

First Solar (FSLR) 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

We are initiating earnings quality coverage of FSLR with a 3- (Minor Concern)

The company has produced very lumpy results due to the timing of when large multi-quarter systems are sold as well as a product transition. Higher volumes spread fixed costs to help margins and FSLR could be set for that to boost margins. COVID is likely restraining that to some degree now. When we say lumpy – it can be very boom or bust for cash flow and earnings quarter to quarter as in huge negative cash flow followed by a banner period. There is a sizeable cash balance to deal with this type of business flow.

Our bigger earnings quality concern relates to the company frequently reversing accruals and changing estimates which drives EPS. In 2019, EPS was \$1.48. Reversing a warranty accrual added 64-cents. In 2018, EPS was \$1.36. Reversing a recycling accrual may have added as much as 25-cents. That doesn't include lower new accruals than historic levels or the fact that FSLR has lengthened its depreciation schedule twice.

- **FSLR warranties allow customers to return products over 25 years for defects and loss of efficiency. It has improved its warranty terms to the benefit of customers**

twice in recent years – most recently cutting the allowed decay in performance per year from 0.7% per year to 0.5%.

- **FSLR claims the lower manufacturing costs will make it cheaper to replace modules and that the latest product will have fewer claims. That led the company to revise estimates of the reserve needed and reverse \$86 million in 2019 and \$40 million in 2017. In 2019, this was 64-cents of EPS and the company reported \$1.48.**
- **The revised estimates for warranties are also making new accruals decline to one-third to half prior levels. This lower expense is adding about 8-12 cents in EPS per year. In 1Q20, the new accrual was half the level of 1Q19 on flat sales.**
- **If the company sees a 1% change in return levels – the reserve would need to be bolstered by almost \$90 million. Every 10bp from that 100bp sensitivity would cost FSLR about 9-cents in EPS.**
- **FSLR has a legacy program to pay for collection and recycling for previously installed modules that have passed their useful life. This program was discontinued during 2014 and modules are expected to have a 25-year life with the oldest ones being 19 years old now.**
- **The estimates for legacy reserve have been revised down also due to higher levels of automation in recycling and higher glass prices. In 2018 and 2017 – FSLR reversed \$25 million and \$13 million from the reserve into earnings. For 2018, this added 19-cents to EPS of \$1.36. During 2018, there was also an \$8 million swing in expense in this area that added another 6-cents to EPS.**
- **In 2017, FSLR changed its depreciation schedule for machinery and equipment from 5-7 years to 5-10 years. This was after taking impairment charges in 2016 and 2017 on equipment. In 2019, it changed the schedule again to 5-15 years.**
- **These changes are based on the forecast that its newest equipment would have a 10-year useful life in 2017 and then the same equipment would have a 15-year useful life in 2019. The latest change cut depreciation in 2019 by \$15 million and added 11-cents to the \$1.48 in EPS. We estimate that the first revision may have already aided 2019 and 2018 EPS by another 11-19 cents.**

- The company touts that new product volumes are high enough to offset fixed costs to the point where it can offset lower selling prices. Reported gross margins increased slightly in 2019 as a result. Most of these estimate revisions discussed above directly impacted gross profit. Adjusting for all changes in forecasts, we calculate that FSLR's gross margin was helped by 180bp in 2018 and by 360bp in 2019. Removing these adjustments would indicate gross margins are still declining.
- FSLR builds both modules which are built and shipped quickly and full power plant systems that are built over time. The latter uses percentage completion accounting and also encompasses billing based on hitting milestones vs. actual work completed at points in time. The accounting looks fine, but it also creates lumpy results depending on when large projects are completed and full payment received.
- The result of this operating model is often several quarters of growing receivables and inventories with negative cash flow that then reverses shortly after that. As we are trying to assess earnings quality in this report and not the timing of all projects going forward – we believe FSLR has gone through this process enough times to show it is sustainable. However, investors would need to be aware that FSLR would trip many red flags from computer screens looking at rapid increases in working capital items or negative cash flow at times.

Warranty Accruals Still Cloud Earnings Quality

FSLR thin panels lose effectiveness over time. The company provides warranties for defects and workmanship for 10-years. It also provides warranty coverage that the modules will perform at 98% of their labeled power outlook rating or better in the first year. The warranty for performance declines by 0.5% per year for 25-years. FSLR accrues for warranty costs and returns as they recognize revenues.

