

Nordic Semiconductor ASA (NOD.OL – NOK 148.65)
July 22, 2024*

Nordic Semiconductor ASA (NOD.OL) is a fabless Norwegian semiconductor company that specializes in short-range wireless communication technology for the Internet of Things (IoT). The Company designs, markets, and sells various products including integrated circuits (ICs) and Systems-on-Chip (SoCs), among others and provides cloud-based services. The Company's product components are manufactured by subcontractors and sold through electronics distributors to manufacturers of branded electronics across a range of product categories. Nordic Semiconductor was founded in 1983 and is headquartered in Trondheim, Norway. Its fiscal year ends on 12/31.

Thesis Summary

We are concerned increased end-market customer concentration highlights revenue sustainability risk. We are concerned global governments' increased focus on domestic semiconductor production may have driven and continue to drive demand pressure. We believe Healthcare "growth engine" revenue pressure may persist given (1) dependence on a small number of end-market customers and (2) evidence of demand weakness at a large end-market customer. We are concerned revenue pressure may persist given certain elevated distributor inventory and receivable levels. Our concerns are heightened given the Company represented destocking was "predominantly" completed and evidence of overbuilt end-market customer inventory. In our view, historically elevated and aged receivable levels highlight overbuilt channel inventory levels. Our concerns are heightened given we believe (1) a disclosure change suggests the Company extended payment terms, (2) no credit loss allowance, and (3) an elevated ship and debit allowance may highlight pricing pressure and/or weak end market demand. We are concerned inventory may be overbuilt and may not be rationalized by an expected demand recovery. Further, we believe inventory aging may highlight write-off risk and wafer prepayments may make inventory normalization difficult. In our view, elevated capitalized R&D levels may portend margin pressure upon launch of the new product given (1) amortization will commence and (2) certain recurring spend will no longer qualify for capitalization. Depressed free cash flow heightens our earnings sustainability concerns. In addition, (1) executive turnover, (2) restructuring, and (3) a decision to "limit" certain guidance and other information highlights limited visibility and near-term disruption risk.

Company Data

Country/Exchange	Norway / Oslo
Reporting currency	\$
Accounting standard	IFRS
Shares Outstanding (mil)	192.8
Float (mil)	165.3
Average Volume (mil)	NOK 88.8
52 Week Range	NOK 76.96 – NOK 158.55
Dividend Yield	0.0%
Market Cap (bil)	NOK 28.6
Net Cash (bil)	NOK 1.6
Enterprise Value (bil)	\$27.0
FY 23 Rev (mil)/Rev Growth	\$74.5 / (48.8%)
FY 23 Op. Income (mil)	(\$33.5)
FY 23 GM %/Change	48.0% / (530 bps)
FY 23 Op. Margin %/Chg	(44.9%) / (4,700 bps)

Valuation (as of report date)

NTM P/S	5.0x
NTM EV/S	4.0x
NTM P/E	64.1x

Consensus Estimate Drift

	EST	1M Ago	6M Ago	1YR Ago
Q2 24 Rev	\$1,382.1	\$1,254.0	\$1,366.2	\$1,857.0
FY 24 Rev	\$5,296.7	\$5,108.0	\$5,856.6	\$7,819.4
FY 25 Rev	\$6,909.8	\$6,819.0	\$7,418.2	\$9,447.9
Q2 24 EPS	(\$0.16)	(\$0.28)	\$0.03	\$0.83
FY 24 EPS	(\$1.26)	(\$1.31)	\$0.78	\$3.60
FY 25 EPS	\$2.04	\$1.94	\$3.27	\$5.48

Peers Mentioned In This Report

Arrow Electronics, Inc. (ARW)
Avnet, Inc. (AVT)
DexCom Inc. (DXCM)

Catalysts and Timing

Weak Q2 24 results and/or weak Q3 24 guidance
Elevated inventory and/or channel inventory
Weak end-market demand in Consumer and Industrials persists
Commentary highlighting increased fundamental competition

* All research is completed as of 4:00PM – 4:15PM Eastern Time unless otherwise noted. Please refer to the end of this report for an updated version of *The Short List*.
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Company Background

Company description: Nordic Semiconductor ASA (NOD.OL) is a fabless Norwegian semiconductor company that specializes in short-range wireless communication technology for the Internet of Things (IoT). The Company designs, markets, and sells various products including integrated circuits (ICs) and Systems-on-Chip (SoCs), among others and provides cloud-based services. The Company’s product components are manufactured by subcontractors and sold through electronics distributors to manufacturers of branded electronics across a range of product categories. Nordic Semiconductor was founded in 1983 and is headquartered in Trondheim, Norway. Its fiscal year ends on 12/31.

Background on business units: In its Q1 24 Earnings Presentation on 04/24/24, the Company disclosed it reorganized with four new business units: Short-range, Long-range, Wi-Fi, and Power Management (PMIC). Short-range offers low power Bluetooth LE (low energy), proprietary technology, and multiprotocol wireless technologies; Long-range offers cellular IoT over LTE-M and NB-IoT networks; Wi-Fi offers Wi-Fi companion products; and PMIC offers integrated circuits used for power management. In its FY 23 Annual Report, the Company disclosed “most” of its Wi-Fi and PMIC customers were in the development or early commercial phase.

Background on technologies: In FY 23, short-range wireless components accounted for 95.5% of total revenue. Specifically, Bluetooth accounted for 89.1% and proprietary solutions accounted for 6.4%. Long range wireless components (i.e. cellular IoT) accounted for 3.2% of revenue, ASIC accounted for 0.9%, and other sources (i.e. PMIC, front end modules and Wi-Fi, and development tool sales) accounted for 0.4%

Revenue By Technology Analysis (as % of revenue)	FY 23
Bluetooth	89.1%
Proprietary wireless	6.4%
Short-range wireless components	95.5%
Long-range wireless components (cellular IoT)	3.2%
ASIC components	0.9%
Other	0.4%
Total revenue	100.0%

Background on end product areas: In its FY 23 Annual Report, the Company disclosed it focused on and sold standard wireless communication components in four end product areas: Consumer, Industrial, Healthcare, and Other areas. Nordic also sells unique application specific integrated circuits (ASIC) and related Consulting Services but did not include the related revenue in end product area revenue. In FY 23, Consumer accounted for 56.2% of revenue excluding ASIC and consulting, Industrial accounted for 21.8%, Healthcare accounted for 19.2%, and Other accounted for 2.8%.

- **Consumer:** Consumer verticals include mobile/PC HID, wearables, smart home, gaming, VR/AR, consumer asset tracking, consumer health, audio, toys, CE remotes, and wireless charging, among others.
- **Industrial:** Industrial verticals include asset tracking, professional lighting, metering, building automation, modules, retail, transportation, payment/ID, tools and machinery, agriculture, beacons, maker and education, and automotive, among others.
- **Healthcare:** Healthcare verticals include drug delivery, disease monitoring, and hearing aids, among others.
- **Other:** Other verticals include catalog sales and other applications.

Revenue By End Product Area Analysis (as % of revenue ex. ASIC & consulting)	FY 23
Consumer	56.2%
Industrial	21.8%
Healthcare	19.2%
Other	2.8%
Total revenue ex. ASIC & consulting	100.0%

Background on major distributors: In its FY 23 Annual Report, the Company disclosed it predominantly sold to electronics distributors under a distribution agreement where the distributors hold a certain level of Nordic Semiconductor inventory to ship to an end customer. In FY 23, a distributor “located in Asia” accounted for 37.0% of revenue and a distributor in the Americas accounted for 18.0% of revenue.

Customer Analysis (as % of revenue)	FY 23
Asia distributor	37.0%
Americas distributor	18.0%
All other distributors/customers	45.0%
Total	100.0%

Background on end-market customers: On its Q3 23 Conference Call on 10/16/23, the Company represented “Tier-1” customers comprised its top 10 largest end-market customers and “broad market” or “long-tail” customers comprised all other end-market customers. In its November 2023 Credit Investor Presentation on 11/14/23, the Company represented its 10 largest end-market customers consisted of “multinational and market leading corporations.” In its FY 23 Annual Report, the Company represented the broad market consisted of “many small and medium companies.” In its FY 23 Annual Report, Nordic disclosed its 10 largest end-market customers accounted for 57.0% of total Bluetooth LE revenue.¹

Background on revenue recognition: In its FY 23 Annual Report, the Company disclosed revenue from product sales is recognized when control of goods is transferred to the customer (i.e. to the distributor, upon sell-in) and time of delivery is considered to be when the goods are transferred to the transport carrier. Revenue recognized on the sale of products is measured at the fair value of the consideration received or receivable, excluding sales taxes and net of allowances for variable considerations, such as ship and debit, product returns, and end-customer rebates.

Revenue by geography: In FY 23, Asia/Pacific accounted for 66.8% of revenue, the Americas accounted for 22.2%, and Europe accounted for 11.0%.

Geography Analysis (as % of revenue)	FY 23
Asia/Pacific	66.8%
Americas	22.2%
Europe	11.0%
Total	100.0%

¹ While the Company predominantly sells to distributors and generates revenue on the sell-in to distributors, Nordic frequently refers to end-market customers as its customers.

Seasonality: Over the past three years, average Q1 revenue contribution as a percent of total revenue was 24.6%, Q2 was 26.1%, Q3 was 25.1%, and Q4 was 24.2%.

