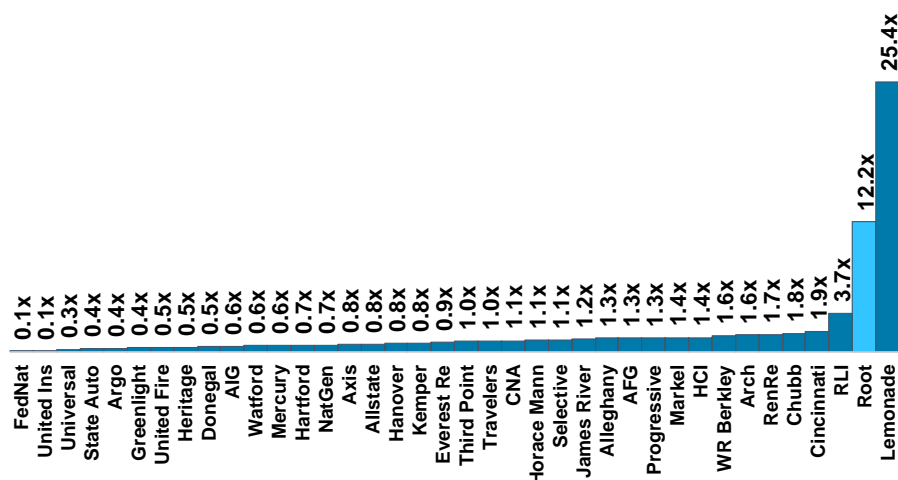


Root: A business in crisis and a tough road ahead

On Wednesday Root IPO'd at the top end of its proposed range at \$27 a share. Based on the IPO price the stock had a \$6.7bn market cap, valuing the business at 6.4x tangible book value and 13.7x annualized revenue. In fact, the company ranked as the 16th largest public P&C company in America by market cap, 1.5x the size of Kemper or RLI.

Exhibit: P&C price/revenue valuations (using annualized H1:20 revenues)

Source: FactSet, Inside P&C



What makes the above facts so extraordinary is that but for the stock valuation and ~\$650mn to \$750mn in new cash proceeds - Root seems in every way like a business in crisis based on its fundamentals.

Indeed, as we pointed out earlier this month, the company's last financing round was priced at the very top end of traditional mezzanine financing rates and bordered on distressed financing (See: [Root IPO: InsurTech and The Big Lie](#)). According to the S-1, the company had just \$113mn in cash at the holding company, \$100mn of debt due in mid-October, and a quarterly burn rate well north of \$50mn even with an assist from Covid-related lower frequency. It is also required to file monthly updates to its home-state regulator in Ohio based on the fact its finances meet some of the NAIC's Hazardous Financial Conditions Standards.

In our original rapid take on the firm's S-1, we (a) outlined concerns with the business model, (b) argued the company in the numbers was entirely divorced from the company in the vision statement, and (c) expressed our view that Root would likely face a challenging cycle of cash burn and capital raising.

That said, in this piece we want to escape the world of the S-1 and deal more with the business as it exists in the real world. For this, we partly rely on the company's product filings, which show how frontline product managers view the health of the business when not putting their thoughts through the filter of pitching a "narrative" to investors.

In this, we see some immediate red flags that suggest the path ahead for Root is likely to be very challenging, and nothing like the rapid growth and industry "disruption" that its stock market valuation implies.

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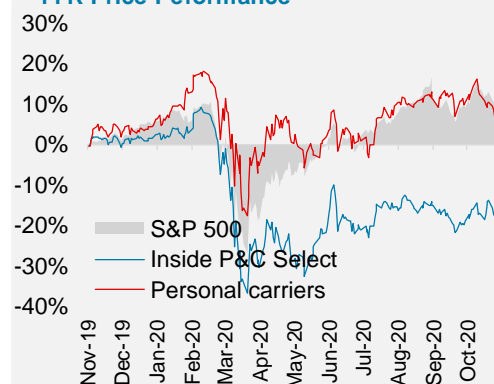
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Composite	YTD px chg.	P/B
Large comm.	(22.4)%	0.8x
Regional	(30.5)%	1.1x
Specialty	(16.1)%	1.4x
Personal	4.9%	1.8x
Bermuda	(24.4)%	1.0x
Florida	(45.0)%	0.7x
Brokers	(5.2)%	-
IPC Select	(16.4)%	1.0x
S&P 500 Fin.	(20.9)%	-
S&P 500	2.5%	-

1YR Price Performance



Indeed, we now feel able to assert with a high degree of confidence something we were only able to speculate on in our rapid-fire S-1 review. We said then that the company looked, on first impressions, not like a tech-enabled disruptor, but simply a non-standard auto company going through an adverse selection cycle due to growing too fast with poor segmentation.

Having done a lot more work to diligence the company, our view is firmly fixed that this fundamental characterization both (a) is correct, and (b) explains all of Root's multiple operating challenges eloquently.

Before getting into the details, we see three key points as a starting point for our analysis that indicate the immediacy of the challenge facing Root.

First, this InsurTech disrupter, this ender of worlds for “archaic” incumbents, has seen growth fall off a cliff and go into reverse.

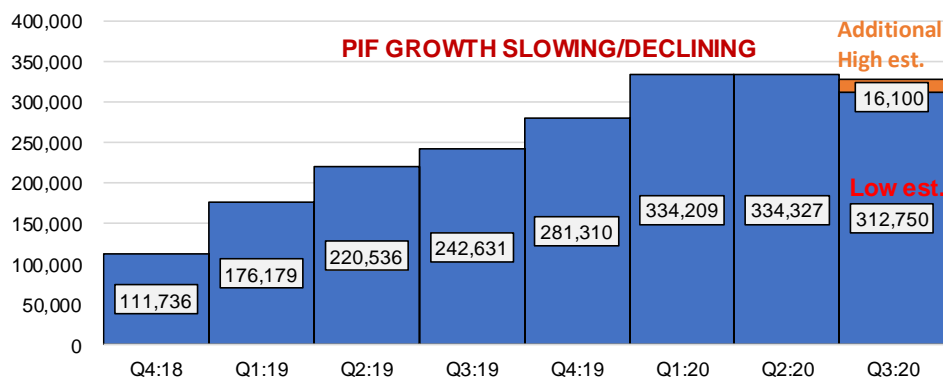
Somehow, among all the hype of this “fast growth InsurTech”, the company managed to get its IPO away without real scrutiny of its most recent growth trends.

Though its initial IPO filing had shown a strange flat-lining in growth in Q2, many had seemed willing to look past that given the unique conditions in the economy during that period (and similar slow-downs at other leading competitors).

However, in an update to the S-1 shortly before its listing, Root provided an estimate for its Q3 financials. This showed estimated PIF in auto may have declined sequentially by as much as 7%, a more than 25% annualized rate. Similarly, premiums in force were in the range of +1% up to -4% lower sequentially according to the range of initial estimates.

Exhibit: Root auto PIF

Source: Root, Inside P&C



It is worth noting the stronger “incumbents” it mocks so ruthlessly in its S-1 seem to be growing just fine and benefitting from the type of digital-first trends in the Covid-economy that Root has pretensions of owning. Similarly, there have been multiple data points recently suggesting consumer interest in telematics has picked up in response to Covid-related lockdowns. This should have been a boon to growth for Root.

Exhibit: Root QoQ PIF growth compared to peers

Source: Company reports, Inside P&C

Firm:	Q4:19	Q1:20	Covid	
			Q2:20	Q3:20
PGR direct	2.0%	3.3%	4.7%	3.1%
Geico	1.3%	2.1%	3.0%	NA
Root	15.94%	18.80%	0.04%	-4.0%

Notably, the company's financial statements suggest a slowing growth of marketing spend in H1, and its product filings also reference a slowdown in marketing "in recent months". Perhaps the cash shortage we referenced above was forcing the company to preserve liquidity, though S&M did pick up in Q3 on a \$ basis (albeit at a slower rate of growth YoY) and may have a lagged effect on growth.

However, the firm now has its new 70% quota share reinsurance in place, and a fully reloaded capital base. If it is going to maintain a narrative of an innovative and disruptive company that can grow enough to support its valuation, it will need to re-ignite growth, and soon.

Second, despite this urgent need for growth, there seem to be several significant warning signs that this may be incredibly challenging to execute on.

If declining growth should have been a major red flag to investors looking in the rear-view mirror, so too should the firm's recent pricing actions be viewed as warning signs of growth headwinds still to come.

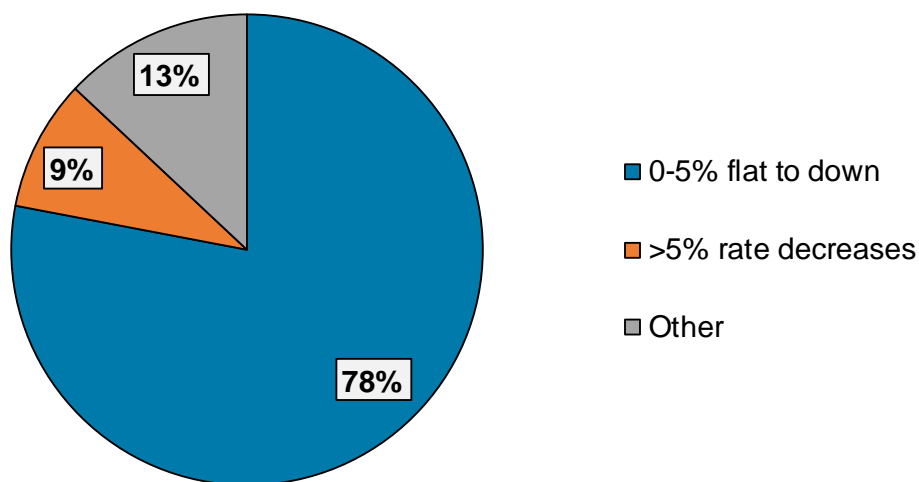
An analysis of Root's rate filings shows the firm is currently taking significant rate increases while its peers are getting more price competitive.

According to data from SNL, there have been 3,700 rate filings for PPA insurance approved with effective renewal dates after June 1 this year, on programs covering 69.3 million policyholders.

Of these, fully 78% of policyholders are seeing flat to down pricing of 0-5%, while a further 9% are seeing rate decreases greater than 5%.

Exhibit: Rate action distribution

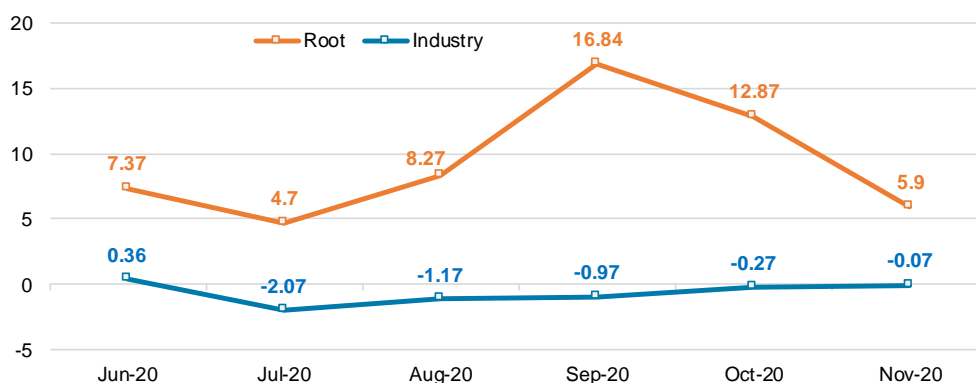
Source: SNL, Inside P&C



In this increasingly competitive environment – something confirmed by management commentary so far in Q3 earnings – Root has 31 filings with a cumulative rate change of 14.2% covering \$119mn of written premium, or about 26% of its 2019 DWP.

