BEHIND THE NUMBERS
EARNINGS QUALITY & DIVIDEND SUSTAINABILITY RESEARCH

BTN Research

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IDEX Corp. (IEX) EQ Review

Current EQ Rating*	Previous EQ Rating
5+	5+

6- "Exceptionally Strong"
5- "Strong"
4- "Acceptable"
3- "Minor Concern"
2- "Weak"
1- "Strong Concerns"

Note that a "+" sign indicates the earnings quality improved in the most recent quarter while a "–" sign indicates deterioration

*For an explanation of the EQ Review Rating scale, please refer to the end of this report

We initiate coverage of IEX with an earnings quality rating of 5+ (Strong)

In our view, IEX's accounting is very conservative – on both a GAAP and Adjusted basis. Given that the company does look for acquisitions to help with long-term growth, it has shown an ability to realize margin synergies with very small restructuring charges and they frequently can pay for acquisitions from internally generated cash flow; there are three big pluses.

Recent gains	2019	2018	2017	2016	2015
Organic Growth	1%	8%	6%	-1%	-4%
Operating Margin	24.2%	23.4%	21.9%	20.7%	21.3%

Many of the end markets are sensitive to the economy and some are sensitive to commodity markets. Total markets are diversified and about half of sales are domestic and the other half international. That can cause growth and margins to decline rather quickly as IDEX has seen with COVID or after 2008:

COVID Change	2Q20	1Q20
Organic Growth	-17%	-5%
Operating Margin	-340bp	-22bp

Recession	2010	2009	2008	2007
Organic Growth	12%	-14%	0%	6%
Operating Margin	17.2%	14.8%	14.1%	18.6%

There is no doubt the company is cyclical and management expects 3Q20 to see further declines in y/y sales growth of 12-17%. It has noted that it seemed to reach a bottom in May and it has seen sales picking up since then. However, it took more than a year to recover from the recession. We believe the strong liquidity position, low debt, and conservative accounting will enable IDEX to survive and recover. The biggest potential risk we can envision is a goodwill write down if any particular unit has a longer than anticipated downturn.

In normal times, IDEX is on pace to earn about $6 in EPS. Our quality issues are only 10-12 cents in restructuring charges being added back and there is a sizeable goodwill balance that is not being amortized and effectively providing about 55-60 cents in EPS.

- **Leverage is very low for a company making acquisitions as it pays for most of them entirely out of cash flow. Debt to EBITDA is 1.65x after COVID impacts (it likely goes higher before it starts to improve in 2021) – but that is a far cry from other "growth-through-acquisition" companies with ratios of 4-6x, net of cash. The company has over $1.5 billion in liquidity and has no maturities until December 2021.**

- **IDEX also does not net its sizeable cash balance against debt – that's very conservative in our view. Doing that would reduce Net Debt to EBITDA to 0.5x.**

There are also not hidden forms of leverage such as meaningful amounts of leases, underfunded pensions, or stretching payables.

- **Cash flow generation is enough to cover capital spending, acquisitions, dividends, and some share repurchases. They also tend to be value buyers of companies as well as their own stock. They don't buy simply because they have cash.**

- **The strong cash flow is not being helped by drawing down working capital. We think that is another plus.** Overall working capital is a slight drag with the top-line growth and it does release some cash when sales decline which shows us they are investing in the business. DSIs are normally about twice DSOs so the rise in DSOs in 1Q has already adjusted to more normal levels and inventories will likely decline further in 3Q. We are also impressed that payables are holding at normal levels of DSPs – IDEX is not reaching for cash from suppliers.

- **Acquired assets are amortized over reasonable lives that compare favorably with internally built assets. We are not seeing equipment depreciated over 3-7 years vs. acquired assets over 20-30 years. The major pieces of PP&E depreciate over 3-12 years and acquired assets over 8-20 years.**

- **Goodwill is our biggest knock – Goodwill is about 75% of all intangibles and is not being amortized. This adds as much as 58-cents to EPS. We will give kudos to IDEX for testing for impairments with both discounted cash flow and looking at public company valuation multiples.** ROI is above 15% and it has improved margins too. It serves older markets too such as municipal water systems, fire equipment, and large industrial applications so short-term obsolescence seems a lower risk. **The concern is the times it has seen write offs are when business lines endure falling sales and margins – which is happening with COVID.**

- **IDEX adjusted metrics are very conservative in our view – especially for a company making acquisitions. It doesn't add back everything under the sun. Adjustments to operating income are limited to restructuring charges, gains/losses on asset sales, and some minor one-time items. Most importantly, the restructurings are small.** They don't make a $300 million deal and announce a $200 million integration plan. The difference between GAAP and adjusted results is about 50bp for operating margin and for EPS it's 5-10 cents or 1%-2% in most cases. The company doesn't even add back stock compensation to adjusted EBITDA.

- **Miscellaneous items also look fine. R&D is growing, warranty accruals are up a little, advertising is flat.** They aren't picking up short-lived earnings in these areas. They do report they have asbestos claims based on products purchased from third parties. At this point insurance has covered any claims.

Leverage is Low and Reported Very Conservatively

For a company that grows with often mild organic growth that is aided by acquisitions, we were surprised at how low the debt is here. So many companies we see that do growth by acquisition have Debt/EBITDA ratios of 4-6x net of cash.