Seasonality Analysis (as % of total)	Q1	Q2	Q3	Q4
FY 23 quarterly revenue contribution	26.8%	28.4%	24.9%	19.9%
FY 22 quarterly revenue contribution	23.6%	25.8%	26.0%	24.6%
FY 21 quarterly revenue contribution	23.5%	24.2%	24.3%	28.0%
Three-year average	24.6%	26.1%	25.1%	24.2%

Competition: In its FY 23 Annual Report, Nordic Semiconductor characterized the semiconductor industry as “extremely competitive” and guided for competition to “continue to increase.” In addition, Nordic Semiconductor represented the largest “intermediate threat” of technologies replacing Bluetooth as a connectivity solution came from various Wi-Fi chips while long-term threats came from other wireless standards such as Ultra-Wide Band. Based on our understanding of the business, we believe Nordic Semiconductor primarily competes with Silicon Laboratories Inc (SLAB), NXP Semiconductors NV (NXPI), Qualcomm Technologies, Inc (QCOM), Broadcom Inc (AVGO), Airgain, Inc (AIRG), STMicroelectronics (STM), and Qorvo, Inc (QRVO), among others.

Voyant's Earnings Risk Assessment

We are concerned increased end-market customer concentration highlights revenue sustainability risk. We are concerned global governments' increased focus on domestic semiconductor production may have driven and continue to drive demand pressure. We believe Healthcare "growth engine" revenue pressure may persist given (1) dependence on a small number of end-market customers and (2) evidence of demand weakness at a large end-market customer. We are concerned revenue pressure may persist given certain elevated distributor inventory and receivable levels. Our concerns are heightened given the Company represented destocking was "predominantly" completed and evidence of overbuilt end-market customer inventory. In our view, historically elevated and aged receivable levels highlight overbuilt channel inventory levels. Our concerns are heightened given we believe (1) a disclosure change suggests the Company extended payment terms, (2) no credit loss allowance, and (3) an elevated ship and debit allowance may highlight pricing pressure and/or weak end market demand. We are concerned inventory may be overbuilt and may not be rationalized by an expected demand recovery. Further, we believe inventory aging may highlight write-off risk and wafer prepayments may make inventory normalization difficult. In our view, elevated capitalized R&D levels may portend margin pressure upon launch of the new product given (1) amortization will commence and (2) certain recurring spend will no longer qualify for capitalization. Depressed free cash flow heightens our earnings sustainability concerns. In addition, (1) executive turnover, (2) restructuring, and (3) a decision to "limit" certain guidance and other information highlights limited visibility and near-term disruption risk.

Increased Tier-1 Customer Dependence & Competition Highlight Growth Concerns

Background on Tier-1 and broad market customers: As mentioned, the Company represented "Tier-1" end-market customers comprised its 10 largest end-market customers and "broad market" or "long-tail" customers comprised all other end-market customers. Beginning in FY 21, the Company disclosed Tier-1 customer Bluetooth LE revenue contribution in its Interim and Annual Reports.

Supply constraints drove increased Tier-1 customer focus at expense of broad market customers, in our view: Previously, in its FY 22 Annual Report, the Company highlighted it "prioritized deliveries" to Tier-1 end-market customers amid ongoing wafer supply constraints and indicated the strategic shift had "partly" been at the expense of broad market customers. On its Q4 23 Conference Call on 02/05/24, the Company represented regaining traction with broad market customers was one of its "main priorities."

In terms of customers, Nordic saw significantly increased sales to its largest Tier-1 customers through 2022. The company prioritized deliveries to these customers under the persisting wafer supply constraints, and this **has partly been at the expense of small and medium sized customers.** (FY 22 Annual Report) [emphasis added]

We have a long history of working with customers in the broad market, and going forward, it is one of our **main priorities to regain traction in this segment** when the market recovers. (CFO Mr. Pål Elstad, Q4 23 Conference Call, 02/05/24)

Increased Tier-1 customer concentration highlights revenue sustainability risk, in our view: In its FY 23 Annual Report, the Company disclosed FY 23 Bluetooth LE revenue from its 10 largest end-market customers increased 1,200 basis points year-over-year to 57.0%, the highest level in at least four years. On its Q4 23 Conference Call on 02/05/24, the Company indicated its largest end-market customers "held up demand reasonably well," in part, due to prioritizing Tier-1 customers amid constrained wafer supply. **We are concerned increased and significant Tier-1 customer concentration may highlight elevated revenue sustainability risk. To the extent the deliberate focus on Tier-1 customers drove broad market customer share loss our revenue sustainability concerns would be heightened.**

Customer Concentration Analysis (as % of Bluetooth LE revenue)	FY 20	FY 21	FY 22	FY 23
Tier-1 customers (i.e. 10 largest customers)	“Just under 40.0%”	“Just under 40.0%”	45.0%	57.0%
<i>Year-over-year change</i>	--	0 bps	500 bps	1,200 bps

Disclosure change highlights competitive threats may have driven certain revenue weakness, in our view: In its FY 23 Annual Report, the Company added risk factor language related to increased competition. Specifically, it disclosed Chinese competition increased as a result of China promoting its domestic semiconductor industry. In addition, Nordic highlighted US and EU competition may increase following similar recently passed legislation in those regions (i.e. the US CHIPS Act and EU Chips Act).² In our view, new disclosure language highlights competition increased amid increased semiconductor nationalism. Accordingly, we believe certain broad-market weakness may have been driven by competition and may not be fully rationalized by the strategic shift to focus on Tier-1 end-market customers.

Nordic is exposed to competition from existing companies and new entrants, mainly from China. **Chinese competition increases as a result of China actively promoting its domestic semiconductor industry through policy changes and investment. In addition, the US Chips ACT and EU Chips Act can result in competition from competitors with access to favorable prices products in the US and Europe.** Nordic’s competitors range from large, international companies offering a full range of products to smaller companies specializing in particular semiconductor products. (FY 23 Annual Report) [emphasis added for new disclosure language]

Asia- and China-specific weakness highlights increased competition and/or growth challenges, in our view: As mentioned, Asia/Pacific accounted for 66.8% of FY 23 revenue. Previously, in its FY 22 Preliminary Annual Report, the Company disclosed China end customer revenue contribution declined over 1,000 basis points from above 20.0% in FY 21 to less than 10.0% in FY 22 and highlighted the “pace and potency” of a market rebound in China was key to medium-term demand. On its Q4 22 Conference Call on 02/06/23, the Company guided for “some pick-up” in Chinese demand in FY 23. On its Q3 23 Conference Call on 10/16/23, the Company indicated “a lot” of Asian Consumer customers were “not-performing” revenue-wise. Further, in its FY 23 Annual Report, the Company represented Chinese revenue “remain[ed] at low levels” below 10.0%. **Given (1) Chinese demand remained weak despite guidance to improve, (2) the Company highlighted Chinese revenue recovery was important to medium-term demand, and (3) the Company highlighted weak demand from “a lot” of Asian customers, we are concerned unexpectedly weak demand in Asia and China may highlight challenging regional growth and/or increased competition in certain Asian markets.**

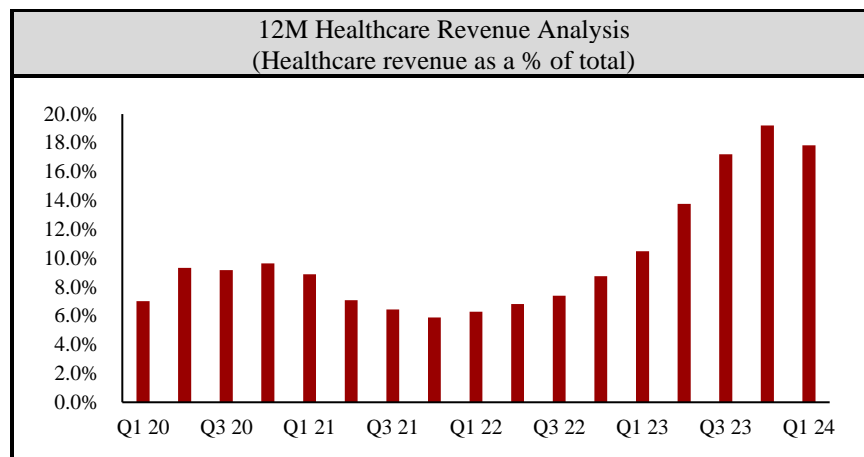
The pace and potency of a potential market rebound in China is one of the key question marks with regards to product demand in the medium term. (FY 22 Preliminary Annual Report)

Healthcare Revenue Pressure May Persist As Tier-1 Customer Right-Sizes Inventory

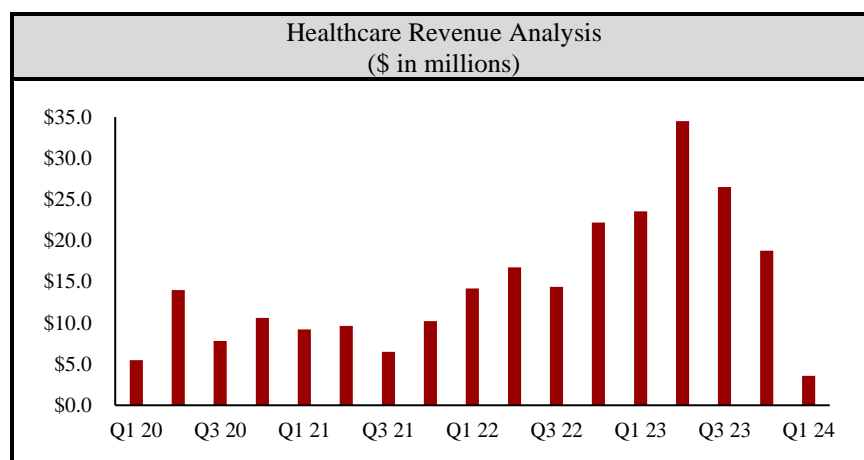
Healthcare “growth engine” may be dependent on a small number of large customers: In the twelve-months ended Q1 24, Healthcare revenue as a percent of total revenue increased 730 basis points to 17.8%, the second highest level in at least five years. In its Q1 24 Interim Report, Nordic highlighted the Healthcare market as a “future growth engine” but disclosed revenues were dependent on a “relatively small number of customers.”