Exhibit: Weighted average filed change, private passenger auto nationwide (%)

Source: SNL



As a rule of thumb, the price elasticity of auto insurance should be thought of as 5:1 for price increases, implying a 50% drop in conversion on new business for every 10% price increase. Though the relationship becomes less linear the higher the number becomes (you can't drop below 100%), this still implies a monstrous new business headwind. Similarly, recall the company has one-year retention of 33% even before factoring in the impact of rate increases – which are not likely to help.

Below, we get into the detail of what we think is driving this rate action. In short, our view based on analysis of the firm's product filings is that the company has been systemically underpricing for its expense load. Our judgement is that this is due to the company's business mix skewing higher non-standard than it anticipated, resulting in customers with a higher service intensity and higher churn rates. Importantly, we would assert the content of the company's product filings is evidence that the company understands this too, as we get into below. This seems noteworthy when factoring in the juxtaposition with its narrative in the S-1.

Further, these recent price actions only partially address this expense load issue in our view, implying more growth headwinds to come for several renewal cycles. Additionally, it is yet to fully roll-out even these partial changes to all its states, with #1 state Texas (21% of 2019 DWP) worth watching closely.

Third, given the above Root has an incredibly narrow path to execute in line with its Fyre Festival-like hype.

Having sold the tickets to its mega-growth hype narrative, Root now has to deliver on the experience to investors.

It should be worth noting that on their own, (a) a slowing growth story, or (b) a large re-underwriting on this scale would be enough to significantly pressure a stock at a typical company (e.g. without a contingent of "HODL" true believers). The two combined at a "normal" insurance company would typically be catastrophic for the stock.

The above issues notwithstanding, thanks to a successful IPO Root does have two things going for it that it did not this time last week: (a) the freedom to choose its preferred path forward, and (b) some time to make it work.

That said, the path to delivering on its \$6.7bn valuation seems incredibly narrow.

It is worth noting the price action above is likely to have multiple effects across Root's business. Many commentators have observed Root's need to fix its loss ratio and improve retention. We have also added to this list a need to become more efficient at acquiring customers.

However, it does not seem to be well understood how these goals are mutually exclusive in the near term. Root's price taking may well improve its combined ratio, but step function price increases are unlikely to help retention in a challenging economic environment – especially when competitors are cutting prices. Similarly, average acquisition costs are likely to suffer as conversion rates decline for comparison shoppers. Any action taken to pricing is likely to have a precipitous impact on the growth that is supporting its valuation.

Finally, there is the added risk that broad-based rate increases can drive the best customers to leave. This then raises your average loss costs and increases rate need, leading to an endless cycle of adverse selection.

As we argue below, these operational challenges are not standalone “issues” that can be “fixed”, but a function of the firm’s customer mix and flawed growth model. The problem is not operational, it is strategic, and it is existential.

Though the company has some time, it does not have that much time given (a) its cash burn rate and (b) the lagging nature of insurance accounting that will mean its improvements need to come quickly in time to be used for the next capital raise.

Simply put, we struggle to see a viable path forward for Root that can match its lofty rhetoric and a valuation divorced from any reality other than the one described in the S-1. The company needs to improve its loss ratios to maintain access to the reinsurance market, maintain growth to support its valuation, increase pricing to fully support the service intensity and expense load of its predominantly non-standard book, and invest in its claims department. It also needs to continue tech investments, add to G&A for public company expenses, improve CAC efficiency and sales conversion, increase retention, shift more preferred, and reduce the drop-off in its sales funnel during the underwriting process. All at the same time, and before it needs to raise more capital

In short, we struggle to see how the company can possibly deliver on the earnings and growth required to support a valuation based on hope rather than reality. The company simply carries so much binary downside risk that does not seem to be reflected in a stock priced to perfection. We wonder how much damage will be done to the perception of the InsurTechs along the way, and the collateral damage it may do to those taking a more responsible and sustainable path.

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BEYOND THE S-1: A DEEPER DIVE INTO ROOT'S BUSINESS

In our [rapid take on the S-1](#), we outlined three key views on Root's business and likely future prospects.

- **First, that we think Root has a fundamentally flawed model relative to its grand vision statement.** Its strategy is a decade late to be disruptive in telematics, faces scale hurdles against better established players on its alleged competitive advantage in data, overstates its advantages in "mobile first" (which is an unsustainable advantage and copiable model even if you grant it), and has a huge barrier to entry to being dominant in Direct in the form of the ~\$1.5bn advertising spends of incumbents.
- **Second, it is clear that Root's business as it exists in reality does not in any meaningful way match the company described in its strategy statement.** Either the strategy is flawed, or the execution is failing, or both. This is evident in a terrible and unsustainable loss ratio, awful retention metrics, and inefficient customer acquisitions costs.
- **Third, that the firm will likely face a daunting flywheel of cash burn and capital need.** The cycle that is going to dominate Root's future is not its "data flywheel" of ever growing and improving data and segmentation driving growth and scale through "network effects". It is its capital flywheel, driven by its monstrous cash burn. This will lead the company to need constant access to new capital to (a) replace lost money, (b) buy new growth to maintain and improve the valuation, and (c) support that growth. The bigger it gets, the harder this cycle will prove, and embed an inherent vulnerability should it lose access to capital markets.

However, perhaps the most important assertion we made was our view that, based on first impressions, Root looked less like a dangerous tech-enabled competitor likely to disrupt the industry, and **more like a typical non-standard auto company going through an adverse selection cycle.**

Since then we have done more work to diligence the company, escaping the obviously biased world of the S-1 (= true of any company) and examining the business as it exists in the real world. In this piece, we heavily rely on two additional sources of data: (a) the firm's statutory filings, and (b) Root's product filings with regulators.

Note that no accounting basis provides objective truth, and any set of accounting numbers always have heavy incentives that factor into their inherent biases. That said, we believe product filings in particular provide an important and contrasting lens to the S-1. In particular, product filings give a more candid view of three things.

- First, they can be a less "managed" lens on both a company's accounting choices and capabilities, as state regulators can (and do) ask probing questions about how filings are supported, with answers and evidence required.
- Second, they can give a more real time lens on the business, providing data on what front line product managers are seeing in real time rather than waiting for management commentary in retrospect.
- Third, they can provide more specific data on how the company is thinking about itself. In Root's case, this includes an understanding of its product development to date, and its target operating model at scale. This can often be more illuminating in terms of concrete data points versus high-falutin CEO commentary or S-1 vision statements.

Below, we try to lay out the multiple sources of evidence that we believe show the company is not a tech-enabled disrupter, but simply another non-standard auto growing too fast with poor segmentation.

In fact, worse than that, the company is likely an accidental non-standard auto company, with every facet of its business poorly designed to deal with the unique challenges of non-standard auto.

As a general rule, customers attracted to telematics are typically the customers with the highest insurance prices or the most incentive to save. This means your customer acquisition funnel is going to skew heavily to non-standard risks.

There is nothing wrong with this *per se*. Great businesses have been built out of a non-standard auto origin (e.g. Progressive). But you fundamentally have to know the business you are in, and if you end up in non-standard by accident rather than by design, you are going to get hosed.

This is because the characteristics of non-standard risks are fundamentally different to a preferred mix. Non-standard policies tend to have a shorter average lifetime (~1-2 years), carry more risk of claims-build up, fraud, and in general skew higher loss ratio, and tend to have a higher service intensity (e.g. issues with billing changes, non-payments, policy cancelations).

Our view is that Root has misdiagnosed the game it is in and built a non-standard auto-book without the tools in place to manage it correctly, or product design to price for it accurately. It is now struggling to adapt to that reality.

In short, its rapid growth is not a symptom of a better product or user experience, but simply its willingness to take the customers no one else wants at a price nobody else would write.

This “not all customers are created equal” problem seems to mesh poorly with the Silicon Valley VC mindset and the incentives and pressures that come with taking their money (= it’s all about total addressable market (TAM), and proving the concept).

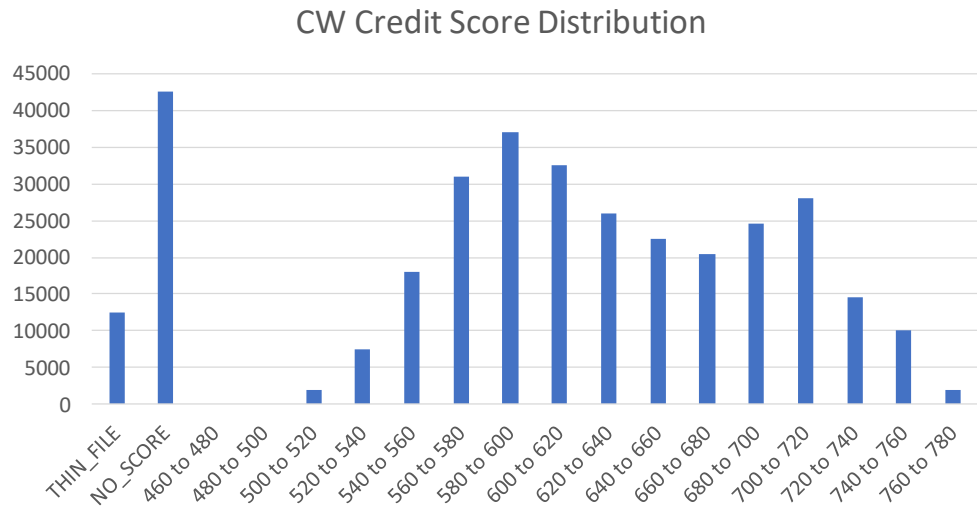
This single fact explains every problem the company is facing. The loss ratio is suffering because it is overweight claims-heavy non-standard auto that its nascent underwriting model was not sophisticated enough to properly segment (whatever the S-1 claims about its advantages in big data).

Root’s superior “user experience” is bumping up against the reality of real-world non-standard claims where “mobile first” is no advantage. Its customer retention is low because that’s the nature of non-standard auto, and has to be baked into pricing.

Below we go through point by point the multiple sources of evidence that support our view. But before we do, here’s one chart that proves the point beyond reasonable doubt, allowing us to discuss Root’s other problems as symptoms of one larger problem, rather than as separate and isolated “operating fixes”. The below chart, taken from a product filing submitted in Montana in April, shows the average credit score of a Root customer nationwide is 619.