That accrual process is straightforward – the more the company sells the more it accrues, which is charged to earnings, but not to cash flow. The problem we see is FSLR has been cutting this accrual and releasing past charges back into earnings:

Warranty	1Q20	2019	2018	2017	2016	2015
Starting Accrual	\$129.8	\$220.7	\$224.3	\$252.4	\$231.8	\$223.1
new charges	\$2.3	\$17.3	\$14.1	\$23.3	\$35.3	\$50.0
settlements	-\$6.6	-\$22.5	-\$11.9	-\$11.3	-\$16.3	-\$13.4
change in estimate	<u>-\$1.0</u>	<u>-\$85.7</u>	<u>-\$5.9</u>	<u>-\$40.1</u>	<u>\$1.7</u>	<u>-\$28.0</u>
Ending Accrual	\$124.5	\$129.8	\$220.7	\$224.3	\$252.4	\$231.8

Several points to notice here:

- **The change in estimate has played a major role in EPS in recent years. In 2019, the \$85.7 million decline added 64-cents to EPS of \$1.48. In 2017, the \$40.1 million reduction added 25-cents to EPS of \$2.59.**
- **Also, the decline in new charges has also been very significant. Sales dropped from 2015 by about 25% and have been flat since then except for 2018. Yet, new warranty expense is half the level of 2016 and in 1Q20, it was half of 1Q19. This decline has added 8-12 cents in EPS per year in recent years too.**
- FSLR is cutting this accrual for two reasons – the cost of replacing units is cheaper because of lower production costs/unit was the 2017 change and it believes its Series 6 Modules will experience a lower return rate overall was the 2019 change.
- Running counter to that is the warranty level has been increasing on newer product:

Warranty	2017+	2014-16	pre-2014
First year performance	>98%	>97%	n/a
annual decay rate	0.5%	0.7%	n/a
Performance after 10 years	>93.5%	>90.7%	>90.0%
Performance after 25 years	>86.0%	>80.2%	>80.0%

- Also running counter to that is the oldest modules were installed in 2001 and could still generate claims. Sales from long ago were very small and under \$1 billion per year until 2008. But, from 2008-2016 – sales were almost \$26 billion against just over \$8 billion from 2017-19. So, the bulk of the warranties may still be for older product.
- **FSLR estimates that a 1% increase in returns across all installed product would boost the liability by \$89.8 million. The entire reserve is only \$124.5 million now**

down from \$252.4 million at the end of 2016. Every 10bp of that 100bp sensitivity is \$9 million or 7-cents per share.

Cuts to Collection and Recycling Accruals Have Also Added to EPS

FSLR had a program for older modules whereby it would pay the costs to collect modules that were past their useful service lives and recycle them. The costs of collection and taking them apart were estimated and disposing of hazardous products became another accrual. This accrual was booked at the time of the sale. That procedure looks fine to us.

During 2014, FSLR stopped giving this treatment on the sales of many of its products. Products covered declined from 99% of sales in 2013 to 56% in 2014 and applied to almost none of the sales after 2014. Thus, this accrual is in run-off although it is still a minor expense:

Recycling Accrual	2019	2018	2017	2016	2015	2014
Charge to SG&A	\$4.9	-\$2.9	\$3.9	\$6.1	-\$4.4	\$7.5
Total Accrual	\$137.8	\$134.4	\$166.6	\$163.6	\$163.4	\$246.3

In several years, FSLR has been pointing to higher by-product sales of recycled glass and more automation in the recycling of older modules cutting labor costs. As a result, it has seen the costs of handling the collected modules fall below estimates. That again is good news.

We do think investors should be aware that in 2014 and prior years, this was an annual charge to Cost of Goods Sold and no longer exists. In 2014 it was \$30.7 million. Since that time, FSLR has been reversing some of this reserve back into earnings via lower Cost of Goods Sold in 2015, 2017, and 2018:

Recycling Accrual	2019	2018	2017	2016	2015
Reversed Accrual	\$0.0	\$25.0	\$13.2	\$0.0	\$67.6
EPS Impact	\$0.00	\$0.19	\$0.08	\$0.00	\$0.43

When looking at 2018, it also had a negative accretion expense of \$2.9 million in SG&A which helped EPS by 2-cents. Or it could be viewed as 2019 was a \$4.9 million charge or -4 cent impact on EPS thus, meaning 2018 was a 6-cent swing.