Nordic has highlighted the Healthcare market as a **future growth engine**. However, **revenues remain dependent on a relatively small number of customers**, and hence prone to wide variations across quarters. (Q1 24 Interim Report) [emphasis added]

² US CHIPS Act and the EU Chips Act aim to boost domestic semiconductor production and innovation and reduce foreign semiconductor dependency. The US CHIPS Act was signed into law on 08/09/22 and the EU Chips Act was entered into force on 09/21/23.

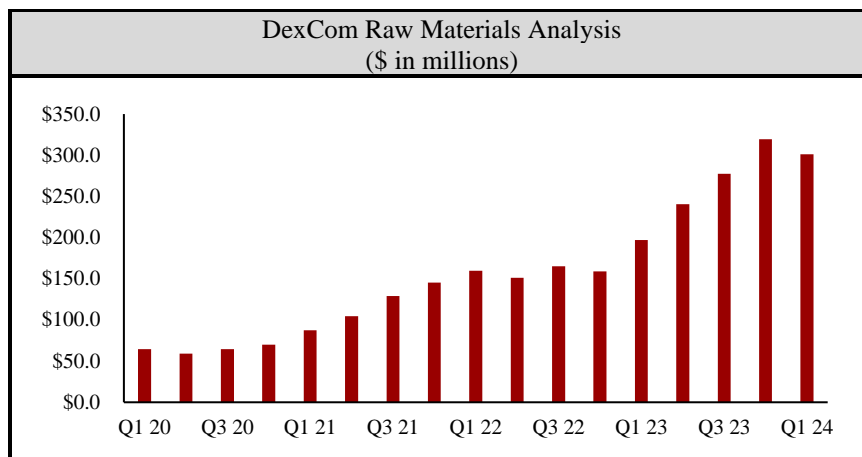


Recent Healthcare weakness highlights customer concentration risk, in our view: In Q1 24, Healthcare revenue declined 84.9% year-over-year to \$3.6 million. In its Q1 24 Interim Report, the Company attributed the decline to inventory adjustments in the broad market and at “one Tier-1 customer” in the Healthcare industry. We believe the “growth engine” end-market material revenue deterioration driven, in part, by a single customer highlights customer concentration risk and our revenue sustainability risk concerns are heightened.

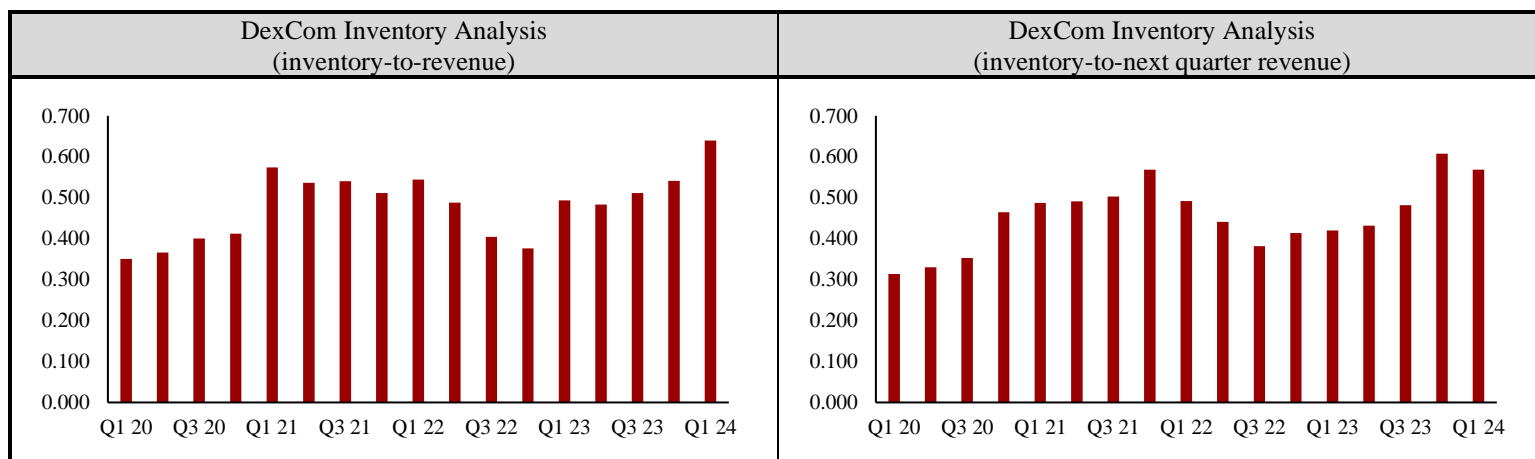


DexCom may be significant Tier-1 Healthcare customer: Previously, on its Capital Markets Day Conference Call on 10/21/21, Nordic represented DexCom, Inc. (DXCM) was a customer and Dexcom’s G7 Continuous Glucose Monitor (CGM) was an end-market application which held “special importance” to it. On its Q1 24 Conference Call on 04/25/24, DexCom disclosed its Stelo Glucose Biosensor System was the first glucose biosensor approved for use without prescription in the US. In its Q1 24 Interim Report, Nordic indicated one of its Tier-1 Healthcare customers received regulatory approval for its first over-the counter integrated Continuous Glucose Monitor which would become available in the US in summer of FY 24. Accordingly, we believe the Healthcare customer Nordic was referring to was DexCom and DexCom is likely a Tier-1 Healthcare customer.

DexCom inventory adjustments may have driven recent weakness, in our view: In Q1 24, Dexcom’s raw materials balance declined 5.7% sequentially to \$301.2 million, the largest sequential decline in at least five years. While we acknowledge DexCom raw materials inventory may not be fully indicative of DexCom’s inventory purchases (i.e. certain raw materials are converted to work-in-process and finished goods intra-quarter) and does not solely consist of Nordic chips, given (1) Nordic attributed the Q1 24 Healthcare revenue decline to “one” Tier-1 customer inventory adjustments, (2) we believe DexCom is a major Tier-1 Healthcare customer, and (3) DexCom raw materials inventory declined sequentially, we believe DexCom inventory adjustments may have driven recent Healthcare weakness.



Elevated DexCom inventory amidst late August 2024 Stelo launch plan suggests pressure may persist: In Q1 24, DexCom inventory surged 61.0% year-over-year, while DexCom revenue increased 24.2% to \$921.0 million. Accordingly, DexCom inventory-to-revenue surged 29.6% to 0.640, the highest level in at least five years. Further, DexCom inventory-to-next quarter revenue (consensus expectation) surged 35.3% to 0.568. On its William Blair Growth Stock Conference Call on 06/05/24, DexCom highlighted it “built” inventory in anticipation of the Stelo launch in “late August” 2024. Given we believe DexCom is a major Tier-1 Healthcare customer, we believe DexCom’s historically elevated inventory levels suggest Nordic revenue pressure may persist as DexCom right-sizes inventory and/or DexCom demand for Nordic Semiconductor products may depend on the success of the Stelo launch. Our concerns are heightened given the Healthcare end-market may be dependent on a small number of large customer (i.e. persistent DexCom demand weakness may have a material impact on Nordic Semiconductor Healthcare revenue).

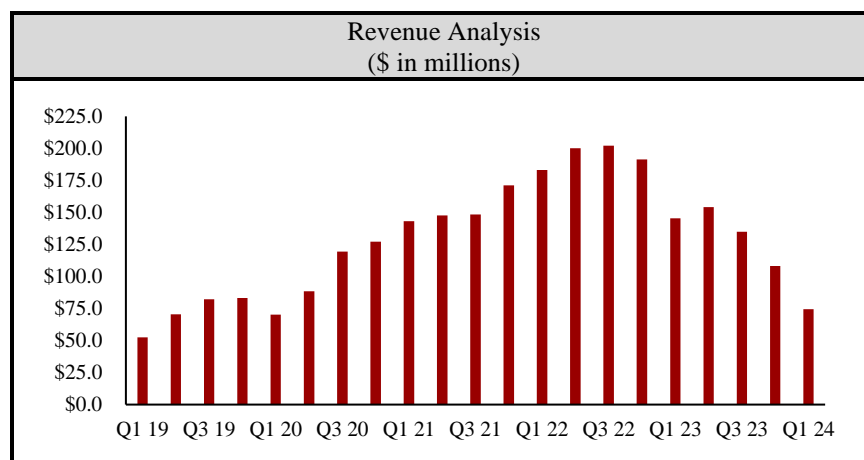


Revenue Pressure May Persist As Distributor Inventory Adjustments Continue

Background on distributor analysis: As mentioned, Nordic Semiconductor predominantly sells its products to electronics distributors. Based on disclosures on Nordic Semiconductor’s website relating to distributors by country, we believe major distributors include Avnet Inc (AVT), Arrow Electronics Inc (ARW), Mouser Electronics (private), and Digi-Key Electronics (private), among others.³ While we acknowledge the level of Nordic Semiconductor-specific inventory at suppliers may differ from total distributor inventory levels, we believe analysis of major Nordic distributors may provide insight into channel inventory and end-market demand levels. Accordingly, we analyzed Avnet and Arrow Electronics’ inventory and receivables levels herein.