Exhibit: Countrywide credit score distribution

Source: Company reports, Inside P&C

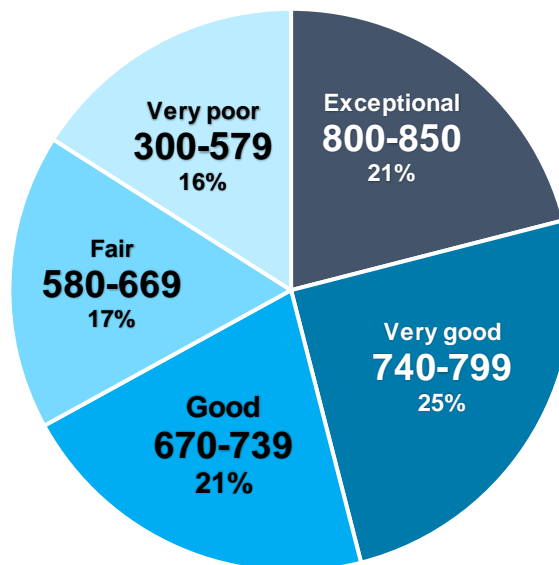


Though we can't measure exactly, we estimate from the chart below that around ~17% of its customers have either no score or a thin file, while its modal customer has a credit score of 580 to 600.

This implies an exceptionally non-standard customer mix, likely materially lower than its direct competitors. For context, here is the split of credit ratings nationally per Experian.

Exhibit: Breakdown of US consumers by FICO scores

Source: Experian



EXPENSES: WHO SAID A BAD EXPENSE RATIO CAN'T KILL YOU?

There's an old saying in P&C circles that a high expense ratio won't kill you, but a bad loss ratio will. For the latest generation of InsurTechs, this historical truism may not hold.

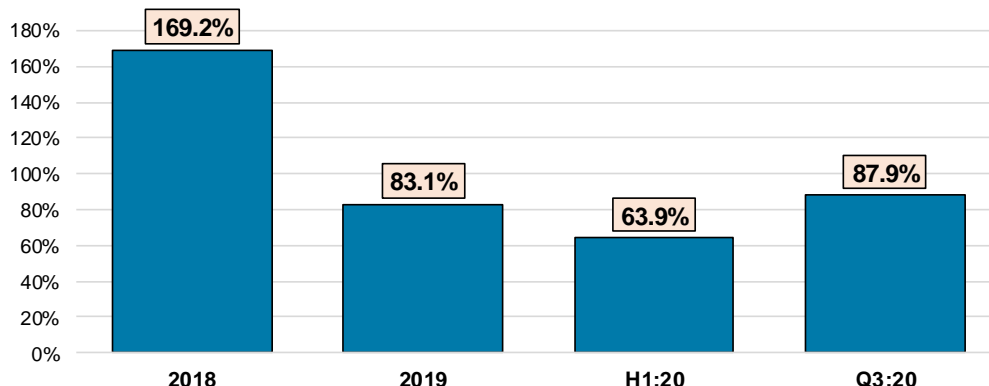
As we argued in our [coverage of Lemonade's IPO](#), the firm had delivered a plausible path to a sustainable loss ratio, and now only had to prove that both (a) its foothold in renters would prove a jumping off point to a larger addressable market, and (b) its unit economics would be positive if/when it achieved scale.

Root has a similar challenge. If it does not have the positive proof-point to date of a path to a sustainable loss ratio, it is easy enough to picture bringing down a ~90-100% loss ratio to a ~75-80% loss ratio with pricing – if you put aside for a second the problems this would cause for growth and its valuation.

On the other hand, its expense base is already so large, that it needs an extraordinary amount of growth before it can reach a sustainable level.

Exhibit: GAAP expense ratio

Source: Company reports, Inside P&C



Root's target expense structure assumes an "at scale" expense ratio of around 21%. We know this from the product filings made with state regulators. We also know that – historically at least – the company has assumed an expense base that is 75% fixed, and 25% variable. Using these two data points, our back of the envelope math estimate is that the company won't reach its target expense structure until it reaches \$5bn in premium – or 2.5x the size of Esurance. (Note, this assumes no sustainable reinsurance override is available given its loss ratio performance – as we explain below – but even with one it would likely be north of \$3bn).

AN EMERGING PROBLEM: UNDERPRICING FOR EXPENSES

In this section, we look to the firm's most recent product filings as a source of real-time insight for how the company's frontline product managers are thinking about the health of the business.

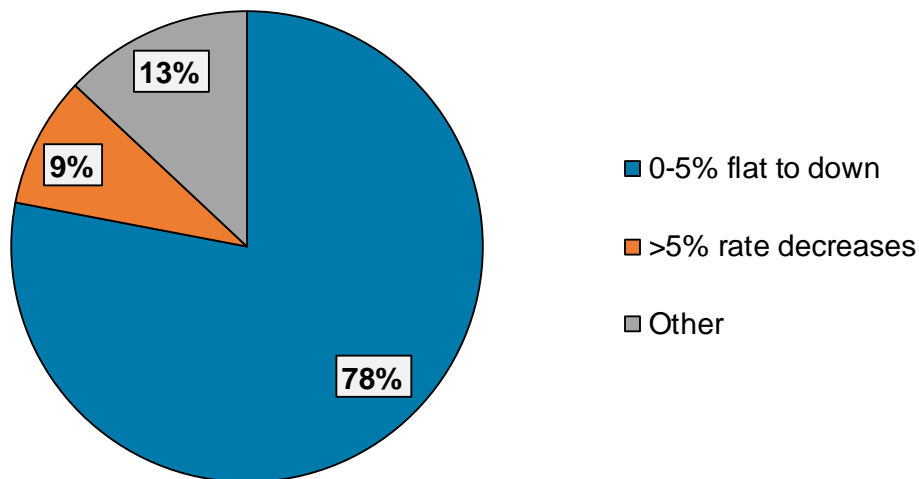
As we noted in the executive summary, an analysis of Root's rate filings shows the firm is currently taking significant rate increases while its peers are getting more price competitive.

According to data from SNL, there have been 3,700 rate filings for PPA insurance approved with effective renewal dates after June 1 this year, on programs covering 69.3 million policyholders.

Of these, fully 78% of policyholders are seeing flat to down pricing of 0-5%, while a further 9% are seeing rate decreases greater than 5%.

Exhibit: Rate action distribution

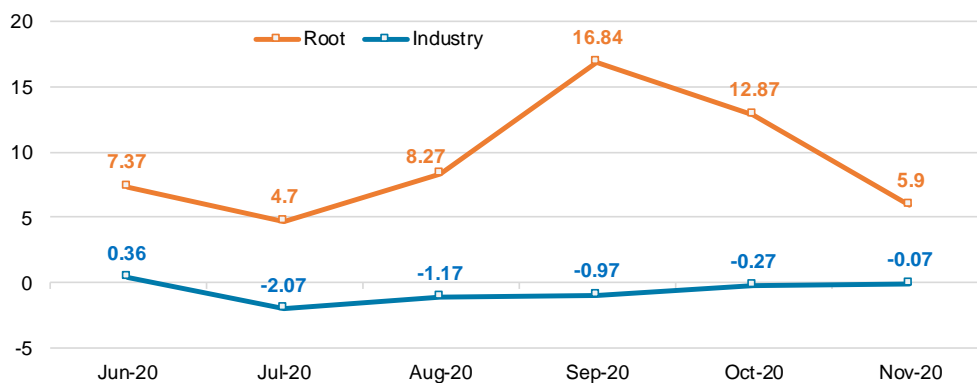
Source: SNL, Inside P&C



In this increasingly competitive environment – something confirmed by management commentary so far in Q3 results – Root has 31 filings with a cumulative rate change of 14.2% covering \$119mn of written premium, or about 26% of its 2019 DWP.

Exhibit: Weighted average filed change, private passenger auto nationwide (%)

Source: SNL



Below, we identify the states that have had recent filings, their size relative to Root's portfolio, loss trends, and other filing-related data.

Root approved or pending filings with disposition date since 8/1

Source: SNL

	Rate change	Rate filing written premium (\$k)	Filing Premium as % of Root's total	2019 direct incurred loss ratio (state)
Nebraska	5.4%	\$ 2,384	0.5%	101.84%
Connecticut	0.0%	\$ 1,640	0.4%	73.74%
Indiana	9.0%	\$ 9,652	2.1%	103.06%
Georgia*	26.5%	\$ 7,347	1.6%	101.93%
Georgia*	25.9%	\$ 38,786	8.6%	101.93%
Kentucky	14.3%	\$ 22,075	4.9%	116.87%
Arizona	20.8%	\$ 16,407	3.6%	102.35%
Arkansas	17.1%	\$ 5,203	1.2%	88.26%
Maryland	9.9%	\$ 11,179	2.5%	107.62%
Oregon	17.8%	\$ 10,959	2.4%	88.35%
Montana	6.0%	\$ 1,825	0.4%	112.59%
Pennsylvania	5.9%	\$ 17,560	3.9%	101.16%

*two separate filings for Georgia for excess and primary coverages, but both with ~25% rate increases.

However, the devil is really in the detail. It is perhaps not surprising that Root is taking rate – it recorded a 200% GAAP combined ratio in 2019. The question is “why?”

As we identified above, we believe the rate filings show that Root has been systematically underpricing for its expense load (and is only partially truing up for it now).

One of the exercises we did while analyzing Root's product filings was to try and baseline them against Progressive, particularly the base rates. Our logic was that as the product design was based on Progressive's, we would find any evidence of systemic (and deliberate) underpricing – if it existed – simply in the base rates.

However, unsurprisingly, we bumped into a non-comparability problem. Progressive and Root outlined base rates differently, with a different number of coverages specified. Most significantly, Progressive had explicit factors for operating and acquisition costs, whereas Root did not.

Our initial assumption was that Root's expense loads were contained in its other coverages – making apples-to-apples comparisons hard. Of course, it was suggestive of underpricing as the rate levels seemed below Progressive's on average even assuming they also contained expense loads.

Here's a sampling on a few major coverages from its two largest states below, though it is worth noting we replicated this across its six largest states (TX, KY, GA, AZ PA, OH) and across more coverages. Only Pennsylvania and Ohio stood out as not fitting a similar pattern. In those states, BI was materially higher, which was what we would expect to see if expense loads were included. Other coverages in those states had an otherwise similar ratio.

