

Discounted unlevered FCF

EV	4.753
Terminal Value	28.135
EV (with perpetuity)	32.888

EV	32.888
Debt	(219)
Equity Value	32.669
Outstanding shares	1.025
Value per share	32
IPO price per share	51

Exhibit CKTN 5: 10-year-US Treasury Bond

10-year US treasury

Year	Yield
2023	3,94%
2022	2,95%
2021	1,45%
2020	0,89%
2019	2,14%
2018	2,91%
2017	2,33%
2016	1,84%
2015	2,14%
2014	2,54%
2013	2,35%
2012	1,80%
2011	2,78%
2010	3,22%
	2,38%

(Bloomberg L.P. n.d.)

Exhibit CKTN 6: Market Return S&P500

	Market return S&P 500
Year	**Return**
2022	-18,01%
2021	28,47%
2020	18,02%
2019	31,21%
2018	-4,23%
2017	21,61%
2016	11,77%
2015	1,38%
2014	13,52%
2013	32,15%
2012	15,89%
2011	2,10%
2010	14,82%
2009	25,94%
2008	-36,55%
2007	5,48%
2006	15,51%
2005	4,83%
2004	10,74%
2003	28,30%
2002	-21,97%
2021	-11,85%
2000	-9,02%
	7,83%

(Bloomberg L.P. n.d.)

Exhibit CKTN 7: Inflation Rate US

Inflation rate	
Year	**Return**
2023	4,08%
2022	7,99%
2021	4,68%
2020	1,25%
2019	1,81%
2018	2,44%
2017	2,13%
2016	1,27%
2015	0,12%
2014	1,61%
2013	1,47%
2012	2,07%
2011	3,14%
2010	1,64%
2009	-0,32%
2008	3,82%
	2,45%

(Bloomberg L.P. n.d.)

Exhibit CKTN 8: Beta Peer Group Semiconductors

Nr	Name	levered Beta	unlevered Beta
1	Intel	1,30	1,21
2	NVIDIA	1,78	1,78
3	Texas Instruments	0,89	0,89
4	Qualcomm	1,37	1,33
5	TSMC	1,17	1,17
6	Samsung	n/a	n/a
7	SK hynix	n/a	n/a
8	Micron Technology	1,17	1,32
9	Broadcom	1,00	1,00
10	Mediatek	n/a	n/a
11	AMD	1,78	1,81
12	Applied Materials	1,47	1,44
13	Infineon	1,88	1,81
14	Apple	0,96	0,95
15	STMicroelectronics	1,76	1,78
16	Kioxia	n/a	n/a
17	NXP Semiconductors	1,42	1,27
18	analog devices cmn	0,90	0,86
19	Adv. Micro Devices	1,78	1,81
		1,38	1,36

(Bloomberg L.P. n.d.)

Exhibit CKTN 9: WACC Key Indicatiors

Cost of equity	8,55%
Risk free rate	2,38%
Market rate return	7,83%
Unlevered Beta	1,13
Cost of debt	3,80%
Corporate tax rate	25%
WACC	8,20%
Market rate return	7,83%
Inflation	2,45%
Terminal value growth rate	**5,38%**

Exhibit CKTN 10: ARM Holdings Balance Sheet 2021-2023

(in millions)	*Actual* FY 31. Mrz 1FYE21	*Actual* FY 31. Mrz 2FYE22	*Actual* FY 31. Mrz 3FYE23
Condensed Consolidated Balance sheet (Unaudited) (1)			
Assets:			
Current assets:			
Cash and cash equivalents	$ 1.171	$ 1.004	$ 1.554
Short-term investments	126	631	661
Accounts receivable, net (including receivables from related parties)	910	1.124	999
Contract assets	81	166	154
Prepaid expenses and other current assets	126	167	169
Current assets related to discontinued operations	77	-	-
Total current assets	**2.491**	**3.092**	**3.537**
	1.320	**2.088**	**1.983**
Non-current assets:			
Property and equipment, net	259	188	185
Operating lease right of use assets	266	229	206
Equity investments (including investments held at fair value)	1.560	736	723
Goodwill	1.651	1.636	1.620
Intangible assets, net	219	205	138
Deferred tax assets	90	135	139
Non-current portion of contract assets	26	100	116
Other non-current assets	145	189	202
Non-current assets related to discontinued operations	172	-	-
Total non-current assets	**4.388**	**3.418**	**3.329**
Total assets	**$ 6.879**	**$ 6.510**	**$ 6.866**
Liabilities:			
Current liabilities:			
Accrued compensation and benefits	$ 426	$ 642	$ 589
Tax liabilities	4	129	162
Contract liabilities (including contract liabilities from related parties)	424	334	293
Operating lease liabilities	35	31	26
Other current liabilities (including payables to related parties)	151	259	293
Current liabilities related to discontinued operations	111	-	-
Total current liabilities	**1.151**	**1.395**	**1.363**
Non-current liabilities:			
Non-current portion of accrued compensation and share-based compensation	196	158	152
Deferred tax liabilities	317	279	262
Non-current portion of contract liabilities	754	792	807
Non-current portion of operating lease liabilities	274	230	193
Other non-current liabilities	107	108	38
Non-current liabilities related to discontinued operations	30	-	-
Total non-current liabilities	**1.678**	**1.567**	**1.452**
Total liabilities	**2.829**	**2.962**	**2.815**
Shareholders' equity:			
Ordinary shares	2	2	2
Additional paid-in capital	1.214	1.214	1.216
Accumulated other comprehensive income	430	399	376
Retained earnings	2.404	1.933	2.457
Total shareholders' equity	**4.050**	**3.548**	**4.051**
Total liabilities and shareholders' equity	**$ 6.879**	**$ 6.510**	**$ 6.866**