³ <https://www.nordicsemi.com/About-us/FindDistributor>

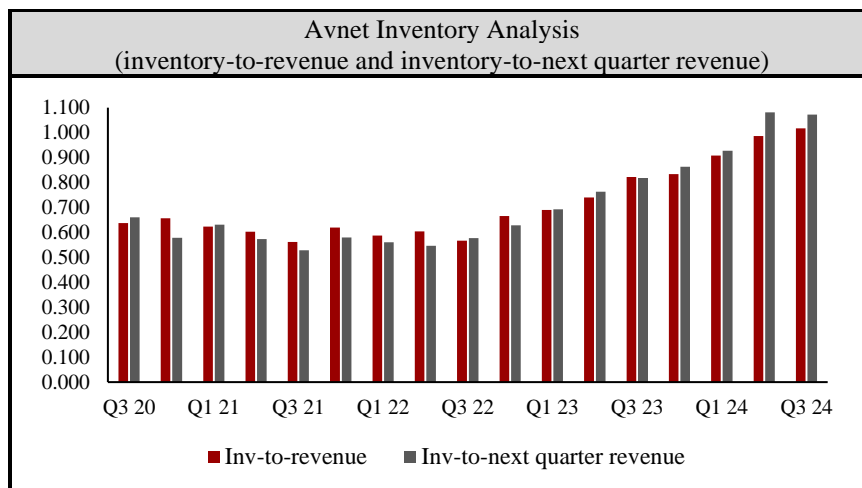
Indication distributor inventory adjustments were “predominantly” complete may be optimistic: In Q1 24, revenue declined 48.8% year-over-year to \$74.5 million. On its Q1 24 Conference Call, the Company attributed weak Q1 24 revenue to “planned and needed” distributor inventory adjustments and represented the adjustment was “predominantly” finished. Further, it guided for “improving demand” from its Tier 1 and broad market end customers, in part, due to stronger second quarter seasonal sales. While we acknowledge Nordic represented distributor inventory adjustments were “predominantly” past and guided for improving Q2 24 demand, we are concerned distributor inventory levels may remain overbuilt given evidence of certain Nordic distributors with historically elevated inventory levels (discussed next). Therefore, we are concerned revenue pressure may persist as distributors continue to normalize overbuilt inventory levels.



Elevated Avnet inventory levels and commentary suggest channel inventory may remain elevated: In Q3 24, Avnet inventory increased 7.4% year-over-year to \$5,751.9 million while revenue declined 13.2% to \$5,653.6 million.⁴ Accordingly, Avnet inventory-to-revenue surged 23.8% to 1.017, the highest level in at least five years. Further, Avnet inventory-to-next quarter revenue (Q4 24 consensus estimate) surged 31.2% to 1.072, the second highest level in at least five years. On its Bank of American Technology Conference Call on 06/06/24, Avnet indicated elevated customer inventories and underlying demand declines impacted its ability to sell-through inventory and guided for an “inflection point” in late CY 24. Given (1) historically elevated Avnet inventory levels, (2) commentary highlighting end-market demand weakness, and (3) Avnet guided for demand challenges to persist throughout CY 24, we are concerned Nordic demand may remain depressed as distributor inventory adjustments persist and Nordic revenue may remain pressured.

Customer inventories are still elevated, so that impacts our ability to get through some of our inventory. But at the same time, we think the inflows coming off of the suppliers are very well-controlled and not creating additional headwinds there. But as **the underlying demand environment has declined**, right, that's causing more, more time. But I think our commentary was a couple of quarters ago mid-2024 would be where we start to see some uptick there. **I think we are thinking more now late 2024 is where we start to see kind of the inflection point**, but we will continue to monitor it. (AVT CFO Mr. Kenneth Jacobson, AVT Bank of America Technology Conference, 06/06/24) [emphasis added]

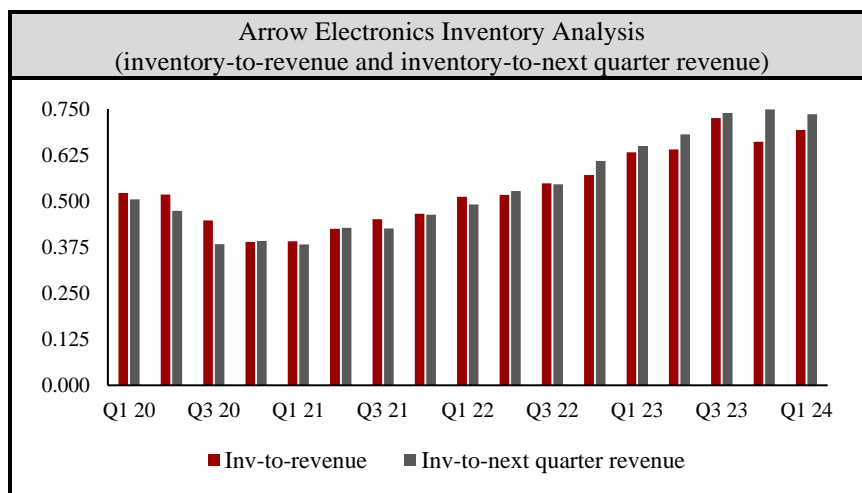
⁴ Avnet’s fiscal year ends on 07/01.



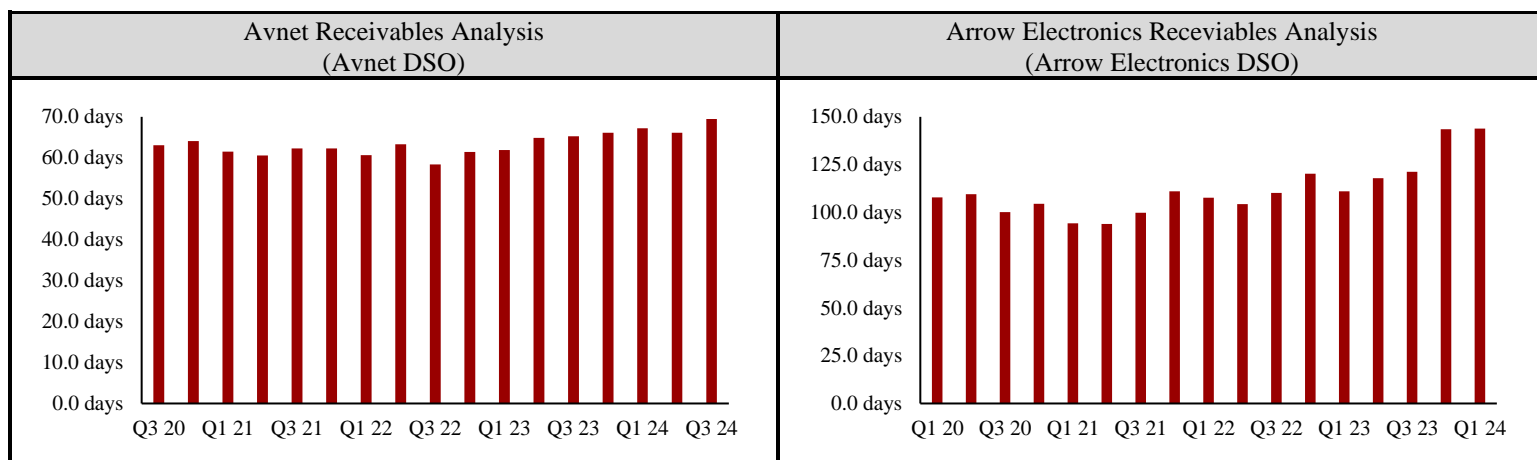
Elevated Arrow Electronics inventory levels suggest channel inventory may remain elevated, in our view: In Q1 24, Arrow inventory declined 13.2% year-over-year to \$4,797.1 million while revenue declined 20.7% to \$6,924.3 million. Accordingly, Arrow inventory-to-revenue increased 9.5% to 0.693, the second highest level in at least five years. Further, Arrow inventory-to-next quarter revenue (Q2 24 consensus estimate) increased 13.3% to 0.736, the third highest level in at least five years. On its Stifel Cross Section Insight Conference Call on 06/04/24, Arrow attributed reduced Q2 24 revenue guidance, in part, to elevated customer inventory levels and represented it was “hard” to say when the cycle was going to inflect, though it was moving in the “right direction.” Given (1) elevated Arrow inventory levels, (2) reduced Arrow Q2 24 guidance attributed, in part, to elevated customer inventory levels, and (3) Arrow commentary highlighting it was unclear when the cycle would turnaround, we are concerned Nordic distributor demand may remain depressed and our revenue pressure concerns are heightened.