Exhibit: Texas (#1 State) base rate, Root vs Progressive

Source: SNL, Company reports, Inside P&C

Root	10/23/17	NA	NA	5/6/19	12/20/19	4/7/20	9/27/20	Var
BI	160.3	-	-	157.1	127.2	126.3	128.8	-19.7%
PD	116.7	-	-	170.5	176.3	197.8	156.6	34.2%
COLL	290.7	-	-	424.1	365.5	360.3	393.7	35.4%
COMP	91.0	-	-	127.6	116.3	117.4	118.6	30.4%
Average								20.1%

Progressive	10/5/17	7/12/18	11/8/18	3/21/19	9/26/19	2/13/20	6/25/20	Var
BI	136.4	130.4	135.6	140.9	175.1	180.3	176.7	29.5%
PD	176.0	158.1	159.9	168.4	203.4	202.3	196.2	11.5%
COLL	313.5	297.4	294.1	293.5	327.1	325.3	312.3	-0.4%
COMP	231.2	254.1	247.2	221.7	263.4	268.1	249.3	7.9%
Average								12.1%

Root / PGR	10/5/17	7/12/18	11/8/18	3/21/19	9/26/19	2/13/20	6/25/20	AVG
BI	1.2	-	-	1.1	0.7	0.7	0.7	0.9
PD	0.7	-	-	1.0	0.9	1.0	0.8	0.9
COLL	0.9	-	-	1.4	1.1	1.1	1.3	1.2
COMP	0.4	-	-	0.6	0.4	0.4	0.5	0.5
Average	0.8	-	-	1.0	0.8	0.8	0.8	0.8

Exhibit: Kentucky (#2 State) base rate, Root vs Progressive

Source: SNL, Company reports, Inside P&C

Root	1/10/18	8/7/18	NA	7/26/19	10/8/19	12/23/19	4/13/20	NA	Var
PD	67.9	105.8	-	119.9	109.1	101.8	125.2	-	84.3%
COMP	59.1	66.2	-	73.5	66.9	71.8	71.8	-	21.4%
COLL	170.3	196.1	-	215.9	196.5	246.1	246.1	-	44.5%
Average									50.0%

Progressive	1/26/18	10/5/18	3/26/19	NA	10/3/19	11/14/19	4/10/20	8/6/20	Var
PD	139.2	135.5	147.3	-	146.4	146.8	154.2	156.7	12.6%
COMP	178.7	174.6	140.3	-	142.9	136.2	144.1	145.0	-18.9%
COLL	373.5	373.0	287.8	-	259.8	251.7	237.8	230.2	-38.4%
Average									-14.9%

Root / PGR	1/26/18	10/5/18	NA	NA	10/3/19	11/14/19	4/10/20	NA	AVG
PD	0.5	0.8	-	-	0.7	0.7	0.8	-	0.7
COMP	0.3	0.4	-	-	0.5	0.5	0.5	-	0.4
COLL	0.5	0.5	-	-	0.8	1.0	1.0	-	0.8
Average	0.4	0.6	-	-	0.7	0.7	0.8	-	0.6

However, this non-comparability problem appears to have become clearer in a handful of filings recently by Root that look like the rolling out of a new pricing design. Notably, the filing's actuarial memorandum outline the changes are being driven by a shift from relying on competitor filings towards a more independent model.

That said, in these five states – all with rate increases of 14-26% – Root has introduced new coverages for acquisition costs and operating expenses. These are the very coverages that were present in Progressive's filings but not Root's (which were based on Progressive's).

Though its explanation to its regulators suggests this is really just a geography move – moving the expense load from BI coverage into explicit standalone factors, in every case the new expense coverages far outweigh the downward adjustment to the BI coverage. Here's the sampling of what we found.

Exhibit: Impact of new expenses rating factors

Source: SNL, Inside P&C

State	Root				Progressive			
	Acquisition costs	Operating costs	BI net change	Expenses net change	Acquisition costs	Var.	Operating costs	Var.
Georgia	108.79	35.00	-3.9%	31.9%	68.89	-37%	-	-
Georgia	108.79	35.00	0.0%	21.8%	68.89	-37%	-	-
Kentucky	123.72	35.00	-3.5%	15.0%	160.59	30%	22.83	-35%
Arizona	103.74	35.00	-6.7%	17.4%	98.47	-5%	18.99	-46%
Arkansas	105.87	35.00	-5.4%	23.6%	-	-	-	-
Oregon	94.67	35.00	-6.8%	22.4%	82.16	-13%	17.72	-49%

Note: Georgia has two filings, one for excess business.

Now maybe there is an explanation here. All we can objectively say is that according to the company's own data, it is raising base rates in these states by double digits, with the vast majority of it driven by the net addition of these new coverages. To us, this simply looks like the company has been systemically underpricing its expense load.

Additionally, we observed that these acquisition costs were loaded with factors based on customer quality. To us, this is evidence that the company knows it has a problem paying too much in CAC for non-standard customers with shorter average policy life times, as it is trying to triage and scale how much it pays for different customers. [More on this below.](#)

Importantly, it should be noted that Root has only filed these product changes in these five states that we could find, covering around ~1/5th of its premium base, and only in the last few months. Other states that we reviewed looked more like the original base rate form without these expense loads. Note in the case of Oregon, the company had to increase base rates by 17.8% driven by this change after already increasing rates 4% just four months earlier.

We suspect this might be a significant growth headwind if the company has to incorporate this change across its other states. In particular, we are going to keep laser focused on Texas, its biggest state at 21% of premium ('19 DWP), which has not had rate increases approved in 2020 other than Covid relief and is running in the 90s on loss ratio prior to 2020.

EXPENSES: THE NEW FRONTIER IN REGULATORY ARBITRAGE

Importantly, we would **argue this systemic underpricing of expense loads is actually even worse than it appears above.** Even with this fancy new "actually pricing for expenses" approach, the company is basing its expense load not on its business as it exists today, but on its expense load as it hopes to be. We're dubbing this its "aspirational expense ratio".

Before we begin we should note how strange this is in a cost-plus business, and state emphatically that no regulator would allow a company **to price based on an aspirational loss ratio that did not reflect its true experience.**

In terms of establishing a base line, it should be worth mentioning the company reported an 83.1% expense ratio in 2019, down from 169.2% in 2018.

However, consistent across the states we reviewed, the company's latest filings price to an expense structure of 21% (plus a 5% profit load).

Exhibit: Root permissible loss ratio calculations

Source: SNL, company product filings, Inside P&C

Liability & physical damage	Total	Variable	Fixed
(1) Commission and brokerage	0.0%	0.0%	0.0%
(2) Other Acquisition	10.0%	0.0%	10.0%
(3) Taxes, licenses, fees	2.0%	2.0%	0.0%
(4) General expenses	9.0%	2.3%	6.8%
(5) Profit and contingencies	5.0%	5.0%	0.0%
(5) Total	26.0%	9.3%	16.8%
*(6) Variable PLR		90.8%	

$$*(6) = 1 - (1) - (2) - (3) - (4)$$

These expense selections appear to be based not on Root's business and a "costs plus" approach typical to insurance, but upon a comparison to peers it hopes to one day emulate – according to answers to regulators in its filings.

However, it is worth noting that Root is essentially assuming success and basing its "scaled" expense ratio on some of the industry's most successful and established companies. In the table below, we show it anticipates an operating expense structure more efficient than Esurance (\$2bn earned premium or 5x Root in 2019) and Nationwide (\$6.3bn NEP, or >20x).

It is also not clear how the company anticipates dropping from 17% of premiums spent on acquisition costs of various forms, to just 10%, which would make it more efficient than Progressive according to Root's data.

Exhibit: Root expense structure comparables presented to regulators

Source: company product filings, Inside P&C

Firm	Commission & Brokerage Expenses	Other Acquisition Expenses	Taxes, License, Fees	General Expenses
Root				
2017	0.0%	194.0%	1.7%	412.3%
2018	4.8%	28.3%	0.1%	39.3%
2019	10.0%	7.0%	2.3%	11.4%
Progressive				
2017	5.3%	5.0%	2.0%	7.3%
2018	5.4%	5.7%	2.0%	6.6%
2019	5.3%	6.5%	1.9%	6.4%
Geico				
2017	0.6%	7.9%	2.2%	2.0%
2018	0.6%	7.8%	2.2%	1.9%
2019	0.7%	8.3%	2.2%	2.0%
Esurance				
2017	0.0%	9.4%	2.5%	12.7%
2018	0.0%	9.2%	2.5%	11.1%
2019	0.0%	7.5%	2.5%	9.3%
Nationwide				
2017	12.4%	7.3%	2.1%	7.8%
2018	13.1%	7.1%	2.3%	8.4%
2019	13.3%	6.1%	2.4%	10.1%
Root's Selection	0.0%	10.0%	2.0%	9.0%

It is also worth noting the creeping optimism in these numbers. In just July 2019, filings in the same state (Kentucky) were assuming 20pts of general expenses, and 20pts of acquisition costs. It is not clear what has justified this change in Root's fundamentals – other than presumably its aspirations became more ambitious.

Exhibit: Root permissible loss ratio calculations

Source: company product filings, Inside P&C

Liability & physical damage	April '20	July '19
(1) Commission and brokerage	0.0%	4.8%
(2) Other Acquisition	10.0%	15.0%
(3) Taxes, licenses, fees	2.0%	2.0%
(4) General expenses	9.0%	20.0%
(5) Profit and contingencies	5.0%	5.0%
(5) Total	26.0%	46.8%

Additionally, this expense load is premised on Root's IEE, which cites its general expense ratio of 11.4% based on \$40mn of 2019 general expenses. This may make a 9% expense target seem reasonable.

However, this evidently does not include a lot of fixed expense at the holding company level that can be excluded from statutory financials (e.g. tech spend). For reference, 2019 GAAP financial included \$119.3mn of non-sales and marketing expenses – see table below.

Exhibit: Root GAAP PNL

Source: company reports (S-1), Inside P&C

PNL	2018	2019	H1:20	Q3:20	Common size (% NEP)			
					2018	2019	H1:20	Q3:20
NEP	40.2	275.3	233.5	45.3	100%	100%	100%	100%
NII	1.2	5.2	3.2	1.0	3.0%	1.9%	1.4%	2.2%
Net realized gains on invests.	0.0	0.0	0.1	0.1	0.0%	0.0%	0.0%	0.2%
Fee income	1.9	9.7	8.6	4.5	4.7%	3.5%	3.7%	9.9%
Total Revenue	43.3	290.2	245.4	50.9	107.7%	105.4%	105.1%	112.4%
Operating expenses:								
Loss & LAE	43.5	321.4	227.2	75.1	108.2%	116.7%	97.3%	165.8%
S&M	40.3	109.6	53.2	36.5	100.2%	39.8%	22.8%	80.6%
Other insurance exp (benefit)	10.2	52.3	26.6	(25.8)	25.4%	19.0%	11.4%	-57.0%
Technology & development	8.2	24.0	27.3	12.6	20.4%	8.7%	11.7%	27.8%
G&A	9.3	43.0	42.2	16.5	23.1%	15.6%	18.1%	36.4%
Total operating expenses	111.5	550.3	376.5	114.9	277.4%	199.9%	161.2%	253.6%
Operating gain (loss)	(68.2)	(260.1)	(131.1)	(64.0)	-169.7%	-94.5%	-56.1%	-141.3%
Loss ratio	108.2%	116.7%	97.3%	165.8%	108.2%	116.7%	97.3%	165.8%
Expense	169.2%	83.1%	63.9%	87.9%	169.2%	83.1%	63.9%	87.9%
Combined	277.4%	199.9%	161.2%	253.6%	277.4%	199.9%	161.2%	253.6%

It is also worth noting, Root explicitly said in its S-1 it expects G&A to raise both in \$ terms and as a % of premiums in the near term.

As such, it is hard to see how even this new expense load is close to sufficient to cover costs any time soon. This might be a bet you are willing to make if you're a high risk investor. Essentially, your risk is continued access to capital markets as you cannot self-fund growth (or even self-fund standing still). At a ~75% expense ratio and permissible loss ratio in the ~80-90% range, you are self-evidently going to burn through a lot of capital as you grow.

Root has clearly demonstrated success at winning support from debt, equity, and reinsurance capital markets, so it is not an entirely groundless bet for the company or its investors to make.

But it is certainly vulnerable to both (a) macro-economic stress and closed (or prohibitive) capital markets, (b) reinsurance market cycles and capacity, and (c) any internal business issues that emerge and make capital raising impossible (e.g. slower growth).

On the other hand, if it is clear why a rational company and investor might reasonably make that bet, it is not clear why the regulators want to support that journey and take such one-sided risk on "10x or bust". Regulators should not have a venture capital, "basket of big bets" mentality.