In the case of IDEX, the company doesn't appear to get too far over its skis as borrowing is never that heavy. What is also a huge sign of conservative reporting is IDEX does not net its borrowing against cash on hand. Cash is frequently a sizeable figure:

Leverage Stats	2Q20	1Q20	2019	2018	2017	2016	2015
Cash	$746.3	$569.2	$632.6	$466.4	$376.0	$236.0	$328.0
Total Borrowing	$1,044.7	$999.3	$849.3	$848.8	$859.0	$1,015.3	$840.8
Equity	$2,261.0	$2,229.8	$2,263.2	$1,994.6	$1,886.5	$1,543.9	$1,443.3
Adj. EBITDA	$634.5	$670.3	$678.5	$662.7	$583.6	$530.5	$505.3
Debt/EBITDA	1.65	1.49	1.25	1.28	1.47	1.91	1.66
Leverage/Capital	31.6%	30.9%	27.3%	29.9%	31.3%	39.7%	36.8%

- In 1Q20, IDEX drew down $150 million on its $800 million credit line as COVID began

- In 2Q20, IDEX issued a new $500 million senior note and repaid $300 million of notes due in December and the $150 million on the credit line – so debt has grown by about $195 million since the end of 2019.

- Offsetting the $195 million rise in debt is a $114 million increase in cash – so COVID has not leveraged the balance sheet.

Many companies we see that have a corporate policy to grow via acquisition not only net cash against debt in computing debt ratios – they often have a goal of being between 3-4x

EBITDA. If we net cash against IDEX's ratios, this balance sheet has very low leverage in our view at 0.5x:

Cash Adj. Lev.	2Q20	1Q20	2019	2018	2017	2016	2015
Cash	$746.3	$569.2	$632.6	$466.4	$376.0	$236.0	$328.0
Total Borrowing	$1,044.7	$999.3	$849.3	$848.8	$859.0	$1,015.3	$840.8
Net Debt	$298.4	$430.1	$216.7	$382.4	$483.0	$779.3	$512.8
Adj. EBITDA	$634.5	$670.3	$678.5	$662.7	$583.6	$530.5	$505.3
Net Debt/EBITDA	0.47	0.64	0.32	0.58	0.83	1.47	1.01
Net Lev./Capital	11.7%	16.2%	8.7%	16.1%	20.4%	33.5%	26.2%

Moreover, we do not see miscellaneous areas where the company has been borrowing money either. IDEX has some leases for buildings and equipment, but that is only about $100 million. They are all operating leases (no capital leases that can inflate earnings and cash flow). The pension obligations are minor too. US pensions have a funding shortfall of only $2.5 million or 3% of the PBO. Non-US pensions are underfunded by $62.7 million or 60% of PBO, but that is using a 1.3% discount rate. Looking at working capital, IDEX is not boosting its payables and its accrued expenses rose in the 1H20 primarily due to income taxes payable increasing:

W/C Liabilities	2Q20	1Q20	2019	2018	2017
Accts Payable	$137.4	$157.7	$138.5	$143.2	$147.1
Accrued Exp.	$225.9	$208.8	$180.3	$187.5	$184.7

In 2020, taxes were not due until 3Q, and taxes payable rose by $34 million from 4Q19 to 2Q20. COVID created some disruption on payables at the end of 1Q20, but that has since been paid back to normal levels.

IDEX Is Funding Its Acquisitions Via Internally Generated Cash Flow

The fact that IDEX is not borrowing much money should be an indication that it is producing solid cash flow to pay for acquisitions. We like that IDEX comes right out and says this is a way it intends to grow on page 2 of the 10-K:

> ***"The Company also believes that its strong financial performance has been attributable to its ability to design and engineer specialized quality products,***

coupled with its ability to successfully identify, acquire and integrate strategic acquisitions."

Other companies have this plan, but far fewer view it as an on-going use of internally generated capital. Many believe they can simply borrow the money for a deal. IDEX generates solid cash flow that amply covers capital spending, acquisitions, and dividends:

Cash Flow	2Q20	1Q20	2019	2018	2017	2016	2015
CFO	$169.4	$84.8	$528.1	$479.3	$432.8	$399.9	$360.3
Cap-Ex	$8.3	$12.8	$50.9	$60.1	$43.9	$38.2	$43.8
Acquisitions	$0.0	$120.8	$87.2	$20.2	$38.2	$510.0	$195.0
FCF	$161.1	-$48.8	$390.0	$399.0	$350.7	-$148.3	$121.5
Dividends	$37.8	$38.7	$147.2	$127.5	$111.2	$102.7	$96.2
Stock Repo.	$1.2	$108.9	$54.7	$173.9	$29.1	$57.3	$210.8

There has really only been one large deal in 2016 in the last 5+ years. The on-going internal cash flow generation handles acquisitions and allows a modest dividend. The lack of debt allows it to borrow if necessary. The maximum leverage allowed on covenants is 3.5x vs. the current 1.65x on COVID-reduced EBITDA. IDEX could more than double current debt and it can go to 4.0x for 12 months to make an acquisition.

We also like that IDEX is more opportunistic in buying shares rather than simply doing it mechanically regardless of price. They bought heavily after COVID hit the stock price in 1Q20 and they took advantage of a price fall in 2018. We think companies should view their stock as cheap, fairly valued, and expensive and buy more heavily when the market is giving it away and less when the market loves it. IDEX indicated a similar philosophy on the 2Q20 call when asked about repurchases:

"we suspended buybacks in the middle of the quarter or the beginning of the quarter, really. ***We bought pretty aggressively early on as the stock went down and then, with the -- just incredible uncertainty, we paused it.*** *We did have 10b5-1 in place in the second quarter. And so, we're open to repurchase shares. So, that is -- there's no doubt about it. And we have plenty of both capital availability and authorization from our Board. So, we can do it there.*

As always Mike, we would much prefer to acquire, right? It builds a business strategically, allows us to compound capital. It creates opportunity for our people. And so that always remains the highest priority after fully funding our business.