Analyst: And, are you getting a sense and do you know, like at different types of customers, in terms of inventory levels and now we talking a quarter or so when you get back to the more normal order patterns or is it going to take longer? Or really depends on end markets or customers?

ARW CFO Mr. Rajesh K. Agrawal: It really depends on end markets and customers. There are differences in different vertical segments that we're serving. Industrial continues to have higher levels of inventory, and that's going to take some time for it to work through. But it is going in the right direction, Matt. And, hard for us to say we – the cycle has lasted a little bit longer than anyone expected, the correction has. And so, **it's hard for us to say exactly when that's going to inflect**, but it is going in the right place. (ARW Stifel Cross Sector Insight Conference Call, 06/04/24) [emphasis added]



Elevated Avnet and Arrow Electronics receivable levels heighten our concerns: In Q3 24, Avnet days sales outstanding (DSOs) increased 6.5% to 69.5 days, the highest level in at least five years. In Q1 24, Arrow DSOs surged 29.5% to 143.8 days, the second highest level in at least five years. On its Stifel Cross Sector Conference Call, Avnet represented it made “good progress” in lowering inventory levels and collecting associated receivables. Arrow did not comment on receivable levels on its Q1 24 Conference Call or in its Q1 24 10Q. To the extent the elevated distributor DSOs were driven by weak end-market demand and/or elevated end-market customer inventory levels, we would be concerned distributor inventory destocking may persist, channel inventory levels may remain elevated, and Nordic channel partners may not be “predominantly behind” inventory adjustments.



Background on Consumer and Industrial end markets: As mentioned, in FY 23, Consumer end markets accounted for 56.2% of revenue and Industrial end markets accounted for 21.8%. Accordingly, Consumer and Industrial accounted for 78.0% of revenue. Consumer applications include mobile/PC, wearables, smart home, gaming, VR/AR, consumer asset tracking, consumer health, audio, toys, CE remotes, and wireless charging, among others. Industrial applications include asset tracking, professional lighting, metering, building automation, modules, retail, transportation, payment/ID, tools and machinery, agriculture, beacons, maker and education, and automotive, among others.

Revenue By End Product Area Analysis (as % of revenue ex. ASIC & consulting)	FY 23
Consumer	56.2%
Industrial	21.8%
Consumer & Industrial	78.0%

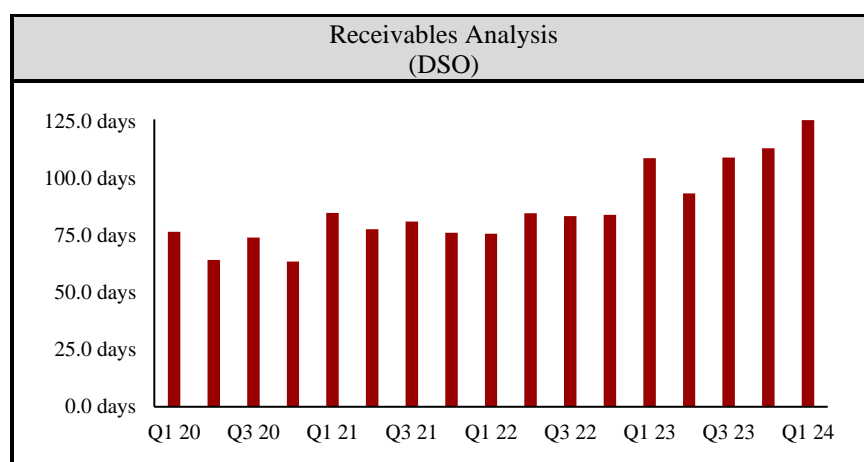
“Weak” Consumer & Industrial end-user demand heightens our destocking and revenue pressure concerns: In FY 23, Bluetooth revenue declined 27.7% year-over-year to \$483.9 million. In its FY 23 Annual Report, the Company attributed the decline in part to weak end-user demand, “especially” in Consumer and Industrial markets. Nordic attributed Consumer market weakness to reduced revenue from PC accessories for home offices and gaming and Industrial market weakness to a “general downturn” in the market. On its Q4 23 Conference Call, the Company highlighted the Industrial market had “particularly high inventory that need[ed] to be depleted.” While we acknowledge Consumer and Industrial end market demand may recover, given Company commentary highlighting (1) FY 23 end-user demand in its two largest end markets was “especially” weak and (2) Industrial inventory was “particularly” high, we are concerned revenue weakness may persist amid continued distributor inventory destocking.

The revenue decrease primarily reflects **weak end-user demand, especially in Consumer and Industrial markets**, combined with continued inventory adjustments at both end-customer and distributor levels. (FY 23 Annual Report) [emphasis added]

Elevated Receivable Levels Highlight Overbuilt Channel Inventory And Revenue Pressure

Elevated receivable levels highlight elevated channel inventory and revenue sustainability risk, in our view:

In Q1 24, receivables declined 41.6% year-over-year to \$102.9 million while revenue declined 48.8% to \$74.5 million. Accordingly, days sales outstanding (DSO) increased 15.3% to 125.7 days, the highest level in at least five years. The Company did not discuss receivable levels on its Q1 24 Conference Call or in its Q1 24 10Q. We are concerned historically elevated DSOs may highlight customer payment term extensions, collection challenges, and/or elevated distributor inventory. Accordingly, our elevated channel inventory and revenue weakness concerns are heightened.



Historically aged receivables highlight collection challenges and/or revenue quality deterioration, in our view:

In its Annual Reports, the Company discloses accounts receivable aging. In FY 23, past due receivables as a percent of total receivables increased 1,190 basis points year-over-year to 29.8%, the highest percentage in at least five years. In its FY 23 Annual Report, the Company represented it had a limited number of customers, regular contact, and long-term relationships with most of its customers base, but did not specifically comment on receivable aging. We are concerned historically aged receivables may highlight collection challenges and/or delayed payments as distributors customers delayed payment until inventory was sold through. Our concerns are heightened given a payment term extension may have understated certain receivable aging (discussed next).

Receivables Aging Analysis (aged receivables as a % of total receivables)	FY 19	FY 20	FY 21	FY 22	FY 23
0-30 days	9.6%	14.4%	20.7%	17.3%	27.8%
31-120 days	3.0%	0.1%	0.0%	0.5%	1.8%
Over 120 days	2.1%	0.4%	0.1%	0.1%	0.2%
Total past due	14.7%	14.9%	20.8%	17.9%	29.8%
<i>Year-over-year change</i>	--	<i>20 bps</i>	<i>590 bps</i>	<i>(290 bps)</i>	<i>1,190 bps</i>

FY 23 disclosed payment term extension heightens our revenue and aged receivables concerns: Previously, in its FY 20 to FY 22 Annual Reports, the Company disclosed payment was generally due 30 to 60 days after delivery. In its FY 23 Annual Report, the Company disclosed payment was generally due 30 to 90 days after delivery. Given disclosure suggests the Company may have extended payment terms, our revenue sustainability concerns are heightened. Further, we are concerned the disclosed aged receivables may understate true receivables aging (i.e. receivables traditionally considered 0-30 days past due would not be considered past due in FY 23).

The normal credit term is 30-**90** days upon delivery. (FY 23 Annual Report) [emphasis added]

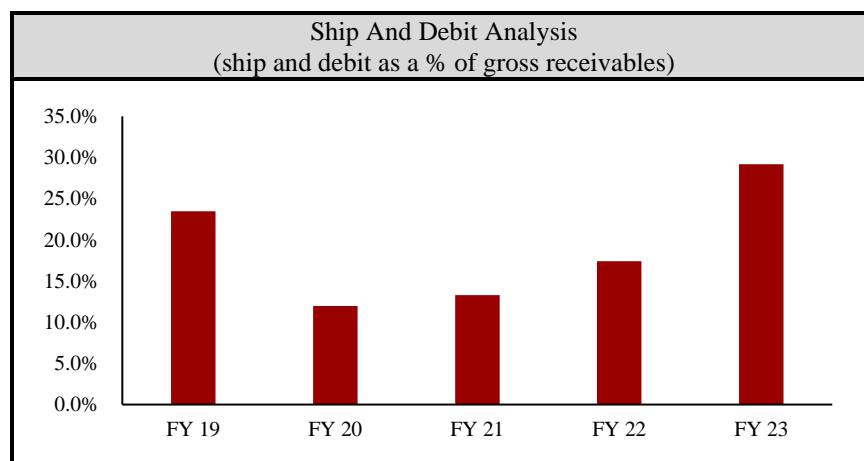
The normal credit term is 30-**60** days upon delivery. (FY 22 Annual Report) [emphasis added]

No credit loss allowance despite elevated and aged receivables may be inappropriate, in our view: In its FY 23 Annual Report, the Company indicated it did not recognize an allowance for doubtful accounts as historically there had “not been any significant credit losses” and 71.0% of trade receivables were within its terms. While we acknowledge there were historically no significant credit losses and the Company had close, long-term relationships with most customers, we are concerned no credit loss allowance may be inappropriate given (1) historically elevated receivable levels and (2) historically elevated aged receivables. Accordingly, we are concerned the limited allowance may be inappropriate and/or the Company may be compelled to directly write-off receivables and/or increase the allowance for doubtful accounts.