No state regulator in the world would let a company set rates based on the loss ratio it wishes it had instead of the one it has – even if the company could eloquently defend its need for scale to produce a good loss ratio in the long term. Especially if the gap between its aspirational loss ratio and actual risked the financial health of the business without assuming an endless supply of new capital to reload.

It is unclear then, why regulators seem to be willing to accept aspirational expense ratios. It both risks the potential for rate whiplash and financial hardship for policyholders when companies start trueing-up in a step-function way (as seen in Root's recent filings) and seems incredibly risky from solvency, claims payment, and macro-prudential standpoints.

What is most ironic about this is that it is 180 degrees backwards on how successful and high performing companies play the game. The rare good businesses in insurance are trying to play the exact opposite game that Root is.

Root is trying to understate general expenses, spread out acquisition expenses over assumed policy life times, and adjust for new business penalties –in short to improve the performance of its business on an accounting basis in its filings relative to the actual economics it earns.

On the other hand, successful companies are trying to overstate acquisition costs per term, and have loss ratios fully loaded with new business – in short to try and minimize accounting profits relative to economic profits (subject to the ability to price competitively).

Finally, it is worth noting its extra-statutory technology spend in particular is likely to be a source of expense strain.

Telematics is a fundamentally hard and expensive business to be in, with constant app updates required as the cellphone fleet rolls-over.

Other companies Root is competing against have either a much larger premium base to spread the expense over (e.g. Allstate) or outsource the data collection component to a third party that can leverage larger scale. Root's bet is that collecting its own data gives it an edge over peers that do not, even if they have a substantial data advantage from the law of large numbers stemming from their larger portfolios (e.g. Progressive, State Farm).

It is also worth mentioning that it is making three bets that seem questionable - that (a) this data source does not become commoditized by a third-party telematics service provider and become a standard industry factor as credit did in the early 2000s, (b) that progress on driverless cars does not render the value of driver-specific rating factors less valuable, and that (c) the data collection by OEMs does not overtake and render its investment in consumer tech obsolete before the company has enough scale and profit margin to pivot its business model.

Root is likely to be caught in a trap that it cannot defund its primary strategic asset, while seeing its reinvestment needs remains high and its efficacy deplete.

ACQUISITION COSTS: SIGNS OF OVERPAYING FOR NON-STANDARD CUSTOMER CONFIRMED

There is another old saying in insurance. If you're selling underpriced insurance in a one-man rowboat in the middle of the Atlantic, they'll find you. The simple point is that growth in insurance is easy. Profitable growth is not.

We expect this concept is likely to come into tension with companies funded by Silicon Valley VC money, where the pressure to grow to expand the plausible addressable market and "prove the concept" will be high.

This is especially true in auto-insurance, a hypercompetitive market at the best of times, where the best customers shop rarely, and the pool of available conversions in any given year tends to skew heavily to lower quality risks and non-standard auto.

We mentioned this as part of the challenge for the loss ratio improvement, but we also think it has significant implications for the expense ratio. In particular, around managing acquisition costs and the sales funnel.

In our original S-1 take, we cited our view that the firm's self-disclosed average CAC of \$332 was probably too high relative to its average policy life span in the 1-1.5 year range. Having spent more time with the company, we are both (a) more convinced we are right, and (b) sure the company agrees with us. Here are three key points.

First, a better understanding of the target operating model helps explain the needed retention improvement, or lower CAC expense.

From the company's product filings and its disclosed target operating model it is pricing to, we can see that long term the company is expecting to spend 10% of term premium on average CAC.

As we get into below, we have reasons to be skeptical of the \$332 number. But let's grant it for the purposes of this exercise. This would imply needing average lifetime premiums per customer of \$3,320. At the company's average premium per policy of \$909, this implies a needed average policy lifetime of 1.8 years.

In short, for the company to meet its own aspirational goals it would need to extend its current average policy life time by about an additional renewal, from ~1.25 to ~1.75 years. Given what we have noted above, the ability to extend retention in a fundamentally non-standard book is harder than it may seem. Alternatively, the company would need to reduce CAC to around \$204 per customer, or about 22.5% of term 1 premium. Again, this is likely to prove hard while taking pricing and lowering conversion rates.

Second, as we noted above, the company has introduced new factors to explicitly price for its acquisition costs.

In the above section, we noted only that it seemed to have been under-loading for expenses in its pricing design before. However, the breaking out of acquisition costs also seems to be motivated by a need to more efficiently acquire customers and to appropriately charge customers with non-standard characteristics.

The company has introduced new factors to allocate its acquisition costs at different amounts based on customer quality. It is worth noting these factors look explicitly designed to charge non-standard customers more. For example, there are factors reducing acquisition costs for bundled multi-vehicle policies, for luxury car status, for financial responsibility score, and discount for pre-paid in full accounts. It has added a simple yes/no factor based on whether customers have completed a test-drive prior to the underwriting phase.

Exhibit: Underwriting factors applied based on payment method, Georgia

Source: Company reports (product filings), Inside P&C

Payment method	BI	PD	COLL	COMP	MED	UMUIM	UM{D	RENTAL	ACQ
Instalments	1	1	1	1	1	1	1	1	1
Pay in full	0.8914	0.9048	0.9401	0.8942	0.838	0.7826	0.9273	0.9993	0.6921

In particular, the heavy discount to acquisition costs for up-front payments (~30%) suggests an attempt to address non-standard issues.

Similarly, the ~80% surcharge to acquisition costs for drivers who have not yet completed a driving test is suggestive of a high drop-off rate during the underwriting phase, which ties with the company's retention metrics. To us, this seems like the company is trying to address the fact that its CAC is spent "acquiring" customers that

do not fully onboard, or have issues paying their bills. We see this as a real issue with its sales funnel that is stuck in a ~2015 mode of buy now, save later.

Before we move on, we should note that this to us confirms that both (a) the company does not think its customer acquisition costs are efficient enough, and that (b) its proposed fix is suggestive that it believes it is spending too much money on acquiring non-standard business with low policy life times. In short, the company's own actions agree with our original analysis of the S1.

Third, there are reasons to be suspicious of Root's non-GAAP disclosed CAC.

As noted above, in the S-1, Root said its average CAC was \$332. We regret in our haste to put out a rapid-response document, that we made the mistake of taking a non-GAAP number at face value as disclosed. A simple sanity check of this number seems to reveal issues with it.

Before we get into the math, we should also highlight the strange time-window choice for the disclosed CAC metric of August 2019 to August 2020. As a general rule, this type of selective disclosure around a window of time should add suspicion. We'd note that it covers a period when many companies pulled back their marketing spend, likely reducing average costs.

Even more fundamentally than that, if we combine what we know about their retention and their PIF growth, we can estimate acquired PIF. We can then take the \$109.6mn of 2019 S&M expense and divide by acquired PIF to get implied CAC of \$445.

Exhibit: Estimated CAC based on company disclosed metrics

Source: company reports (S-1), Inside P&C

2019 Starting PIF	Retained customers (33%)	2019 PIF	Acquired PIF	S&M expense	\$ per acquired customer
111,736	36,873	283,057	246,184	\$ 109,600,000	\$ 445.20

Arguably this is even a little under-stated as it excludes some deferred acquisition costs excluded from S&M, some acquisition costs contained in "other insurance costs", and the impact of contra-expenses from reinsurance ceding commissions. The company ceded around 25% of DWP through year-end 2018 but increased this to ~70% in 2020, according to statutory data.

This would likely have some impact on net CAC, and may be another reason the company chose to use CAC expenses for an atypical period covering as much time under the new reinsurance program as possible.

Importantly, we would argue that this contra-expense may not be as appealing as it seems. For starters, we would argue it is not a sustainable arbitrage worth all that much at scale, as non-standard auto is not a diversifying risk for reinsurers and carries little investment float.

Additionally, because of the company's high loss ratios, we would be skeptical that there is an easy reinsurance arbitrage even in the near term giving them a true over-ride – particularly when we note their major reinsurance counter-parties include National indemnity per 2019 Schedule F. These is not indicative of naïve markets.

Importantly, we note the company's general interrogatories on reinsurance use in its annual statutory filings indicate their reinsurance protections include a loss corridor.

We can also see from the S-1 that the company included losses relating to a reinsurance loss corridor for 2019 of \$7.8mn, or around 2.2pts on its 2019 loss ratio.

We also note an additional \$7.2mn of sliding scale commission expense in 2019, or an additional 2.0pts on the loss ratio.

Our interpretation of this is that the reinsurance is designed to front-load expense support when the company needs upfront cash to acquire customers without taking a hit to surplus.

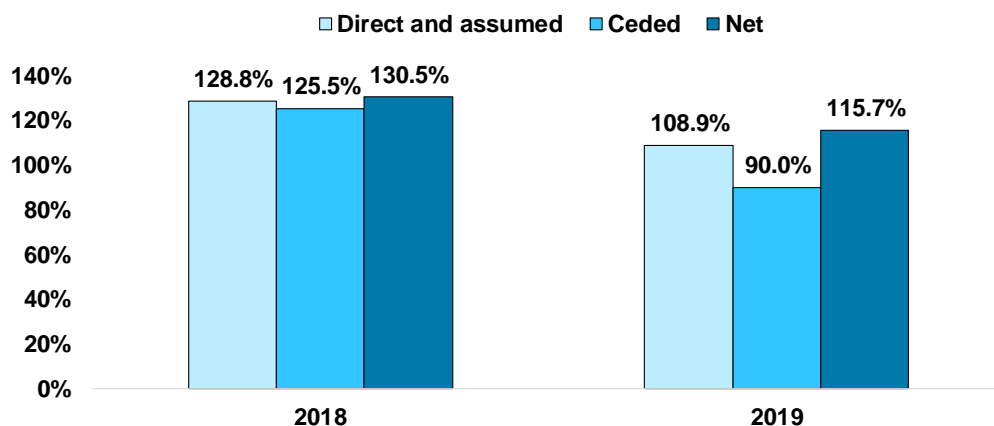
However, because of the poor underwriting results, the company ends up giving at least part of this gain back to reinsurers in the form of loss corridor and sliding scale commission true-ups.

The true impact of reinsurance then is not an arbitrage of reinsurers giving up value, but a form of temporal arbitrage. Root is simply deferring the upfront payments in its accounting from up-front to in arrears, by which time its growth in earned premium should lower the impact. The reinsurers in turn extract a fee for their “maturity transformation”.

Indeed, we can see this in the fact that the company’s ceded loss ratios are lower than its direct and assumed, and therefore its net loss ratios. This implies reinsurers are more structured and protected than a simple pro-rata quota share.