And so, we're going to continue to push there. Prices have basically remained the same for the most part. And so, the trade off in interest rates and some drop in cash flows because of the pandemic are kind of effectively balancing each other out in terms of valuation."

Working Capital Shows Negative COVID Impact on Inventory – But It Is Not a Primary Source of Cash Flow

It is also obvious that IDEX doesn't draw down its investment in working capital to generate cash flow for 1-2 years and spend the money on share repurchases.

Cash Flow	2Q20	1Q20	2019	2018	2017	2016	2015
CFO	$169.4	$84.8	$528.1	$479.3	$432.8	$399.9	$360.3
Working Cap.	$63.2	-$46.0	-$29.5	-$18.4	-$2.8	$5.7	-$9.0

Essentially, working capital was a mild drag on cash flow as we would expect for a company with some growth. The slowdown in sales with COVID in early 2020 impacted inventory the most and caused inventory to back up as sales declined. That is already being corrected:

Cash Flow	2Q20	1Q20	4Q19	3Q19	2Q19
Receivables	$270.3	$327.8	$298.2	$317.3	$326.4
Inventory	$324.9	$340.6	$293.5	$303.5	$301.0
Payables	$137.4	$157.7	$138.5	$147.1	$160.6
Accrued Exp	$225.9	$208.8	$180.3	$185.2	$162.8
Net W/C	$231.9	$301.9	$272.9	$288.5	$304.0

As we noted earlier, the higher accrued expenses are due to the delay in tax collection in 2020 as taxes payable grew in 1Q and 2Q. IDEX continued to pay its suppliers quickly and collected a bit faster. Given what the slowdown did to sales, the rise in inventories is understandable but is correcting. Also – if IDEX had to, it likely could pull more cash from working capital on a short-term basis.

Looking at ratio analysis, we see few problems here:

Work Cap Ratios	2Q20	1Q20	4Q19	3Q19
DSO	44.9	51.2	45.9	47.3
DSI	90.8	96.4	79.0	80.9
DSP	38.4	44.6	37.3	39.2

Work Cap Ratios	2Q19	1Q19	4Q18	3Q18
DSO	47.4	50.0	47.4	48.7
DSI	72.3	80.4	75.0	76.5
DSP	38.6	43.3	38.4	37.6

Work Cap Ratios	2Q18	1Q18	4Q17	3Q17
DSO	48.5	50.1	47.0	50.2
DSI	74.7	77.2	72.9	76.9
DSP	39.6	42.8	41.3	39.8

Only the inventory DSI's stand out for the last two quarters. IDEX is seeing improvement in sales but expects it to be slower y/y in 3Q and 4Q in several areas. Inventories may well decline a bit the rest of this year. But we would expect to see the DSIs remain a few days higher than normal until sales fully recover. The 1Q saw a jump in DSO with the sales falling, but that has already corrected. And as seen above in this section, the negative drag of working capital overall in 1Q, reversed in 2Q. Paying taxes in 3Q should be a drag too. The sizeable cash balance should be able to withstand the next couple of quarters as working capital normalizes.

Acquisition Accounting – Life of Assets and Intangibles Better than Most

One of the biggest issues we have with companies that grow with acquisitions is extremely long amortization periods. Our view is when a company buys a smaller one that is often highly similar to itself in product and customers – they could have built it rather than bought it. If they built it, much of the cost would have been expensed as incurred and the rest would have been depreciated/amortized over periods similar to other assets.

For IDEX, its depreciation schedule does not vary widely from the acquired asset amortization schedule:

Depreciation	% of PP&E	Life in Yrs	Amortization	% of Intang	Life in Yrs	Avg Life
Machinery/Equipment	54%	3-12	Patents	1%	5-17	12
Office Eq/Transportation	13%	3-10	Tradenames	24%	5-20	16
Buildings/Improvements	25%	8-30	Customer Relations	54%	8-20	14
Land Improvements	4%	8-12	Unpatented Tech	20%	3-20	12

Looked at another way, Net PP&E has been about $280 million in the last couple of years and depreciation has been $39 million for an average life of the undepreciated assets of 7.2 years. Net Intangibles have been $383-388 million in the last two years with amortization of $37-$38 million or about 10.2-10.5 years. That is a much tighter band than some other companies in our universe where intangible amortization is more than 2x the depreciation rate. So, we will give high marks in this area.

Where IDEX has more of an issue in our view is it still assigns much more of the value of deals to goodwill than to assets that will be amortized. It is carrying over $1.8 billion in goodwill vs. the gross intangibles to be amortized of $557 million and another $91 million in tradenames it does not amortize. We would prefer to see less allocation of value toward goodwill. If the company had to amortize goodwill over 40-years, it would have cost it about 10% of EPS – 58-cents of $5.56 in 2019 and 55-cents of $5.29 in 2018.

We have only seen two goodwill impairments at IDEX - $198.5 million in 2012 and $30.1 million in 2008. In both cases, the company attributed it to softness in end markets (which could certainly be a risk now – especially overseas). In 2019, there was a $9.7 million impairment due to a unit that it planned to sell, losing its largest customer. It did not impact goodwill, but led a write down for amortizing intangibles and a small amount of PP&E.