Historically there has not been any significant credit losses. 71 percent of trade receivables were within terms at the balance sheet date. On that basis, expected credit loss for trade receivables are limited and allowances for doubtful accounts at 31 December 2023 was [\$]0m. (FY 23 Annual Report)

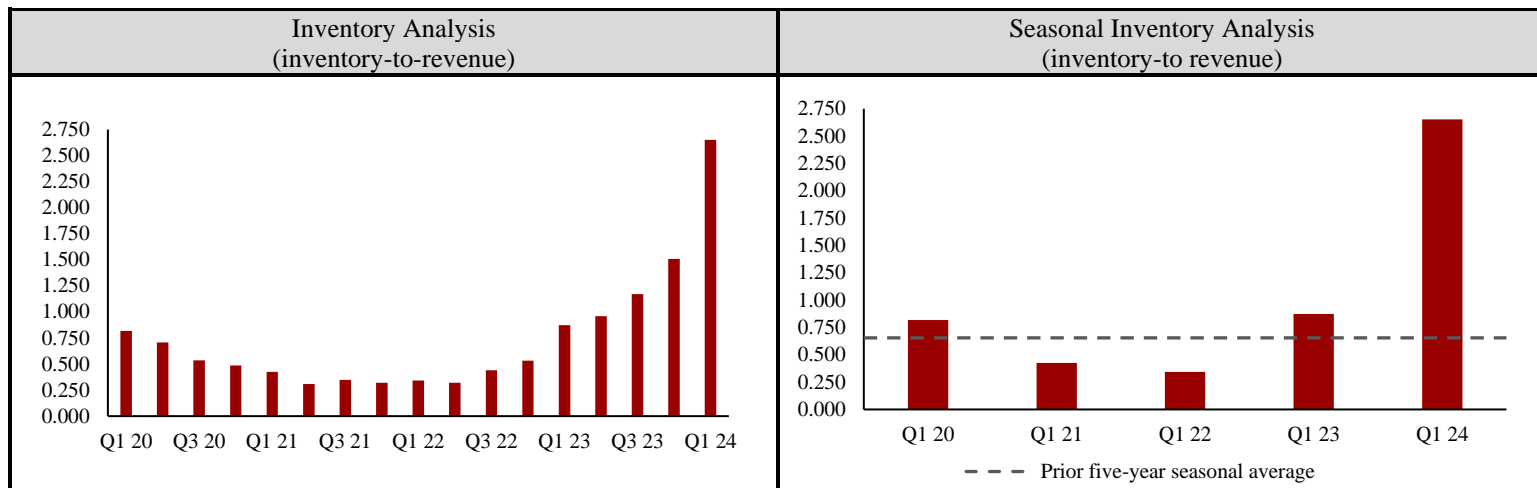
Background on ship and debit allowance: In its FY 23 Annual Report, the Company disclosed it sells products to certain distributors on “ship and debit” terms, which entitle the distributor to a refund in the amount of the price difference if it sells the products to end customers at lower prices than those quoted on the distributor price list. Revenue is recognized net of variable considerations such as ship and debit allowances. The Company discloses ship and debit allowances in its Annual Reports.

Elevated ship and debit allowance highlights pricing pressure and/or weak end market demand, in our view: In Q1 24, ship and debit allowance declined 2.2% year-over-year to \$30.0 million while gross receivables declined 41.6% to \$102.9 million. Accordingly, ship and debit allowance as a percent of gross receivables increased 1,180 basis points to 29.2%, the highest level in at least five years. In our view, elevated ship and debit allowance levels suggest there may be more pre-approved price discounts in the channel relative to outstanding receivables and distributors may have been compelled to increase discounting to sell-through elevated inventory. Accordingly, we are concerned about pricing pressure amid elevated channel inventory and/or weak end market demand.



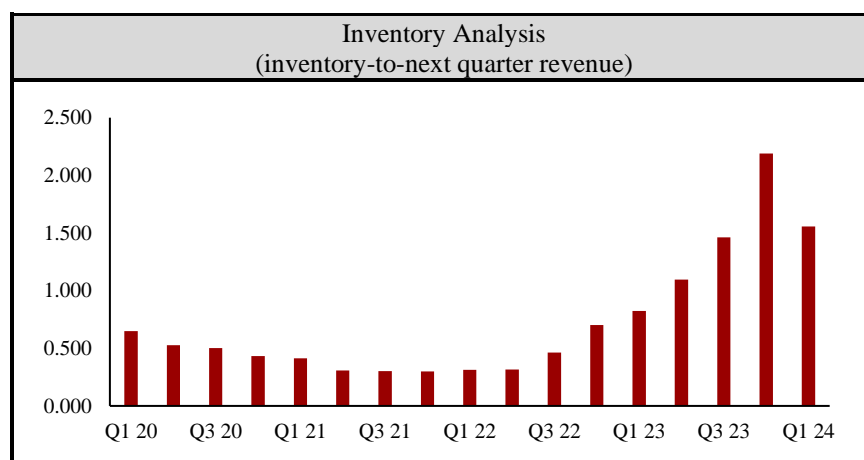
Inventory May Be Overbuilt & May Not Be Rationalized By Distributor Adjustments

Elevated inventory levels amidst overbuilt channel inventory may portend margin pressure, in our view: In Q1 24, inventory surged 55.7% year-over-year to \$197.6 million, while revenue declined 48.8% to \$74.5 million. Accordingly, inventory-to-revenue surged 203.9% year-over-year to 2.652, the highest level in at least five years. In its Q1 24 Interim Report, the Company disclosed it began to strategically build inventory in FY 23 following supply constraints in FY 22. Further, the Company represented it built wafer supply for its nRF52 and nRF53 Series SoCs and its upcoming nRF54 Series SoCs. Given historically elevated inventory levels amidst overbuilt channel inventory, we are concerned inventory may be overbuilt and margins may be pressured to the extent Nordic is compelled to underutilize capacity to right-sized overbuilt inventory levels.



Elevated inventory levels may not be rationalized demand improvement, in our view: As mentioned, the Company highlighted the distributor inventory adjustments were “predominantly” behind it. In Q1 24, inventory increased 55.7% year-over-year to \$197.6 million, while consensus expects next quarter revenue of \$127.0 million. Accordingly, inventory-to-next quarter revenue (Q2 24 consensus estimate) surged 89.0% to 1.556, the second highest level in at least five years. In our view, completed inventory destocking does not fully rationalize the inventory build given inventory was historically elevated relative to next quarter expected revenue.

The low revenue reflects that we have actively adjusted inventory in the distribution channel. Sell-through from distributors have been significantly higher in the quarter. The planned and needed **distributor inventory adjustment are now predominantly behind us**. (CEO Mr. Vegard Wollan, Q1 24 Conference Call, 04/23/24)



Inventory aging may highlight potential write-off risk, in our view: In its FY 23 Annual Report, the Company disclosed inventory was valued at the lower of cost or net realizable value after deduction for obsolescence, where items made from older parts that cannot be easily sold to other customers (i.e. obsolete inventory) are written off completely if aged more than two years. We are concerned inventory building over multiple years and historically elevated inventory levels may compel the Company to write down and/or write off certain inventory and margins may be pressured. To the extent inventory relates to older generation products, we would be concerned about increased obsolescence risk amidst the upcoming nRF54 SoCs launch.

One exception from regular calculation of net realizable value is related to items that are made from older parts and cannot be easily sold to other customers. These items are written off completely item by item if aging is more than 2 years. (FY 23 Annual Report)

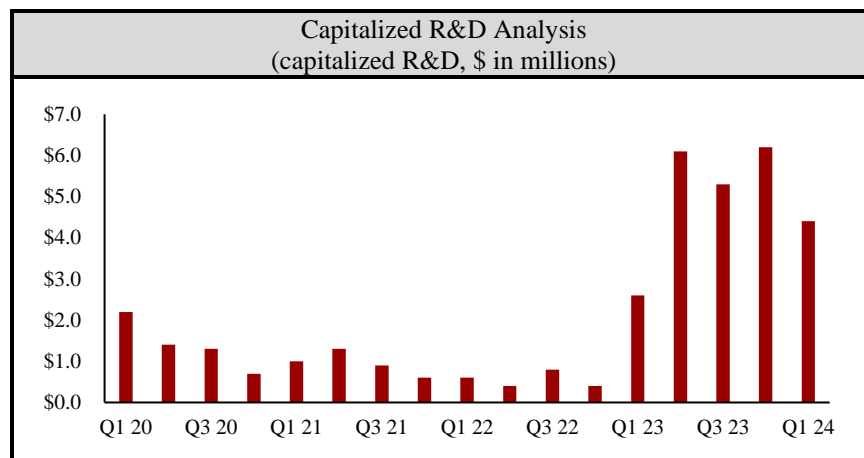
Wafer prepayment may make inventory normalization difficult, in our view: In its FY 23 Annual Report, the Company disclosed it paid \$100.0 million in Q1 23 to secure a capacity reservation agreement with a wafer manufacturer to purchase wafers from Q4 23 to Q2 27, in part, to “strengthen supply resilience.” In our view, wafer prepayments may make inventory normalization difficult as the Company is compelled to take on prepaid inventory despite historically elevated inventory levels.

Bluetooth inventory previously highlighted to be at “normalized” level heightens our concerns: In Q2 23, inventory-to-next quarter revenue surged 246.2% year-over-year to 1.096. On its Q2 23 Conference Call, the Company indicated Bluetooth inventories were at a “more normalized level,” though proprietary and cellular inventory was “on the high side.” Given inventory levels have surged significantly since Q2 23, we are concerned Bluetooth inventory levels may be materially above “normalized” levels.