Exhibit: Loss and LAE as a % of premiums earned (assumed/ceded/net)

Source: Statutory filings, SNL, Inside P&C



LOSS RATIOS: A SYMPTOM OF A MISDIAGNOSED NON-STANDARD BOOK

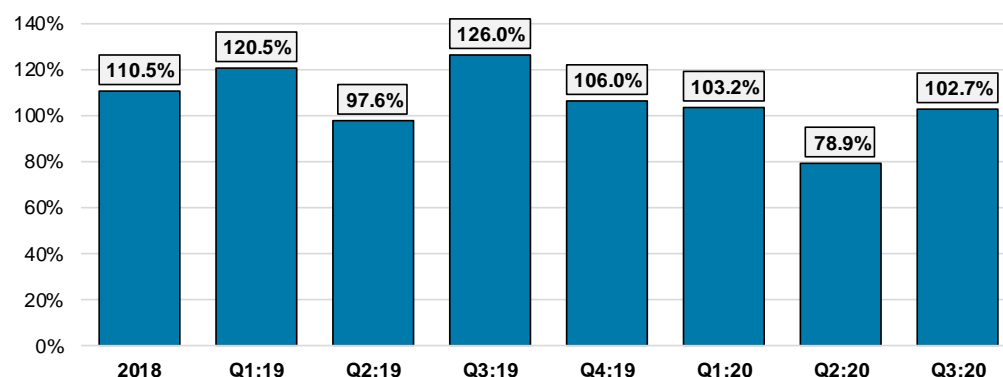
Root's business model is premised on the idea that telematics data can help a company better match risk and premium. As we stated in our S-1 review, this is all very well and good as a strategy or aspiration, and we certainly could believe such a story if we saw it in the numbers.

The only problem is, Root doesn't seem to be very good at it, and has provided less than zero evidence to date that it has any serious competitive advantages in underwriting.

Since its inception Root has consistently struggled to underwrite profitably. But this is not just a function of its size and a need to scale, Root has also never approached a loss ratio that could be deemed sustainable to allow for self-funding growth at a fully scaled expense ratio. For example, the company's direct accident year loss and LAE ratio was 110.5% in 2018, and 111.9% in 2019, at least per its latest S-1.

Exhibit: Root direct loss & LAE ratio

Source: Company reports, Inside P&C



Even worse, the company has also consistently under-estimated its losses and been forced to consistently take adverse development charges. For example, the company's 2018 all-lines accident year has already deteriorated 17pts (or \$8.8mn) from its initial already awful 92% pick.

Exhibit: Schedule P incurred loss ratio

Source: SNL, Inside P&C

Accident Year	12 Months	24 Months	Variance
2018	92.0%	109.0%	17.0pts
2019	102.5%	-	0.0pts

Commentary in the firm's annual statutory filing attributed this reserve movement to higher-than-estimated claims frequency on bodily injury and underinsured motorist BI coverages, and higher-than-estimated claim size for property damage coverages.

It should be noted that this higher-than-expected frequency appears to be a Root specific problem and not an industry problem. Recall, other leading carriers in 2018/2019 almost universally pointed to benign frequency trends.

Exhibit: Frequency trend disclosures by peers

Source: Company reports

Frequency:	Q1:18	Q2:18	Q3:18	Q4:18	Q1:19	Q2:19	Q3:19	Q4:19	Q1:20	Q2:20
Geico (YTD)										
Property	D slightly	(2.0)%	(2.5)%	(3.0)%	(3.0)%	(3.0)%	(2.5)%	(3.0)%	(13.0)%	(38.5)%
Collision	D slightly	(2.0)%	(2.5)%	(3.0)%	(3.0)%	(3.0)%	(2.5)%	(3.0)%	(13.0)%	(25.0)%
Personal	D slightly	(2.0)%	(2.5)%	(3.0)%	(3.0)%	(3.0)%	(3.0)%	(1.5)%	(10.0)%	(38.5)%
Bodily	(2.0)%	(3.0)%	(2.5)%	(3.0)%	0.0%	0.0%	0.0%	0.0%	(7.0)%	(38.5)%
Progressive (YTD)										
Personal auto	1.5%	(2.0)%	(2.0)%	(3.0)%	(3.0)%	(3.0)%	(3.0)%	(3.0)%	(18.0)%	(29.0)%
Bodily injury	(1.0)%	(2%)-(3%)	(3.0)%	3.0%	(3.0)%	(3.0)%	(2.0)%	(3.0)%	(12.0)%	(28.0)%
Auto property	(2.0)%	(2%)-(3%)	(3.0)%	3.0%	(3.0)%	(4.0)%	(4.0)%	(4.0)%	(18.0)%	(30.0)%
Collision	(1.0)%	(1.0)%	(2.0)%	3.0%	(4.0)%	(5.0)%	(4.0)%	(4.0)%	(23.0)%	(30.0)%
PIP	(3.0)%	(2%)-(3%)	(3.0)%	3.0%	(4.0)%	(5.0)%	(6.0)%	(5.0)%	(20.0)%	(33.0)%
Allstate (YoY)										
Paid claims (PD)	(3.0)%	(3.0)%	0.2%	(0.6)%	(3.6)%	(1.5)%	0.2%	(4.0)%	(3.8)%	(37.8)%
Gross claims (BI)	(2.0)%	(2.7)%	(0.7)%	(2.5)%	(1.2)%	(2.1)%	(0.5)%	(3.2)%	(11.2)%	(49.2)%

So far in 2020, this unfortunate trend has continued. A review of the company's quarterly statutory filings shows \$11.1mn of adverse development in H1 that does not seem to be called out separately in the S-1 other than presumably as part of the loss ratios disclosed.

This was driven by higher-than-expected reported losses on bodily injury, property damage, and collision coverages primarily on accidents occurring in the second "semester" of 2019. The company also pointed to claims operation "improvements" in 2019 that changed payment and reporting speeds for these coverages, though also blamed a "seasonal slowdown" in claims reporting in Q4 2019 that it said didn't emerge until early 2020.

On top of this, the new disclosures in the amended S-1 filed just days before its IPO highlighted a further \$7mn of adverse development. The company said that "substantially all of this increase to held reserves relates to accident years 2019 and prior as a result of a change in estimate". It is worth noting that this adverse development drags the company's Q3 direct CY loss and LAE ratio to 97.7% to 102.7% based on the estimated range provided – in a period where peers are still putting up peak margins.

Exhibit: Schedule P incurred loss ratio

Source: SNL, Inside P&C

Accident Year	12 Months	24 Months	Variance
2018	92.0%	109.0%	17.0pts
2019	102.5%	107.7%	0.0pts

Note: 2019 at 24 months an estimate based on fully allocating 2020 development.

Recall in our S-1 review we pointed out that the 2019 accident year superficially screened as weakly reserved, though the limited operating history and changes to the claims department made this impossible to assert with conviction (e.g. one note included the introduction of an automatic \$5k case reserve when a claim is filed which would change the pattern in reported claims). It is also worth noting that the language above implies some of the Q3 development applied to the H1:20 period.

In total, this brings the total adverse development disclosed so far in 2020 to \$18.1mn. We note in the S1 the company discloses a FY 2018 direct accident year loss ratio of 111%, which compares to the fully developed 109% in its Schedule P as of year-end 2019. This would imply 2pts have been allocated to this year.

However, 2019 is still disclosed as 103%, the same as it is in Schedule P. As such, we're not sure where the bulk of these reserve charges have gone. We assume this is an administration error, with the company not updating its prior year accident numbers for its Q3 preliminary disclosures, but this still does not fully account for the H1 development we found in the company's stat filings. This makes understanding the company's true baseline loss ratios harder, especially when they are referring to them on an accident year basis.

LOSS RATIOS AND "THE NEW BUSINESS PENALTY" DEFENSE

One of the primary arguments Root has made in defense of its loss ratio performance to date is that its loss ratios need to be adjusted for the tenure effect. New business typically comes with a higher loss ratio as companies have less understanding of the risk profile of their new business relative to their renewals.

Root S-1

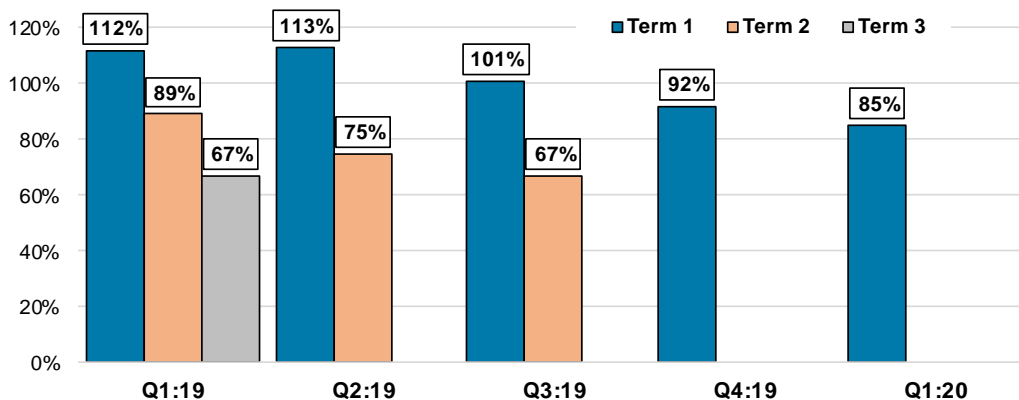
"Over time we expect that our book of business will naturally mature as renewal premiums outweigh new premiums, driving profitability. Renewal premiums are characterized by lower loss ratios, and our accident period renewal loss ratio was significantly lower than our new business accident year loss ratio for the trailing 12-month period ended June 30, 2020. As our renewal premium base expands from 47% as of June 30, 2020 to align over time with an industry average of approximately 80%, we expect our direct loss ratios will fall sharply as will our marketing costs as a percent of total premium."

Essentially, Root argues that as a new company with a higher mix of new business, analysts should give it credit for an expected improvement as that ratio improves over time. For reference, the company currently has 53% new and 47% renewals, but says it expects to eventually shift towards an "industry average" of 80:20 renewal to new.

Indeed, the company even took the unusual step of breaking it out for investors in the updated S-1 with explicit accident years by cohorts, presumably due to feedback and criticism on its loss ratio tack record to date. What they provided is in the chart below.

Exhibit: Accident period loss ratio by cohort

Source: Root



Root explains it believes the improvement through time reflects "our consistently improving risk segmentation capabilities and the power of our flywheel".

To borrow a phrase, we do not think this means what they think it means. Here are our issues with it.

The first is that in many ways this chart is the biggest self-own in the entire S-1, perhaps the single biggest fatal blow to their pretenses at having a better underwriting mouse trap that can better match risk and premiums.

As we noted in our initial S-1 review, the whole point of Root's model is to better understand risks during the measurement period. If the telematics part of the business model was working perfectly, you would expect to see zero gap between new and renewing.

If perfection is a high standard to hold them to, you would at least expect them to be better than industry average. Our understanding is that a rule of thumb should be for a 7-10pt handicap to new business relative to renewing. If we take the above numbers at face value (and there are reasons we shouldn't), Root appears to be materially worse than its mature competitors at identifying risk during the underwriting process.

Second, the loss ratio "tenuring" in the chart above cannot be taken seriously due to the impact of the corona-driven frequency benefit.

By our estimate, every single one of the Term 2 and Term 3 renewals provided by the company would have had some impact from corona-linked frequency benefits that began to emerge in March 2020. The same goes for the Term 1 improvement in Q1:20.

The company acknowledges the potential for this distortion and that they may increase as driving levels return to "normal", but claims it cannot "determine with precision the impact of Covid-19 on our loss ratio experience".

Again, this is a curious claim for a company with pretensions of superior real-time data insights to make. We also note the company made several product filings across most of its states noting a 30% reduction in frequency, and a 40% reduction in claims in filings made around June, and outlined a saving program for customers willing to have their driving re-measured. This seems like a reluctance to disclose with precision, rather than an inability to measure.