We readily admit that non-amortization of goodwill is not a problem for GAAP – it is us being critical about growth through acquisition as we believe there are far more *Betamax* video tape-type assets tied up in Goodwill than there are *Oreo Cookie* and *Mickey Mouse*-type assets when arguing something has eternal value.

In defense of IDEX in this area, it tests based on a combination of discounted cash flows (8.5%-10.5%) and the use of publicly-traded multiples for similar assets (11-18x). It also has assets that support a wide range of long-lived infrastructure type investments like municipal water systems, agriculture, chemical industries, fire and safety equipment. It

doesn't become obsolete very quickly like software. The ROI has been above 15% for many years too.

COVID issues do pose a risk here for a possible impairment depending on how rapidly some of the end markets recover such as energy. Also, the company has noted that municipal and government spending can see a lagging impact for a spending slowdown as current projects are completed regardless of the economic status – but new projects may see delays next year.

Acquisition Accounting is More Realistic – Adjusted Metrics Remain Conservative

Perhaps our biggest area for red flags when it comes to companies who grow with acquisitions is when they add back every conceivable cost related to buying, integrating, and operating the acquired business. Often, this is the only way to justify what they paid for the deal and post any semblance of a positive income and decent ROI. They also take enormous recurring charges that are labeled as one-time events. **We give high marks for earnings quality to IDEX and view it accounting in this area conservative against many others.**

The income measures of operating and net income only add back restructuring charges, gains/losses on asset sales, (early amortization of debt fees for net income), and truly one-time items. That compares to other companies that add back stock compensation, consulting fees, bonuses, huge write-offs of recent acquisitions, and all ongoing amortization of acquired assets. **If we look at the difference between GAAP and adjusted income figures – it is very small:**

GAAP vs Adj. Income	2Q20	1Q20	2019	2018	2017
GAAP Op. Income	$110.6	$139.9	$579.0	$569.1	$502.6
Adj. Op. Income	$118.5	$139.9	$603.4	$581.2	$501.7
Margin change	140bp	0bp	100bp	50bp	10bp
GAAP EPS	$0.93	$1.34	$5.56	$5.29	$4.36
Adj. EPS	$1.10	$1.34	$5.80	$5.41	$4.31

Looking more closely at what these adjustments are also shows these are small items for restructuring and things we would call one-time in nature:

Op. Income Adjs.	2Q20	1Q20	2019	2018	2017
Restructuring	$3.8	$0.0	$8.4	$10.5	$8.3
Impairments	$0.0	$0.0	$10.1	$0.0	$0.0
Inventory Step-Up	$4.1	$0.0	$3.3	$0.0	$0.0

- For a company with almost $900 million in recent acquisitions and $2.5 billion in sales – we're not disturbed by $8 million in restructuring costs. They didn't even add back anything related to COVID. They announced there may be a small amount of additional restructuring in 3Q20, but it should be even less than 2Q20.

- The impairment in 2019 is related almost entirely to the business they planned to sell then wound down instead mentioned earlier. We would consider that one-time in nature.

- The inventory step-up followed acquisitions and we consider that conservative as it hurts GAAP income. It also does not happen all the time.

With Net Income for EPS, we do not see any other differences we would classify as other than one-time in nature. Taking a gain on selling an asset in 2017 and redeeming its bonds early in 2020 qualify as one-time in our view. Also, guidance seems to indicate the 11-12 cents of restructuring should decrease going forward.

EPS Adjustments	2Q20	1Q20	2019	2018	2017
Restructuring	$0.04	$0.00	$0.11	$0.12	$0.07
Impairments	$0.00	$0.00	$0.10	$0.00	$0.00
Inventory Step-Up	$0.04	$0.00	$0.03	$0.00	$0.00
Gain on Asset Sale	$0.00	$0.00	$0.00	$0.00	-$0.12
Early Redemption of Debt	$0.09	$0.00	$0.00	$0.00	$0.00
Total Adjustments	$0.17	$0.00	$0.24	$0.12	-$0.05

We are impressed that the company is counting amortization of intangibles in both adjusted operating income and adjusted EPS.

On EBITDA, they are adding back amortization of intangibles on both GAAP and adjusted – but that's part of the definition. They are not adding back stock option costs in the

adjustment and that a strong mark for conservative reporting in our view. The adjustments are the same as above: restructuring, impairment, one-time gain, inventory step-up, and the early extinguishment of debt charge.

EBITDA Adjustments	2Q20	1Q20	2019	2018	2017
EBITDA	$124.8	$158.4	$654.1	$650.6	$584.4
Restructuring	$3.8	$0.0	$10.9	$12.1	$8.5
Impairment	$0.0	$0.0	$10.1	$0.0	$0.0
Gain on Asset Sale	$0.0	$0.0	$0.0	$0.0	-$9.3
Inventory Step up	$4.1	$0.0	$3.3	$0.0	$0.0
Early Exting. of Debt	$8.4	$0.0	$0.0	$0.0	$0.0
Adj. EBITDA	$141.1	$158.4	$678.4	$662.7	$583.6
Increase %	13%	0%	4%	2%	0%

Adjusted EBITDA is almost equal to normal EBITDA. In 2Q20, 10% of the 13% increase in the adjusted figure comes from one-time items. Given that cash flow under GAAP shows they can afford acquisitions, we are more than comfortable adding back essentially the minor restructuring charges to adjusted EBITDA. **We also want to highlight that IDEX continually spends more in capital expenditures ($45-$60 million) than depreciation generates in cash (about $38-$39 million). GAAP shows that positive funding difference is not a problem either for cash flow so EBITDA has more value as a realistic figure.**

Acquisition Accounting is More Realistic – Disclosure Is Great

IDEX is very careful to label organic growth without acquisition impact and specifies the FX impact as well on revenues. It goes further and does the same with each business and further will highlight with operating income if it gaining/losing volume, gaining/losing pricing, and if raw material costs are offsetting those changes or savings achieved via restructuring.