(Arm Holdings plc, 2015) (Bloomberg L.P., n.d.)

Exhibit CKTN 11: ARM Holdings Cash Flow Statement 2021-2023

(In millions)	*Actual* FY 31. Mrz FYE21	*Actual* FY 31. Mrz FYE22	*Actual* FY 31. Mrz FYE23
Condensed Cash Flow Statement (Unaudited)			
Cash flows provided by (used for) operating activities:			
Net Income	**$ 388**	**$ 549**	**$ 524**
Adjustments to reconcile net income to net cash provided by (used for) operating activities:			
Depreciation and amortization	201	185	170
Deferred income taxes	(33)	(76)	(34)
Loss (income) from equity investments, net	(476)	(141)	45
Impairment losses on long-lived assets and loans receivable	26	43	-
Share-based compensation cost (1)	54	26	79
Operating lease expense	47	41	34
Other non-cash operating activities, net	16	19	(6)
Changes in assets and liabilities:			
Accounts receivable, net (including receivables from related parties)	19	(219)	125
Contract assets	(31)	(158)	(2)
Prepaid expenses and other assets	(53)	(41)	(1)
Accrued compensation and benefits (1)	144	127	(138)
Contract liabilities (including contract liabilities from related parties)	950	(51)	(37)
Tax liabilities	(50)	112	35
Operating lease liabilities	40	(59)	(58)
Other current liabilities (including payables to related parties)	(9)	101	3
Net cash provided (used for) by operating activities	**$ 1.233**	**$ 458**	**$ 739**
Cash flows used for investing activities			
Purchase of short-term investments	(235)	(750)	(1.111)
Proceeds from maturities of short-term investments	110	245	1.081
Purchases of equity investments	(50)	(8)	(15)
Purchases of intangible assets	(61)	(41)	(29)
Purchases of property and equipment	(104)	(34)	(64)
Investments in convertible loans and other	-	(31)	-
Net cash provided by (used for) investing activities	**$ (340)**	**$ (619)**	**$ (138)**
Cash flows provided by (used for) financing activities			
Cash dividends declared and paid to shareholders	(750)	-	-
respectively	-	(43)	-
Payment of intangible asset obligations	(38)	(37)	(40)
Proceeds from short-term debt borrowing	-	50	-
Other financing activities, net	(1)	(2)	(2)
Payment of withholding tax on vested shares	-	-	-
Net cash provided by (used for) financing activities	**$ (789)**	**$ (32)**	**$ (42)**
Effect of foreign exchange rate changes on cash and cash equivalents	1	(17)	(9)
Net increase (decrease) increase in cash and cash equivalents	105	(210)	550
Cash and cash equivalents at the beginning of the period	1.109	1.214	1.004
Cash and cash equivalents at the end of the period	1.214	1.004	1.554
Less cash from discontinued operations at the end of the period	(43)	-	-
Cash and cash equivalents from continuing operations at the end of the period	**$ 1.171**	**$ 1.004**	**$ 1.554**

FCF			
Net cash provided by operating activities	**1.233**	**458**	**739**
Adjusted for:			
Purchases of property and equipment	(104)	(34)	(64)
Purchases of intangible assets	(61)	(41)	(29)
Payment of intangible asset obligations	(38)	(37)	(40)
Non-GAAP free cash flow	**1.030**	**346**	**606**

(Arm Holdings plc, 2015) (Bloomberg L.P., n.d.)