We also wonder if the Term 1 improvement in Q3:19 and Q4:19 has been trued up for the adverse development on this accident year noted above, where the company specifically called out H2:19 and the fourth quarter in particular). If not, this would imply nearly every single data point in the chart is distorted and not a fair baseline.

Third, even if we grant them the benefit of the doubt, the adjustment barely makes a dent in their needed improvement.

Per Root's latest S-1, its mix of renewal business at end of Q2:20 was 47%. Let's grant them their premise. Even then, we're talking about only ~6pts at most on the loss ratio to adjust for the "tenuring effect" (~30pts less new business multiplied by 20pt gap), and likely less due to the Covid-distortions mentioned above.

Now 6pts is not nothing at a normal company, but nowhere near to a fix based on its run-rate loss ratios which are likely running in the 90-100s trued up for Covid benefits.

Additionally, recall it is unclear if the company's 2019 baselines in its disclosures have been updated for 2020 adverse development. This could be as much as 5pts on 2019 depending on how the disclosed development is allocated by accident year. In short, enough to almost entirely offset the ~6pt adjustment it is asking for to its reported numbers.

Also, we should note that for what it's worth both its mix percentages and its cohort loss ratios don't seem to match up with similar disclosure it included in recent rate filings in a way we don't fully understand.

Exhibit: Disclosed mix of new to renewal business per product filings

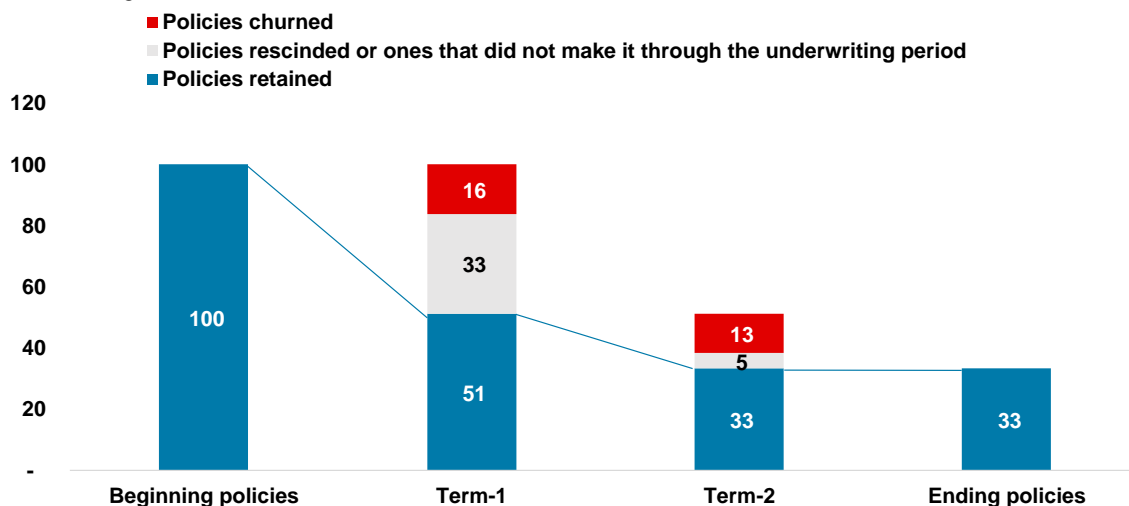
Source: SNL, Inside P&C

As of date	Tenure	On-level Premium	Ultimate Loss	Loss Ratio	New & Renewal Mix	Projected LR	LR Mix Improvement
12/31/19	New	345,158,789	266,020,904	77.1%	60.0%		
	Renewal	230,237,630	140,925,485	61.2%	40.0%		
	Total	575,396,419	406,946,389	70.7%	100.0%	68.9%	0.97
3/31/20	New	424,957,543	346,746,316	81.6%	58.1%		
	Renewal	306,442,992	191,312,069	62.4%	41.9%		
	Total	731,400,535	538,058,384	73.6%	100.0%	71.8%	0.98
6/30/20	New	501,737,645	404,598,144	80.6%	56.0%		
	Renewal	394,320,397	237,788,065	60.3%	44.0%		
	Total	896,058,042	642,386,208	71.7%	100.0%	70.2%	0.98

A final point on this subject should be made. There are also good reasons to assume Root does not make it industry average new to renewal mix. As we noted above, the firm skews heavily to low-credit, non-standard risks which typically have a higher churn rate. The company's own retention statistics show that its book is behaving exactly as you would expect given the insight into its credit profile. Root seems to just assume success, and that the industry average outcome is pre-ordained rather than a hard-won outcome in a competitive market.

Exhibit: Illustrative journey of 100 policies through two policy terms at disclosed retentions

Source: S-1 filing, Inside P&C



WHAT'S GONE WRONG WITH UNDERWRITING AT ROOT?

We could simply point to the loss ratio and Root's fairly consistent price increases over time as evidence of simply underpricing. There is likely some of that, though it is hard to separate out the impact movements between base rates, underwriting factors, and pricing due to changing expense load assumptions.

However, our diagnosis of Root's underwriting missteps to-date point to three primary drivers of model error: (a) multiple problems with its underwriting model missing the non-standard nature of its book and misclassifying high risk drivers, (b) a claims department not well designed for non-standard risks, and (c) simply a model that does

not have sufficient data to understand its own book, let alone lead the industry in big data as a competitive advantage.

First, the company's product filings show a journey of consistently missing non-standard factors that have undermined underwriting performance.

Perhaps some amount of model miss between the product design and the customer base was always likely when copying a competitor's product design and applying it to an unknown customer base.

That said, there are simply so many examples in Root's product filings of what look like clear issues with a non-standard population being mischaracterized and mispriced.

As we noted above, telematics naturally attracts a non-standard customer base, as it is attractive to those with the highest prices, and those with the most to gain by saving. As such, a pure-play telematics should be expecting its customer acquisition funnel to be heavily non-standard, atypical risks, and have an underwriting and claims function set up to handle it.

Against that, a review of product filings for Root's top five states by premium shows a consistent history of belated changes that appear to reveal its loss ratio issues are partly stemming from a heavy dose of mispricing the "worst drivers" that its S-1 proudly claims it does not write.

Examples we would put in this category include:

- (a) **Bad payment history.** Root added rating factors to increase pricing for customers with bad payment history or rating changes, included in filings in TX, KY, AZ, and PA. Data in filings suggest a loss ratio relativity of almost 30pts higher with even one late payment, and 52% higher for both a late payment and a billing adjustment. These factors were added in the middle of 2019.

Exhibit: Billing adjustment support, multiple states

Source: Product filings, SNL, Inside P&C

Billing adjustments	Late payments	Loss ratio	Loss ratio relativity	Selected factor
0+	0	81.10%	1	1
0	1+	105.20%	1.3	1.1
1+	1+	123.40%	15217	1.2

- (b) **An SR-22 factor.** Sn SR-22 is a document required for "high risk" insurance policies such as people with DUIs, incidents of driving without insurance, a period of license suspension, or a record of at-fault accidents. This factor was added in September in the largest state Texas, in December in Kentucky and PA, but only in April 2020 for Arizona and September 2020 for Georgia. The company's data points to a ~150% loss ratio relativity for customers requiring an SR-22, which accounts for around ~4% of its known claims.

Exhibit: SR-22 filing support, multiple states

Source: Product filings, SNL, Inside P&C

SR-22	Coverage	Loss ratio	Loss ratio relativity	Claim count	Credibility	Indicated factor
Yes	All	88.00%	1.5019	2538	100%	1.5019
No	All	58.60%	1.0	64206	100%	1.0

- (c) **Deductible support.** Multiple states introduced changes to deductible rating factors due to loss ratio issues on low deductible coverage for collision and comp. Policies with a deductible of just \$100 had a 159% loss ratio relativity in comp relative to a policy with a \$1,000 deductible, and in collision the ratio was 134%.
- (d) **Prior history.** The company outlined an issue where its underwriting model that relied on third-party data to verify prior insurance and driving records could not find records and classified them as “unknown” and therefore treated them as neutral, rather than penalizing them relative to average based on an absence of good data. Though this language appears specifically in a Kentucky filing (see below) we note the introduction of or changes to prior carrier factors across multiple states.

**Root
Product
Filing**

“As a new carrier, the initial implementation of third-party data sources was limited based on a small set of policyholders and sample data. As a result there were many unknown possible scenarios across both driving record and prior insurance history. When risks fell into these situations they were placed in an “unknown” segment and provided a favorable clean record rate since we were not able to confirm their proper segment.”

- Kentucky filing submitted on 08/21/2020

What do all of these product changes have in common? They all seem to be belatedly identifying non-standard factors causing higher loss ratio relativity for significant cohorts of its portfolio. In particular, the deductible changes show how poorly the company’s product was suited for its “real” target market in non-standard, where high claims build-up makes low deductible policies a high risk bet without exceptional underwriting capabilities.

Finally, we would note that the introduction of these factors has not been uniform, having been earlier in some and later in others. We’d point to Kentucky as a worrying red flag on growth following the introduction of these underwriting changes earlier than most other states – where growth is now in reverse, and the company told regulators as recently as August it expects that to continue.

**Root
Product
Filing**

“Our premium trends over the last 12 months have consistently been negative and continue to shift more negative. We expect this to continue as we implement segmentation improvements to better match risk with rate across the market.”

- Kentucky filing submitted on 08/21/2020

Exhibit: Kentucky growth post rating factor changes

Source: Product filings, SNL, Inside P&C

Date	OLEP	ECY	% change	Average Premium	Monthly Trend	Annual Trend	Rolling Annual Trend	Rate chg (%)	Factor change
2019-07	6,714,478	13,226	4%	508	-0.5%	-6%	3%		
2019-08	6,597,590	13,096	-1%	504	-0.8%	-9%	0%		
2019-09	6,211,814	12,525	-4%	496	-1.6%	-17%	-3%	6.2%	Introduced Billing History and Deductible changes
2019-10	6,256,591	12,885	3%	486	-2.1%	-22%	-5%	14.3%	
2019-11	5,848,907	12,305	-5%	475	-2.1%	-23%	-6%		
2019-12	5,803,456	12,425	1%	467	-1.7%	-19%	-8%	-9.0%	
2020-01	5,532,365	12,126	-2%	456	-2.3%	-25%	-11%		
2020-02	5,029,596	11,321	-7%	444	-2.6%	-27%	-14%		
2020-03	5,213,081	12,049	6%	433	-2.6%	-27%	-16%	0.0%	Introduced SR-22 factor
2020-04	4,601,390	10,879	-10%	423	-2.2%	-24%	-18%		
2020-05	4,585,835	10,978	1%	418	-1.2%	-14%	-18%		
2020-06	4,183,159	10,184	-7%	411	-1.7%	-18%	-19%	9.8%	

* OLEP = On level earned premium, ECY = earned car years

INSURANCE IS NOT AN APP. A REAL WORLD CLAIMS DEPARTMENT IS A CRUCIAL INGREDIENT OF SUCCESS, ESPECIALLY IN NON-STANDARD AUTO

The second issue driving loss ratio “issues” is that insurance is not an infinitely scalable app, and user experience is not confined to your handheld device. Real world claims departments are an important part of user experience for customers, and cost control for customers.