Sales Growth	2Q20	1Q20	2019	2018	2017
Organic	-17%	-5%	1%	8%	6%
FX	-1%	-1%	-2%	1%	0%
Acquisition	5%	2%	1%	0%	2%

IDEX breaks out amortization of intangibles from other parts of depreciation and amortization so that's easy to track. It gives a full breakdown for each acquisition in terms of allocating the purchase price to various assets and gives a weighted average life for each intangible asset for an amortization schedule.

Miscellaneous Issues Look Tame

The company is growing R&D spending and holding flat advertising. Warranty accruals ticked up a little in 2020 bad debt reserves are not moving much:

Accruals/Expenses	2Q20	1Q20	2019	2018	2017
R&D	n/a	n/a	$92.4	$84.9	$76.4
Advertising	n/a	n/a	$15.7	$17.0	$15.8
Warranty Accrual	$7.2	$7.2	$5.6	$5.3	$6.3
Bad Debt Accrual	$5.9	$5.9	$6.3	$6.7	$7.8

Any of this moving around by $1 million is worth about 1-cent in EPS for a company earning almost $6.

The only other thing that jumped out as us is the company does have some asbestos claims. These stem from products not manufactured by IDEX but acquired from third parties that contained asbestos. To this point, insurance has fully covered the costs. The company does not have a reserve in place as it cannot reasonably estimate the final costs if any.

Autodesk (ADSK) EQ Review

Current EQ Rating*	Previous EQ Rating
3-	3-

6- "Exceptionally Strong"
5- "Strong"
4- "Acceptable"
3- "Minor Concern"
2- "Weak"
1- "Strong Concerns"

Note that a "+" sign indicates the earnings quality improved in the most recent quarter while a "–" sign indicates deterioration

*For an explanation of the EQ Review Rating scale, please refer to the end of this report

Overall, we do not have major concerns with ADSK's earnings. However, we are initiating coverage with a 3- (Minor Concern) rating which largely reflects the near-term risk of a cash flow shortfall posed by any sustained shift away from multi-year deals.

- ADSK shifted the overwhelming majority of its services to cloud-based subscription offerings from perpetual, on-premises license deals years ago. Historically, about 20% of its deferred revenue has been long-term reflecting its propensity to sign multi-year subscription deals. In 2018 to early 2019, the company experienced a shift away from multi-year deals related to its push away from maintenance license deals. However, for the last several quarters, multi-year deals have risen in the mix, driving long-term deferred revenue as a percentage of total deferred revenue to historical highs.

- The shift to multi-year deals has been a boost to cash flow as these contracts are billed upfront and have an immediate impact on cash flow when the bills are collected. However, customers have been more reluctant in the current environment to commit to multi-year deals. This led to disappointment in the latest quarter as the company lowered its full-year guidance for bookings as a result of a shift away from multi-year deals. While it has maintained its cash flow forecasts for now, we could see that being at risk if there is a sustained move away from multi-year deals which could result in a short-term hit to the stock price.

- ADSK capitalizes the cost to obtain contracts. The amortization of capitalized costs has fallen from the mid 30% range to the mid-20% range over the last two years. This is likely a reflection of the shift to multi-year deals which would incur the same level of acquisition costs but would be amortized over a longer contract period. Any sustained decline in the shift away from multi-year deals could see this tailwind reverse. This shift added only about 1.5 cps to EPS growth in the 7/20 quarter, but a reversal could represent a minor unexpected headwind to upcoming quarters.

- Account receivable DSOs have been rising YOY for the last several quarters. This is likely another reflection of the shift to multi-year deals as the average invoice size has likely been rising. In addition, the company extended payment terms to 60 days for customers from March to August which would have also boosted DSOs. We do not see this as a concern.

- ADSK adds back stock compensation expense to its non-GAAP earnings figures which has been boosting them by 35-40% in recent quarters. We believe this overstates non-GAAP profits as the company would have to pay these expenses in cash if it didn't award options and will also have to spend cash to buy back shares or dilute shareholders. The company is still more than self-funding if we treat stock expense as a cash outflow, so this is not as big a concern as it is with some companies. Still, investors should realize that ADSK's options expense as a percentage of non-GAAP profits is one of the highest in the industry.

- The company also adds back the amortization of intangibles to non-GAAP results. However, these amount to 6-8% of adjusted results in the last few quarters as the amounts are declining as older assets become fully amortized so adjusted growth is being penalized by excluding them. Also, the company has not made a major acquisition since the 1/19 quarter and it is not acquiring its way to growth. We are therefore not overly concerned with this distortion.