Exhibit CKTN 12: ARM Holdings Income Statement 2021-2023

(in millions, except per share amounts)	*Actual* FY 31. Mrz 1FYE21	*Actual* FY 31. Mrz 2FYE22	*Actual* FY 31. Mrz 3FYE23
Condensed Consolidated Income Statements (Unaudited)			
Revenue:			
Revenue from external customers	$ 1.579	$ 2.219	$ 2.025
Revenue from related parties	448	484	654
Total revenue	**2.027**	**2.703**	**2.679**
Cost of sales	(145)	(131)	(106)
Gross profit	**1.882**	**2.572**	**2.573**
Operating expenses:			
Research and development	(814)	(995)	(1.133)
Selling, general and administrative	(826)	(897)	(762)
Impairment of long-lived assets	(3)	(21)	-
Disposal, restructuring and other operating expenses, net	-	(26)	(7)
Total operating expense	**(1.643)**	**(1.939)**	**(1.902)**
Operating income	**239**	**633**	**671**
(Loss) income from equity investments, net	476	141	(45)
Interest income, net	2	2	42
Other non-operating income (loss), net	(20)	10	3
Income from continuing operations before income taxes	**697**	**786**	**671**
Income tax expense	(153)	(110)	(147)
Net income from continuing operations	**544**	**676**	**524**
Loss from discontinued operations before income taxes	(194)	(99)	-
Income tax (expense) benefit from discontinued operations	38	(28)	-
Net loss from discontinued operations	(156)	(127)	-
Net income	**$ 388**	**$ 549**	**$ 524**
Earnings per share continuing operations attributable to ordinary shareholder			
Basic	$ 0,53	$ 0,66	$ 0,51
Diluted	$ 0,53	$ 0,66	$ 0,51
Weighted average ordinary shares outstanding			
Basic	1.025,2	1.025,2	1.025,2
Diluted	1.025,2	1.025,2	1.027,5

(Arm Holdings plc, 2015) (Bloomberg L.P., n.d.)

Exhibit CKTN 13: GAAP to Non-GAAP Reconciliation 2021-2023

GAAP to Non-GAAP Reconciliation (Unaudited) (4)			
Reconciliation of GAAP gross profit to Non-GAAP gross profit:			
Gross profit	$ 1.882	$ 2.572	$ 2.573
Adjusted for:			
Acquisition-related intangible asset amortization	10	9	5
Share-based compensation expense (equity settled) (1)	2	1	2
Non-GAAP gross profit	**$ 1.894**	**$ 2.582**	**$ 2.580**
Reconciliation of GAAP operating income to Non-GAAP operating income:			
Operating income	$ 239	$ 633	$ 671
Adjusted for:			
Acquisition-related intangible asset amortization	11	9	5
Cost of sales	10	9	5
Selling, general and administrative	1	-	-
Share-based compensation expense (equity settled) (1)(2)(3)	41	30	60
Cost of sales	2	1	2
Research and development	22	19	38
Selling, general and administrative	17	10	20
Public company readiness costs	1	11	42
Selling, general and administrative	1	11	42
Other operating income (expenses), net	5	1	-
Research and development	1	-	-
Selling, general and administrative	4	1	-
Costs associated with disposal activities	4	-	4
Selling, general and administrative	1	-	-
Costs associated with disposal activities	3	-	4
Impairment of long-lived assets	3	21	-
Restructuring and related costs	-	26	1
Non-GAAP operating income	**$ 304**	**$ 731**	**$ 783**
Reconciliation of GAAP net income from continuing operations to Non-GAAP net income from continuing operations:			
Net income from continuing operations	544	676	524
Adjusted for operating items:			
Acquisition-related intangible asset amortization	11	9	5
Share-based compensation expense (equity settled) (1)(2)(3)	41	30	60
Restructuring and related costs	-	26	1
Public company readiness costs	1	11	42
Other operating income (expenses), net	5	1	-
Costs associated with disposal activities	4	-	4
Impairment of long-lived assets	3	21	-
Adjusted for non-operating items:			
(Income) loss from equity method investments, net	(476)	(141)	45
Gain on disposal of business	-	-	(4)
Pre-tax total non-GAAP adjustments	(411)	(43)	153
Income tax effect on non-GAAP adjustments	74	30	(20)
Non-GAAP net income from continuing operations	**$ 207**	**$ 663**	**$ 657**
Earnings per share continuing operations attributable to ordinary shareholder			
Basic	0,20	0,65	0,64
Diluted	0,20	0,65	0,64
Weighted average ordinary shares outstanding (millions)			
Basic	1.025,2	1.025,2	1.025,2
Diluted	1.025,2	1.025,2	1.027,5

(Arm Holdings plc, 2015) (Bloomberg L.P., n.d.)