Much like Lemonade, a big part of Root’s pitch to investors is that its mobile first and app-based platform gives it a competitive advantage through a superior user experience.

In our prior note, we doubted whether that truly counted as a sustainable competitive advantage, as plenty of leading competitors have fairly decent apps with high engagement and good reviews. And even if the UX is superior, it does not seem like something that could not be replicated by highly profitable incumbents with cash to burn.

However, we should have made the following point clearer. Insurance is not an app! There is a real product that goes beyond the buying process, and even the claim filing process. Perhaps Lemonade has found a nice niche in renters where claims payment via app is often literally the product, but as we argued [in our coverage of that IPO](#), more complicated lines like home and auto are likely to be less easy to do via “bot”.

Absent from Root’s claims to a superior product and UX is any discussion of claims. And perhaps no wonder. A review of their statutory filings show the company made a significant step to switch from an external TPA to an in-house claim team in 2019, with the language of a needed “improvement” suggesting issues with the prior situation – something also evidenced by subsequent adverse reserve development.

Another data point in this direction is the firm’s NAIC complaint index rating, which shows the firm has 5x the complaints relative to its market size.

We note the firm is also facing market conduct examinations in both Delaware and Virginia, and while we don’t know what these relate to, a reasonable Occam’s Razor bet would be claims issues (though a data collection issue is not out of the question).

Unfortunately the company does not report a Schedule P part 5, meaning we cannot analyze typical claims KPIs (and it would have a limited operating history in any case).

But we also note the “late reporting claims” issue for H1:19 we highlighted above that manifested this year is also symptomatic of a weak performing claims organization, as

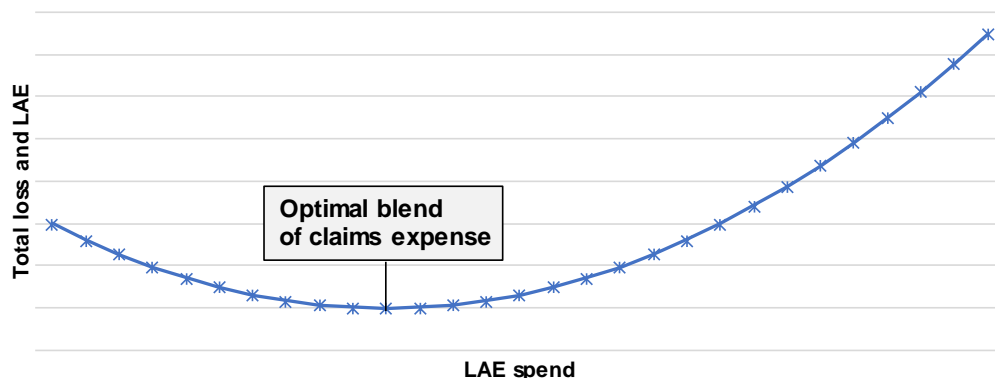
is the fact, as noted elsewhere in this report, that the company cannot seem to provide its own frequency and severity metrics and seems to rely on averaging competitor filings to a 4.0% rule of thumb loss trend. So much for its “data flywheel”.

We highlight all this because in all of the “tech” focus on the infinite scalability of apps, there seems to have been too little focus on the real world. Similarly, the Silicon Valley ethos of “delighting” your customers simply does not translate to non-standard auto, where there is higher fraud or fraud adjacent activity and a need for sharp elbowed and “hands on” claims handling.

High performing insurance companies do not just try to lower LAE as a frictional cost – they leverage either scale or targeted localized approaches to efficiently manage the optimum outcome of the combination of LAE and pure loss cost.

Exhibit: Claims J-Curve (loss & LAE)

Source: Inside P&C



Efficient claims help manage down the loss ratios, give better insight to claims and reserve setting, and provide a better data feedback loop for underwriting – in short, a crucial element of the “data flywheel” at any insurance company. It also, for what it’s worth, can provide a better experience to customers. All evidence in the numbers suggests this not a high performing function at Root, and a crucial missing ingredient that will need to be improved, particularly given its implied customer mix.

ROOT’S DATA EDGE: A VISION, BUT NOT YET A REALITY

If the purpose of this piece is to mark Root’s S-1 to independent reality, we need to address its grand claims to a better mouse trap. As we did the work to diligence the business, we could not help but be struck by the yawning gap between the way the company talks about itself to external investors on the one hand, and how it talks to its state insurance regulators on the other.

To read Root’s S-1 is to enjoy a stomach wrenching journey through its supposed superiority over its “archaic” competitors in all things data. Indeed, its ability to collect and analyze data to use in sophisticated “machine learning” pricing is supposedly its key competitive advantage. Here it is in its own words:

Root S-1

“We prioritize growth because our business enjoys the network effects of big data and scale. These items (growth, scale, and data) turn our flywheel and unlock the full potential of our business model. More data allows us to deploy even more advanced algorithms, which continue to allow us to differentiate our product from the market while becoming an even better underwriter. As we grow, we expect our operational scale will realize economies of scale and grow margins.”

Step out of the world of capital market “thirst traps” and into the mundane world of insurance product filings and Root paints a very different picture. A detailed review of Root’s product filings shows the company consistently relies on competitor product filings to inform its view of almost every aspect of its business – consistently telling regulators that it does not have sufficient data to rely upon its internal numbers.

This is not entirely surprising, at least if you think about the company as an early-stage insurance start-up and not a revolutionary data-driven tech company. Root openly admits (in its product filings) that it copied the vast majority of its original product design from Progressive (one of those “incumbents” that are beneath contempt in its S-1). It should be said that “borrowing” from Progressive is a time-honored tradition in this industry, and not something unique to Root.

Root wasn’t able to copy Progressive chapter and verse, in part because of its different model and in part because of the types of data it collects from customers is different (= you can’t use something as a variable if you don’t collect the information from your insureds). However, it tries to approximate the same outcomes. As it explains to regulators, its view is that it is essentially trying to mirror Progressive’s demographics, and therefore believes its pricing should be competitive with it.

If this level of copying should be doubted, one early filing in Kentucky (December 2017) evidences this point forcefully, where Root outlines a full 163-page slide deck showing its own pricing versus Progressive’s on multiple simulated coverages, showing next to no daylight between them. Other states have similar exhibits in their early stages.

However, it is important to state that this heavy reliance on competitor filings is not just an artifact of its origins, but something that continues to this day in 2020 filings, albeit decreasing somewhat over time. Though this dependence on competitor data manifests in many ways, perhaps the most emphatic and illuminating of this is that Root is still arguing in its most recent product filings that competitor loss trend indicators are more reliable than its own internal view.

Not only that, it seems to have simply decided there was too much noise in even its peer numbers, and settled for 4% trend assumption across the board. This is the sort of rule of thumb data insight you might expect at the Farmers’ Tractor Mutual of North Western Pennsylvania – the mock incumbent strawman we dubbed the company’s literature as setting up as its competition.

Exhibit: Root supplemental data support for loss trend assumptions in Kentucky

Source: Product filings, Inside P&C

Item:	Progressive		Geico		ISO		Root	
	Frequency		Frequency		Frequency		Frequency	
BI	-0.2%	0.6%	-1.0%	-1.2%	-1.0%	0.6%	55.0%	-8.2%
PD	-1.7%	-0.8%	-0.4%	-0.5%	-2.4%	-3.2%	3.0%	23.0%
COMP	-1.8%	-0.7%	-0.4%	-0.6%	0.4%	0.1%	-40.0%	36.0%
COLL	-1.9%	-1.0%	0.1%	-0.1%	-0.7%	-0.7%	-22.2%	0.0%
UM	1.6%	2.1%	1.1%	1.1%				
UIM	2.3%	4.6%	1.1%	1.1%				
PIP	-1.4%	0.0%	-2.1%	-2.7%	-0.7%	-1.5%		
RENTAL	-4.8%	-2.9%	-0.9%	-1.0%				
	Severity		Severity		Severity		Severity	
BI	1.3%	2.8%	5.8%	6.0%	5.8%	8.1%	-35.0%	-44.0%
PD	4.3%	4.8%	4.9%	4.4%	4.8%	5.6%	2.5%	-18.0%
COMP	6.4%	7.0%	5.2%	5.2%	5.2%	1.1%	80.0%	-13.0%
COLL	4.6%	4.2%	3.3%	3.4%	3.4%	3.9%	5.5%	11.6%
UM	0.6%	1.0%	3.5%	3.5%				
UIM	6.3%	8.5%	3.5%	3.5%				
PIP	3.9%	4.7%	1.3%	1.3%	1.9%	0.7%		
RENTAL	6.0%	5.3%	1.4%	1.2%				
	Pure Premium = Severity * Frequency		Pure Premium = Severity * Frequency		Pure Premium = Severity * Frequency		Pure Premium = Severity * Frequency	
BI	1.1%	3.4%	4.8%	4.7%	4.7%	8.7%	0.8%	-48.6%
PD	2.5%	3.9%	4.5%	3.9%	2.3%	2.2%	5.6%	0.9%
COMP	4.5%	6.2%	4.8%	4.6%	5.6%	1.2%	8.0%	18.3%
COLL	2.6%	3.2%	3.5%	3.2%	2.5%	3.2%	-17.9%	11.6%
UM	2.1%	3.1%	4.6%	4.6%				
UIM	8.7%	13.4%	4.6%	4.6%				
PIP	2.5%	4.7%	-0.9%	-1.4%	1.1%	-0.8%	0.1%	0.4%
RENTAL	0.9%	2.3%	0.5%	0.2%			0.1%	0.4%
Root Selected Loss Trend			*Combined-coverage trends were used for UM, PIP and RENTAL due to low credibility					
	Historical	Projected						
BI	4.0%	4.0%						
PD	4.0%	4.0%						
COMP	4.0%	4.0%						
COLL	4.0%	4.0%						
UM	4.0%	4.0%						
UIM	4.0%	4.0%						
PIP	4.0%	4.0%						
RENTAL	4.0%	4.0%						

Here's the company's justification for this apparent rule of thumb in place of its much-hyped data flywheel of data-driven machine learning.

**Root
Product
Filing
(Kentucky)**

"We performed an initial analysis on our internal loss and premium data by coverage. Although for the most part premium trends were slightly negative while the loss trends were slightly positive, the data was too thin to produce reliable results.

"Instead, we decided to leverage countrywide data with competitor trends and industry data to come up with our best estimate of what we expect net trend to be for Kentucky. For competitor trends, we took the averages of all premium and loss trends from the most recent Progressive and Geico filings available for each state. ISO trends were based on Fast Track data as of 2019Q4, where we selected an 8-point trend for historical and 4-point trend for projected severity and frequency by coverage."

Note, Kentucky is the company's #2 state with \$47mn in premium in 2019 – not one of its new expansion states.

Additionally, this "4% across the board" trend assumption was also included in filings we reviewed in Georgia, Oregon, Arkansas, Arizona, and Indiana (and potentially others we didn't review).

We must confess, we find this "incumbents know best" approach to regulators somewhat hard to reconcile against the company's language to investors on its key competitive advantages in its data flywheel. For us, it strongly suggests that the vision the company spells out to investors in its S-1 is more of an aspiration for the future than a description of the business as it exists today.

This research report was written by Insider Publishing's Research team which includes Gavin Davis, Gianluca Casapietra, and Dan Lukpanov.

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