Impact of Move to Subscription Services

ADSK has been another leader in the push towards presenting its software to customers in the form of cloud services rather than on-premises perpetual licenses. The following table shows a breakout in sales between revenue type:

	7/31/2020	4/30/2020	1/31/2020	10/31/2019
Subscription	$841.2	$803.0	$777.4	$715.0
Maintenance	$51.2	$62.1	$79.9	$91.2
Other	$20.7	$20.6	$42.0	$36.5
	$913.1	$885.7	$899.3	$842.7

	7/31/2019	4/30/2019	1/31/2019	10/31/2018
Subscription	$663.7	$595.8	$550.0	$481.3
Maintenance	$103.5	$112.0	$137.4	$150.1
Other	$29.6	$27.7	$49.9	$29.5
	$796.8	$735.5	$737.3	$660.9

Subscription revenue includes the company's service subscriptions, cloud offerings, and flexible enterprise business arrangements. These revenues are recognized over the related contract term. Maintenance revenue consists of maintenance arrangements which were originally part of perpetual software deals. These revenues are also recognized ratably over the contract term. The company is actively pushing these customers to subscription arrangements which accounts for the observed decline in category revenues. Finally, other revenue consists of consulting, training, and other services that are recognized over time as well as software license revenue that do not incorporate cloud services that are recognized upfront. ADSK has also been pushing clients away from the latter products and into subscription services accounting for the decline in other revenue.

A move to subscription services will have several distinct impacts on a company's revenue and cash flow patterns. Under license arrangements, a company recognizes the full amount of the sale upfront. However, under a cloud subscription, cash is typically received upfront, but the revenue is deferred and recognized over the subscription term. This leads to more stable and predictable revenue growth trends. However, given that so much revenue is recurring, a slowdown in demand will not be fully reflected in revenue growth immediately as the company continues to book revenue from existing subscriptions. This makes it very important to monitor trends in bookings and deferred revenue for signs that new business is not coming in.

A Move to Multi-Year Deals Boosts Deferred Revenue and Cash Flows but the Trend Has Reversed

In addition to a move towards subscription revenue, another recent trend that has been impacting ADSK's revenue recognition metrics is a move back to more multi-year contracts.

Under these arrangements, a customer pays upfront for a subscription that spans more than a year. The company explained the benefits of its multi-year contracts in the 4/19 conference call:

> *"And in line with our plans, multi-year contracts moved higher, helping our total billings. Recall that multi-year payments are good for our customers as they benefit from stable pricing and a single approval process. Our partners like them as they can sign higher contract values and maximize their cash flow. And we benefit from a more predictable revenue stream and upfront cash payments."*

The signing of a multi-year deal results in a bump to cash flow in the period as the customer is billed for multiple years in advance. Likewise, deferred revenue receives a boost as these cash flows received well in advance of being recognized as revenue are deferred.

When the company began to push customers away from contract maintenance products and towards subscriptions, it temporarily led to a shift away from multi-year deals. However, beginning in the 10/18 quarter, the company saw the signings of multi-year deals increase again. Consider the commentary from the 4/19 quarter conference call:

> *"The second and third year of those multiyear agreements are recorded in our long term deferred revenue, which grew by 12% and ended the quarter at 17% of the total deferred balance.* ***As we indicated at our Analyst Day, we expect to end the year with a long term balance in the low 20% range of total deferred revenue, in line with the historical range."***

These shifts in the composition of deferred revenue can be seen in the following table:

	7/31/2020	4/30/2020	1/31/2020	10/31/2019
Current Deferred Revenue % of Total	73.0%	72.0%	72.4%	75.3%
Long-Term Deferred Revenue % of Total	27.0%	28.0%	27.6%	24.7%

	7/31/2019	4/30/2019	1/31/2019	10/31/2018
Current Deferred Revenue % of Total	78.8%	82.5%	84.3%	84.7%
Long-Term Deferred Revenue % of Total	21.2%	17.5%	15.7%	15.3%

In the 4/19 quarter, the company was calling for long-term deferred revenue to climb to the 20% range by the 1/20 quarter. It significantly surpassed that goal with long-term deferred

revenue at almost 28 by the 1/20 quarter. For an even closer look at deferred revenue, the following table shows current and short-term deferred revenue days of sales calculated on subscription and maintenance revenue:

	7/31/2020	4/30/2020	1/31/2020	10/31/2019
Subscription and Maintenance Revenue	$892.4	$865.1	$857.3	$806.2
Current Deferred Revenue	$2,102.1	$2,163.9	$2,176.1	$1,822.0
Current Deferred Revenue DSO	216.7	225.1	233.5	207.9
Long Term Deferred Revenue	$776.8	$841.2	$831.0	$598.0
Long Term Deferred Revenue DSO	80.1	87.5	89.2	68.2
Total Deferred Revenue Days	296.8	312.6	322.7	276.2

	7/31/2019	4/30/2019	1/31/2019	10/31/2018
Subscription and Maintenance Revenue	$767.2	$707.8	$687.4	$631.4
Current Deferred Revenue	$1,772.1	$1,777.5	$1,763.3	$1,517.6
Current Deferred Revenue DSO	212.5	223.5	236.0	221.1
Long Term Deferred Revenue	$477.4	$376.0	$328.1	$274.5
Long Term Deferred Revenue DSO	57.2	47.3	43.9	40.0
Total Deferred Revenue Days	269.8	270.8	279.9	261.1

We can see that through the 1/20 quarter, current deferred revenue days fell on a YOY basis, but this was more than made up for by an increase in long-term deferred revenue days. This fits the narrative of sales shifting to multi-year deals. In the 4/20 quarter, we see a return to a YOY increase in current deferred revenue days, which could have been due to initial caution against signing long-term deals given COVID uncertainties. Finally, the full impact of COVID can be seen in the 7/20 numbers as long-term deferred revenue showed the first sequential decline in several quarters.