This increase comes as a result of **higher inventory due to the end of the supply constraints** that have kept inventory levels at very low during 2022. So, **Bluetooth inventories are now at the more normalized level**, although **inventory for proprietary and cellular is on the high side**. (CFO Mr. Pål Elstad, Q2 23 Conference Call, 07/10/23) [emphasis added]

Increased Capitalized R&D May Portend Margin Pressure, In Our View

Capitalization of R&D expenses related to new product beginning in Q1 23 drove capitalized R&D surge: Previously, in its Q1 23 Interim Report, the Company disclosed it did not “commence capitalization of R&D until after customer sampling.” In Q1 24, capitalized R&D surged 54.8% to \$4.8 million, the seventh consecutive quarter of at least 50.0% growth. In its Q1 24 Interim Report, the Company indicated it commenced capitalization of its nRF54 (multiprotocol SoC) after customer sampling started in “late” Q1 23. We are concerned elevated capitalized R&D may have provided a near-term margin benefit and portend margin pressure (discussed next).

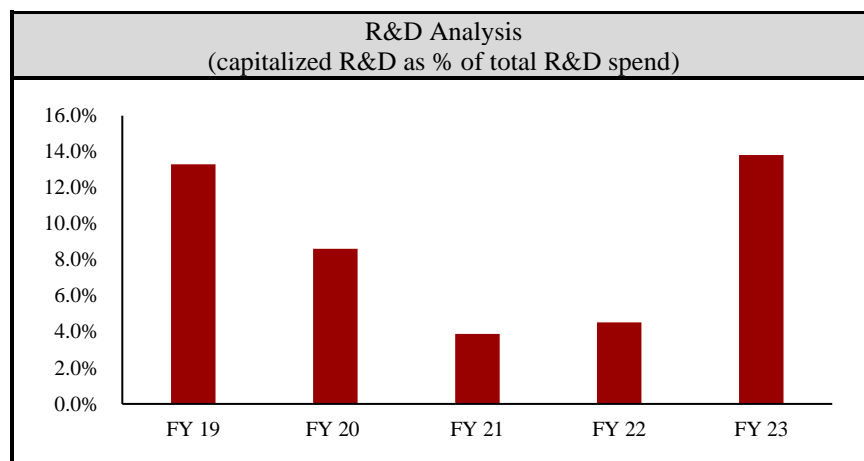


Elevated capitalized R&D levels may portend margin pressure, in our view: In its Annual Reports, the Company discloses total R&D spend (including capitalized R&D) in the intangible asset footnote. Accordingly, we analyzed R&D capitalization relative to total R&D spend annually. In its FY 23, capitalized R&D surged 238.6% year-over-year to \$22.0 million while total R&D spend increased 10.8% to \$159.1 million. Accordingly, capitalized R&D as a percent of total R&D spend increased 930 basis points to 13.8% the highest level in at least five years. On its Q1 24 Conference Call, the Company represented it had “shifted priorities” to the development of the nRF54 family of products and had “by far” the largest engineering programs behind it and guided for initial nRF54 product revenues “towards the end” of FY 24. We are concerned margins may be pressured as the nRF54 development is completed and capitalized development amortization commences. To the extent significant new projects do not

enter the development stage after the nRF54 goes to market, we are concerned certain recurring expenditures (e.g. employee salaries) would no longer qualify for capitalization (i.e. would be directly expensed) and our margin pressure concerns would be heightened.

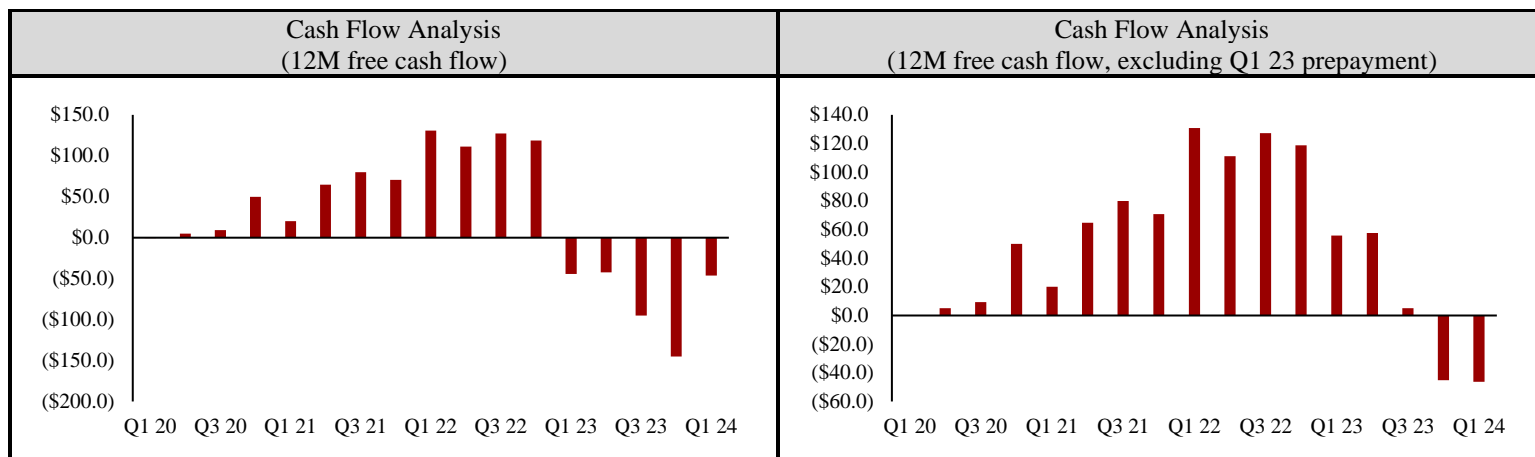
But I think it's fair to say that our expectations still are pretty much the same, that we are on track and expecting initial revenues towards the end of 2024. And I can also add to that that we have now more over 300 customer samples combined in the nRF54 products. (CEO Mr. Vegard Wollan, Q1 24 Conference Call, 04/23/24)

We have by far the largest engineering resources behind these programs. They are extremely important for us. And we have **shifted priorities** to make sure and assure and continue deliver on these programs. (CEO Mr. Vegard Wollan, Q1 24 Conference Call, 04/23/24) [emphasis added]



Depressed Cash Flow Highlights Growth And Earnings Sustainability Risk

Depressed free cash flow highlights earnings sustainability risk, in our view: In the twelve months ended Q1 24, cash flow from operations declined 36.6% year-over year to negative \$25.6 million while capex declined 18.5% to \$20.7 million. Accordingly, free cash flow declined \$2.1 million to negative \$46.3 million, the third lowest level in at least four years. As mentioned, the Company prepaid \$100.0 million in Q1 23 to secure wafer supply. Therefore, Q1 24 trailing twelve month free cash flow (adjusting for the one-off wafer prepayment) declined to the lowest level in at least four years. In its Q1 24 Interim Report, the Company represented low operating cash flow reflected losses in the period and negative changes in working capital. On its Q1 24 Conference Call, the Company indicated it focused on “reducing and deferring [capital expenditures] in the period with low revenue” and expected “normalization” in the coming quarters. In our view, historically depressed free cash flow attributed, in part, to negative working capital movements highlights elevated earnings sustainability risk.



Other Observations: Executive Turnover, Restructuring, & Reporting Change

Executive turnover may increase business disruption risk, in our view: Previously, in its FY 23 Annual Report, the Company disclosed it appointed a new CEO Mr. Vegard Wollan effective 01/01/24 following CEO Mr. Sverre Tore Larsen stepping down after “more than two decades” with the Company. In its Press Release on 12/12/23, the Company represented the CEO transition was part of a “management succession program” initiated in FY 21.⁵ In its Press Release on 03/07/24, the Company announced CTO Mr. Svein-Egil Nielsen stepped down “to pursue new adventures” and SVP of Legal and Compliance Ms. Linda Pettersson left the Company to “accept an offer outside of Nordic.” In our view, significant executive turnover amidst core business weakness may highlight increased business disruption, growth, and earnings sustainability risk.

Business unit restructuring may highlight fundamental business challenges: In its Q1 24 Interim Report, the Company represented it reorganized with four new product-centric business units (i.e. Short-range, Long-range, Wi-Fi, and PMIC) at the end of Q1 24, in part, to “clarify strategic direction” and “improve autonomy and accountability.” On its Q1 24 Conference Call, the Company indicated the restructuring may lead to changes in future resource and investment allocation as certain project roadmaps may require “more resources” to shorten the time to market. In addition, the Company represented it had “room for organizational improvement.” We are concerned a major business unit restructuring attributed, in part, to “clarify[ing] strategic direction” may highlight certain fundamental business challenges and disrupt near-term operations.

Nordic expects the reorganization to **clarify strategic direction, improve autonomy and accountability** in the different areas, sharpen the focus on products and development roadmaps, and enable a customer centric and agile approach to improve market responsiveness and shorten time-to-market. Overall, the company expects this to increase return on R&D investments over time. (Q1 24 Interim Report) [emphasis added]

Nordic shift to limit guidance and “other” information may obfuscate analysis & highlight limited visibility: On its Q4 23 Conference Call, the Company represented it would no longer guide beyond the current quarter given “lessons learned” over the past year. Further, Nordic indicated it would limit comments that could be traced to individual customers and other information that could “create disadvantages” in the competitive landscape and no longer comment on specific projects or their timing. In our view, the decision to no longer provide guidance beyond the current quarter and efforts to limit potentially disadvantageous information may obfuscate analysis and/or highlight limited visibility/increased uncertainty.