In 2019, the accrual actually rose over 2018 and in 2020 so far it is basically flat. There may be fewer tailwinds from this accrual going forward.

FSLR Has Changed Its Depreciation Lives Multiple Times

Normally, when we see a depreciation estimate change it's a company making an acquisition and the acquired company's schedule is modified. First Solar has lengthened its depreciation lives without a deal twice:

- In 2014, depreciation of machinery and equipment was done over 5-7 years
- In 2017, depreciation of machinery and equipment was changed to 5-10 years
- In 2019, depreciation of machinery and equipment moved to 5-15 years

This corresponds to a surge in investment in machinery and equipment at FSLR:

	1Q20	2019	2018	2017	2016	2015	2014
Gross Machinery/EQ	\$2,169	\$2,437	\$1,826	\$1,059	\$1,444	\$1,825	\$1,649
Depreciation	\$47.4	\$176.4	\$109.1	\$91.4	\$211.2	\$245.7	\$245.0

- In 2016, FSLR took impairment charges of \$156.6 million for equipment
- In 2017, FSLR took impairment charges of \$27.6 million for equipment
- In 2017, FSLR moved/disposed of much of the Series-4 equipment

In 2016, FSLR noted that it estimated the useful life of the newer Series-6 equipment would be 10-years and in 2017, it adopted a new 5-10 year life for equipment. In 2019, FSLR reported that it was revising its Series-6 equipment's useful life to 15-years and moved to a 5-15 year life for machinery and equipment.

In 2019, FSLR said that the change in policy will help earnings via lower depreciation expense of \$15 million. Other depreciation lives have not changed and the amount of PP&E in buildings was about \$400 million until 2018 when it moved to \$567 million and \$664 million in 2019. Office equipment and leasehold improvements are also fairly flat. As a result, we would conclude that much of the move from \$245 million in annual depreciation to \$176 million is the result of extending the lives of assets.

The \$15 million cut in depreciation expense in 2019 added 11-cents to EPS. It would not take much of a stretch to estimate that from years of 5-7 years to 5-15 now may have added \$30-40 million to 2019 or 22-30 cents in EPS.

One other area of depreciation that may be understated is on solar systems that FSLR owns. In the 10-K, the company states:

“We compute depreciation expense for the systems using the straight-line method over the shorter of the term of the related PPA or 25 years. Accordingly, our current PV solar power systems have estimated useful lives ranging from 19 to 25 years.”

It occurs to us if the modules that make up the system are decaying annually and becoming less efficient, shouldn't this depreciation be calculated on an accelerated basis? We cannot quantify this and it may not be very material – accumulated depreciation on systems was only \$53 million at the end of 2019.

Gross Margin Has Been Helped by These Changes

When investors read the management discussion for earnings at First Solar, it is frequently noted that even with pricing coming down, it has been successful at reducing production costs via less labor and spreading more units over fixed costs. That in turn is helping gross margin. The issue we see is the warranty accruals, the recycling accruals and depreciation all impact Cost of Goods Sold.

Reported Gross Margin	2019	2018	2017	2016	2015	2014
Sales	\$3,063.1	\$2,244.0	\$2,941.3	\$2,904.6	\$3,571.0	\$3,391.2
COGS	<u>\$2,513.9</u>	<u>\$1,851.9</u>	<u>\$2,392.4</u>	<u>\$2,266.1</u>	<u>\$2,659.7</u>	<u>\$2,566.2</u>
Gross Profit	\$549.2	\$392.1	\$548.9	\$638.5	\$911.3	\$825.0
Gross Margin	17.9%	17.5%	18.7%	22.0%	25.5%	24.3%

In the years of 2014-16, the company also changed its estimates for profitability on longer-term projects accounted for under the percentage of completion method. This also helps boost gross profit in those years. If we adjust for those items, plus the depreciation changes, and reversals of accruals, the underlying results show even more erosion:

Adjusted Gross Margin	2019	2018	2017	2016	2015	2014
Sales	\$3,063.1	\$2,244.0	\$2,941.3	\$2,904.6	\$3,571.0	\$3,391.2
COGS	\$2,513.9	\$1,851.9	\$2,392.4	\$2,266.1	\$2,659.7	\$2,566.2
2019 Dep. Chg.	\$15.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
2017 Dep. Chg.	\$15.0	\$15.0	\$15.0	\$15.0	\$15.0	\$0.0
Recycling reversals	\$0.0	\$25.4	\$13.5	\$0.0	\$69.6	-\$30.7
Warranty reversal	\$80.0	\$0.0	\$31.3	\$0.0	*\$0.0	\$0.0
Change in % Completion	<u>\$0.0</u>	<u>\$0.0</u>	<u>\$0.0</u>	<u>\$61.0</u>	<u>\$31.9</u>	<u>\$40.1</u>
Total Adjustments	\$110.0	\$40.4	\$59.8	\$76.0	\$116.5	\$9.4
Adjusted COGS	\$2,623.9	\$1,892.3	\$2,452.2	\$2,342.1	\$2,776.2	\$2,575.6
Adjusted Gross Margin	14.3%	15.7%	16.6%	19.4%	22.3%	24.1%

- 2015 had a \$28 million warranty reversal but FSLR did not state that it was reversed out of Cost of Goods sold as they did in 2019 and 2017.

The company would report that gross margin is starting to recover. We think if you remove the benefits of slower depreciation and accrual reversals – the decay is still continuing.

Working Capital Looks Messy – but Does Not Appear to Be a Red Flag to Us

FSLR sells solar modules to customers who install them or build power plant systems. It also builds power plant systems under contract for customers. The two sources of income differ in revenue recognition.

Module sales are straight-forward. Sales are booked and recorded as accounts receivable when the product is shipped or delivered (depending on the contract) and ownership transfers.

Systems sales use a percentage completion method to estimate how far along the total project is against the contracted price. Both sales and costs are tracked in the manner and recorded as sales and cost of goods sold. Often the billing may occur subject to reaching certain milestones. That means FSLR may be unable to bill at the time revenue is recognized and it becomes an Unbilled Accounts Receivable. When it can bill, it converts to Accounts Receivable. Or, a customer may pay deposits or other money in advance which will be booked as Deferred Revenue and later convert into sales.

As we noted in the beginning – FSLR reports some very lumpy results because some of these system projects are huge. This makes both sales and the working capital figures move quite a bit. Here are the last eight quarters:

	1Q20	4Q19	3Q19	2Q19
Sales	\$532.1	\$1,399.4	\$546.8	\$585.0
Receivables	\$290.3	\$475.0	\$367.3	\$269.5
Unbilled A/R	\$121.1	\$183.5	\$165.0	\$128.0
Inventory	\$479.8	\$443.5	\$576.8	\$586.6
LT Inventory	\$182.3	\$160.6	\$152.6	\$149.2
Cash from Ops	-\$504.9	\$781.7	-\$317.6	\$13.5

	1Q19	4Q18	3Q18	2Q18
Sales	\$532.0	\$691.2	\$676.2	\$309.3
Receivables	\$301.7	\$128.3	\$141.7	\$125.4
Unbilled A/R	\$367.1	\$458.2	\$421.1	\$177.7
Inventory	\$459.5	\$387.9	\$296.0	\$234.2
LT Inventory	\$142.5	\$130.1	\$124.3	\$119.2
Cash from Ops	-\$303.4	-\$185.5	-\$225.2	\$129.2

DSO's fell from 115 to 71 y/y for 1Q20, from 77 to 43 y/y for 4Q19. There is a flip of receivables vs. unbilled receivables y/y for 4Q also. You can see the larger sales completed in 4Q19 after building for several quarters and generated lots of cash flow in 4Q19. Some of this is the ramp-up of the new Series-6 modules from Series-4 and the completion of more system sales over time. During this time, receivables built too.

	1Q20	4Q19	3Q19	2Q18	1Q19	4Q18	3Q18
Module Sales	\$318	\$661	\$371	\$229	\$224	\$116	\$120
System Sales	\$123	\$738	\$176	\$356	\$308	\$576	\$556
Total	\$441	\$1,399	\$547	\$585	\$532	\$692	\$676

Some of this is simply the nature of the business in our view. Also, the bigger risk in our view is if they underbid a deal and miss the huge quarter every year due to cost over-runs. Also, FSLR has \$1.5 billion in cash. Investors have to accept this type of lumpiness to own the stock – it has been a common feature for some time. Also, the bigger COVID risk in our view is the gross margin relies on producing more units over fixed costs. If the company sees slower sales, it could come combined with tighter gross margins and we doubt long-term contracts would take that into account.

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.

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