We do not see evidence of unexpected weakness in revenue trends or aggressive revenue recognition in any of the company's metrics. However, we are somewhat concerned that the uncertain environment could lead to a sustained reversal in the growth of multi-year deals. Management also expressed concerns for this in the 7/20 quarter conference call:

> *"Despite improving multi-year trends we experienced at the end of the quarter, we are taking a cautious view of their continued uptake in the second half of the year, which is impacting the upper end of our billings forecast range for the year."*

If customers elect to sign shorter-term contracts for the time being, it would not necessarily negatively impact revenue growth, but it would have an immediate negative impact on cash flow growth as less cash would be received upfront on a shorter-term deal. A shift away from long-term deals has already hurt the company's bookings figures which, like deferred revenue, benefit from the signing of long-term contracts. The stock already took a 5%+ hit after the 7/20 quarter earnings despite raising its full-year revenue growth guidance to 13.5%-15.0% from the previous quarter's 12-15%. However, investors were concerned by the reduction on the top end of its full-year billing guidance to $4.17 billion from $4.22 billion in the previous quarter. Management blamed the reduction on the shift away from long-term deals. For now, the company left its free cash flow guidance for the year at $1.3 billion-$1.4 billion. **However, if the shift away from long-term deals continues, which is logical to expect given the uncertain environment and push to conserve cash by customers, we could easily see this cash flow forecast fall which would likely result in another negative reaction by the market.**

Capitalized Contract Costs

As required by ASC 606, ADSK capitalizes the cost to obtain contracts and amortizes them over the contract term in the case of sales made by its internal sales force and over an estimated benefit period in the case of sales made by third-party resellers. ADSK does not disclose the estimated billing period as many of its peers do.

The following table shows the balance of capitalized costs to obtain contracts, the amortization of capitalized costs, and the amount of costs capitalized estimated as a plug number. The table also shows amortization expense as a percentage of the average outstanding balance of capitalized contract costs.

	7/31/2020	4/30/2020	1/31/2020	10/31/2019
Beginning Balance of Capitalized Contract Costs	$91.5	$98.8	$75.9	$78.6
Amortization	-$23.6	-$22.8	-$26.2	-$25.2
Contract Costs Capitalized During the Period (PLUG)	$20.4	$15.5	$49.1	$22.5
Ending Balance of Capitalized Contract Costs	$88.3	$91.5	$98.8	$75.9
Amortization % of Average Outstanding Balance	26.3%	24.0%	30.0%	32.6%

	7/31/2019	4/30/2019	1/31/2019	10/31/2018
Beginning Balance of Capitalized Contract Costs	$85.5	$93.0	$75.8	$82.5
Amortization	-$25.5	-$24.7	-$28.8	-$26.9
Contract Costs Capitalized During the Period (PLUG)	$18.6	$17.2	$46.0	$20.2
Ending Balance of Capitalized Contract Costs	$78.6	$85.5	$93.0	$75.8
Amortization % of Average Outstanding Balance	31.1%	27.7%	34.1%	34.0%

We can see that the amortization expense has been declining YOY on both an absolute basis and as a percentage of the average outstanding balance. This could be a result of the previously discussed move to longer-term contracts, as the capitalized costs would be amortized over a longer time frame. This is another potential negative from any sustained move away from multi-year deals as costs to obtain shorter-term contracts would remain the same but be amortized over a shorter contract period. We estimate that the YOY decline in the amortization percentage only added about 1.5 cps to earnings growth in a quarter that beat estimates by 8 cps. This is not a huge risk but could be a minor unexpected headwind over the next couple of quarters.

Accounts Receivables DSOs Increasing

Accounts receivable DSOs have been increasing for the last several quarters, as seen in the following table:

	7/31/2020	4/30/2020	1/31/2020	10/31/2019
Sales	$913	$886	$899	$843
Trade Receivables	$490	$357	$652	$520
Trade Receivables Days of Sales	49.4	36.2	66.7	56.8

	7/31/2019	4/30/2019	1/31/2019	10/31/2018
Sales	$797	$736	$737	$661
Trade Receivables	$347	$268	$474	$309
Trade Receivables Days of Sales	40.1	32.4	59.2	43.0

Ordinarily, a large, sustained increase in DSOs would be a point of concern. However, given the increase in multi-year deals discussed above, it is logical to expect an increase in DSOs

as the company's average invoice size increased during the period in question. The YOY growth in DSO began to subside in the 4/20 quarter before increasing again in the 7/20 quarter which was likely due to the company extending payment terms to 60 days for customers from 3/16/20 to 8/7/20. We would expect to see DSOs begin to drift down in the next couple of quarters as these receivables are collected and the mix of longer-term deals falls.

Adding Back Stock Compensation Expense

As is typical for tech companies, ADSK adds back stock-based compensation to its non-GAAP earnings. The following table shows stock compensation for the last eight quarters as a percentage of non-GAAP operating income.