With the lessons learned over the last year, **we’ll only be guiding for the current quarter.** We will also limit comments that possibly can be traced back to individual customers and create unnecessary speculation on their behalf, particularly on financial- and business-related information. We have great respect for our customers and the partnerships we have created over a long time. And finally, although we wish to remain

⁵ <https://www.nordicsemi.com/Nordic-news/2023/12/Vegard-Wollan-announced-as-new-CEO>

open and transparent, **we may be limiting certain other information that we see could create disadvantages for Nordic in the competitive landscape.** (CEO Mr. Vegard Wollan, Q4 23 Conference Call, 04/05/24) [emphasis added]

Conclusion

We are concerned increased end-market customer concentration highlights revenue sustainability risk. We are concerned global governments' increased focus on domestic semiconductor production may have driven and continue to drive demand pressure. We believe Healthcare "growth engine" revenue pressure may persist given (1) dependence on a small number of end-market customers and (2) evidence of demand weakness at a large end-market customer. We are concerned revenue pressure may persist given certain elevated distributor inventory and receivable levels. Our concerns are heightened given the Company represented destocking was "predominantly" completed and evidence of overbuilt end-market customer inventory. In our view, historically elevated and aged receivable levels highlight overbuilt channel inventory levels. Our concerns are heightened given we believe (1) a disclosure change suggests the Company extended payment terms, (2) no credit loss allowance, and (3) an elevated ship and debit allowance may highlight pricing pressure and/or weak end market demand. We are concerned inventory may be overbuilt and may not be rationalized by an expected demand recovery. Further, we believe inventory aging may highlight write-off risk and wafer prepayments may make inventory normalization difficult. In our view, elevated capitalized R&D levels may portend margin pressure upon launch of the new product given (1) amortization will commence and (2) certain recurring spend will no longer qualify for capitalization. Depressed free cash flow heightens our earnings sustainability concerns. In addition, (1) executive turnover, (2) restructuring, and (3) a decision to "limit" certain guidance and other information highlights limited visibility and near-term disruption risk.

Risks to Our Thesis & Valuation

Demand Recovery, Product Pipeline, Healthcare Growth, Design Wins, & Reorganization

Q2 24 guidance and Company commentary highlight expected demand recovery: In its Q1 24 Interim Report, the Company guided for Q2 24 revenue of \$125.0 million at midpoint and a gross margin “around 50.0%,” up sequentially from \$74.5 million and 48.0% in Q1 24, respectively. Further, Nordic represented inventory levels “peaked” in Q1 24 and guided for inventory levels to decrease to a “normalized level” in FY 24. As mentioned, the Company indicated distributor inventory adjustments were “predominantly” behind and guided for “improving demand” in Q2 24.

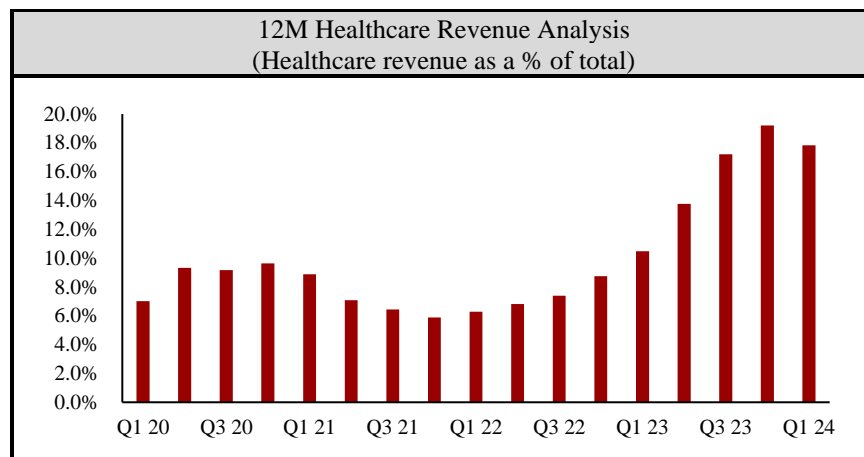
The inventory adjustment are predominantly behind us. We do see improving demand now for our end – from our end customers, both in the Tier 1 segment and in the broad market. At the same time, Q1 is a seasonal stronger quarter than Q – Q2 is a seasonal stronger quarter than Q1. (CEO Mr. Vegard Wollan, Q1 24 Conference Call, 04/23/24)

Guidance Analysis (per Q1 24 Interim Report, \$ in millions)	Q2 24G
Revenue (at midpoint)	\$125.0
Gross margin	“around 50.0%”

“Strong traction” in upcoming products and development pipeline: On its Q4 23 Conference Call, the Company guided for its nRF54 Series products to “drive the next level of performance” to the wireless connectivity and IoT markets and highlighted positive customer feedback on the products. In addition, it represented its PMIC products, Wi-Fi products, and front-end modules were “gaining traction” with “clear synergies” to its Short- and Long-range businesses. On its Q1 24 Conference Call, the Company reiterated “very, very strong traction” for its upcoming nRF54 product and highlighted its new nRF9151 cellular IoT product confirmed its position as the “cutting edge” of long-range low power and system innovation.

So on the nRF54 products, which we are extremely excited about and have a **very, very strong traction** with our customer base around these products, that is obviously a larger family and a larger range of products. (CEO Mr. Vegard Wollan, Q4 23 Conference Call, 02/05/24) [emphasis added]

Increased diversification as Healthcare segment guided to be a growth driver: Previously, on its Q4 23 Conference Call on 02/05/24, the Company highlighted the Bluetooth LE audio holds “great potential” with recent product launches from a “world renowned” Danish hearing aid company. In the twelve-months ended Q1 24, Healthcare revenue as a percent of total revenue increased 730 basis points to 17.8%, the second highest level in at least five years. In its Q1 24 Interim Report, the Company indicated one of its Tier-1 Healthcare customers (we believe DexCom, as mentioned) received regulatory approval for its first over-the counter integrated Continuous Glucose Monitor which would become available in the US in summer of FY 24. Further, Nordic guided for the Healthcare end market to be a “future growth engine.”



Bluetooth LE design wins market leader: In its Q1 24 Interim Report, the Company highlighted it remained the “clear market leader” in Bluetooth Low Energy (LE) design win market share with “approximately five times” as many design wins as the second and third largest companies. Specifically, the Company highlighted 488 of the 1,145 (i.e. 42.6%) new Bluetooth LE design certifications in the twelve-months ended Q1 24 used Nordic chips. Further, on its Q1 24 Conference Call, the Company highlighted it was “outpacing the total market” in design win market share over the last twelve months.

On a twelve months basis the company remains the clear market leader with approximately **5 times as many design wins as the second and third largest, and 8 times as many as number three and four.** The total number of new Bluetooth LE design certifications was 1145 in LTM Q1'24, of which 488 had Nordic inside. (Q1 24 Interim Report, 04/23/24) [emphasis added]

Organizational change guided to facilitate growth: As mentioned, the Company reorganized with four new business units at the end of Q1 24. In its Q1 24 Quarterly Report, the Company guided for the reorganization to increase return on R&D investments over time. Further, on its Q1 24 Conference Call, the Company highlighted it was “in the right market segments” and represented it was “certain” the reorganization would lead it to return to growth and restore profitability.

That means that we'll have to prioritize our resources carefully to maximize return from our significant R&D investments, and more changes will naturally follow from the organizational changes we are now implementing... But I'm **certain** that the new steps we are now taking are starting our journey towards our overarching goal to return to growth and restore profitability for Nordic. (CEO Mr. Vegard Wollan, Q1 24 Conference Call, 04/23/24) [emphasis added]

Valuation Analysis

As of the date of this publication, Nordic Semiconductor’s shares traded at 4.0x next-twelve month enterprise value-to-sales, 2.3% below the peer group average.

Valuation Analysis	NTM EV/S
Nordic Semiconductor ASA (NOD.OL)	4.0x
Silicon Laboratories Inc (SLAB)	5.2x
Qorvo, Inc (QRVO)	3.1x
NXP Semiconductors NV (NXPI)	5.1x
STMicroelectronics NV (STM)	3.1x
Peer average	4.1x
<i>Nordic Semiconductor above (below) peer average</i>	<i>(2.3%)</i>

Disclaimer and Disclosure

This report was produced by Voyant Advisors, LLC (“Voyant”). The following Research Analysts employed by Voyant contributed to this report: Graeme Lazarus, Ryan DesJardin, Andrew Brown, Duran Sulymankhel, and Adam Yribarren. Voyant’s home office is at 15373 Innovation Dr, Suite 365 San Diego, CA 92128. The firm’s home office is where information about the valuations herein are located, unless otherwise indicated in the report.

At the time of this report, Voyant expects to provide updates on a quarterly or semi-annual basis depending on the frequency of when the above company discloses material financial results. We will cease providing updates if we are discontinuing research coverage as disclosed on the front page of this report in the Thesis Summary.

Voyant has not provided previous recommendations concerning the same financial instrument or issuer during the preceding twelve-month period.

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