	7/31/2020	4/30/2020	1/31/2020	10/31/2019
Non-GAAP Operating Income	$262.4	$247.8	$258.9	$225.3
Stock Compensation Expense	$95.9	$98.2	$105.0	$94.0
% of Non-GAAP Op Inc.	36.5%	39.6%	40.6%	41.7%

	7/31/2019	4/30/2019	1/31/2019	10/31/2018
Non-GAAP Operating Income	$186.5	$131.9	$139.2	$92.2
Stock Compensation Expense	$88.2	$75.2	$74.0	$64.2
% of Non-GAAP Operating Income	47.3%	57.0%	53.2%	69.6%

Rapid growth in operating income has resulted in a decline in stock compensation as a percentage of non-GAAP operating income. (Note that YOY stock compensation growth was closer to 40% in previous quarters which was likely due to acquisitions made in the 1/19 quarter making more employees eligible for options plans.) Despite the decline in the percentage of non-GAAP operating income, it is important to realize that profits would be reduced by almost 40% if stock compensation expense was considered a "real" expense. Our standard argument is that stock compensation should essentially be viewed as a cash item given that the company would have to pay its employees cash if it wasn't awarding options and the fact that the company has to spend cash to repurchase shares or dilute shareholders.

The following table shows how much free cash flow would be reduced if we viewed stock compensation expense was paid in cash compensation:

	7/31/2020
T12 Free Cash Flow	$1,322.7
T12 Stock Compensation	$393.1

Free cash flow would be reduced by approximately 30% for the trailing 12 months ended 7/20 if stock compensation was paid in cash. ADSK pays no dividend and free cash more than covers the buyback so ADSK would still be more than self-funding even if we considered options to be a cash expense. Regardless, investors should take note that ADSK's stock compensation expense as a percentage of non-GAAP earnings is one of the highest in the industry.

Adding Back Acquired and Developed Technology Amortization

Like almost all tech companies, ADSK adds back the amortization of acquired intangible assets to its non-GAAP earnings figures. The following table shows amortization as a percentage of non-GAAP operating income:

	7/31/2020	4/30/2020	1/31/2020	10/31/2019
Non-GAAP Operating Income	$262.4	$247.8	$258.9	$225.3
Amortization of Developed and Purchased Technologies	$16.9	$17.1	$18.0	$18.1
Amortization % of Non-GAAP Operating Income	6.4%	6.9%	7.0%	8.0%

	7/31/2019	4/30/2019	1/31/2019	10/31/2018
Non-GAAP Operating Income	$186.5	$131.9	$139.2	$92.2
Amortization of Developed and Purchased Technologies	$18.3	$19.0	$11.1	$7.8
Amortization % of Non-GAAP Operating Income	9.8%	14.4%	8.0%	8.5%

Our argument against adding back amortization of intangibles is that the company spent cash acquiring the assets. If it had not made the acquisition, it would have spent cash and incurred expenses to develop them in-house. Thus, adding those expenses back to adjusted profits completely ignores those very real costs.

However, compared to other tech companies, ADSK's amortization of intangibles is relatively small. It is also declining as older assets become fully amortized. Finally, the company has not made a major acquisition since the 1/19 quarter and it is not acquiring its way to growth. Therefore, we are not overly concerned by the distortion caused by adding back amortization at this point.

Explanation of EQ Rating Scale

6- "Exceptionally Strong"	Indicates uncommonly conservative accounting policies to the point that revenue and earnings are essentially understated relative to the company's peers. Higher possibility of reporting positive earnings surprises
5- "Strong"	Indicates the company has no areas of concern with its reported results and we see very little risk of the company disappointing due to recent results being overstated from aggressive reporting in recent periods.
4- "Acceptable"	Indicates the company may have exhibited a minor "red flag", but the severity of the issue is not yet a concern. Minimal risk of an earnings disappointment resulting from previous earnings or cash flow overstatement
3- "Minor Concern"	Indicates the company has exhibited either a larger number of or more serious warning signs than companies receiving a 4. The likelihood of an immediate earnings or cash flow disappointment is not considered to be high, but the signs mentioned deserve a higher degree of attention in the future.
2- "Weak"	Indicates the company's recently reported results have benefitted materially from aggressive accounting. Follow up work should be performed to determine the nature and extent of the problem. There is a possibility that upcoming results could disappoint as the impact of unsustainable benefits disappears.
1- "Strong Concerns"	Indicates that the company's recent results are significantly overstated and that we view a disappointment in upcoming quarters is highly likely.

In addition to the numerical rating, the EQ Review Rating may also include either a minus or plus sign. A minus sign indicates that our analysis shows the overall earnings quality of the company has worsened since the last review and there is a possibility the numerical rating will fall should the problem continue into the next quarter. Likewise, a positive sign indicates that the overall earnings quality is improving, and the company may see an upgrade in its numerical rating should the trend continue.

Key Points to Understand About the EQ Score

The EQ Review Rating is much more than a blind, quantitative scoring method. While we utilize proprietary adjustments, ratios, and methods developed over decades of earnings quality analysis, the foundation of all of our analysis is reading recent SEC filings, press releases, conference call transcripts and in some cases, conversations with managements.

The EQ Review Rating is not comparable to a traditional buy/sell rating. The Rating is intended to specifically convey the extent to which reported earnings may be over/understated. Fundamental factors such as forecasts for future growth, increasing competition, and valuation are not reflected in the rating. Therefore, a high score does not in itself indicate a company is a buy but rather indicates that recent results are a good indication of the underlying earnings and cash generation capacity of the company. A low score (1-2) will likely result in us performing a more thorough review of fundamental factors to determine if the company warrants a full-blown sell recommendation.

Disclosure

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