October 12, 2015

It's Not SaaS:

It's "For-Profit Education" in a Silly Disguise

Citron Research Reports on 2U INC (NASDAQ:TWOU)

Short Term Price Target- $14

- **2U (NASDAQ:TWOU) is not a SaaS company. In reality, it is a for-profit outsourced online degree provider that was founded almost eight years ago, yet still generates ~85% of revenues from only 4 clients**.
- Stock irrationally doubled due to economically inconsequential and highly controversial Yale deal that was denied accreditation on first try
- 2U's addressable market is tiny, there are dozens of competitors, and its contract economics are unattractive
- Insider selling and recent capital raise suggest that management thinks stock is overvalued and likely to keep burning cash for next several years
- Current valuation insane even when benched against actual SaaS companies ... ~67%+ downside from current levels.

Citron believes that 2U (NASDAQ:TWOU) is a fundamentally misunderstood business that is erroneously being viewed as a "Software as a Service" / "Cloud" company. In reality, it is just an outsourced provider of online graduate degrees.

What makes SaaS companies desirable is the scalability of the business model. In stark contrast, 2U's business model requires it to invest substantial up-front capital **for each client**, employ a full time staff to support each of the online degree programs that it hosts, and then take **all the risk** associated with enrollments. The disproportionate revenue concentration in the business alone (~85% revenue concentration in its top 4 clients as of 1H2015) is a definitive business indicator unheard of in any actual "Saas" or "Cloud" company.

To make the business model even more expense-burdened, 2U is also responsible for finding students to enroll in the online programs it hosts, and therefore has very low visibility into its future revenues on any newly signed contract. Students churn in and out of programs (either by graduating or dropping out), obligating 2U to constantly find new students to enroll in its programs – a model no different than any of the for-profit education companies. The only unique premise is that 2U gives up ~35% of tuition revenues in exchange for leveraging university brand names).

Can you imagine if Workday not only supplied software services but actually recruited, interviewed, and staffed an HR department? It would be running a joke of a business model in the SaaS space.

Company Background

2U (TWOU) is an online education company that creates, administers, and operates online degree programs (largely graduate programs) on behalf of not-for-profit universities. The company was founded in 2008 by John Katzman (founder of Princeton Review) and Chip Paucek (current CEO of 2U). Katzman left the company in 2013 to work on a competitive product that is billed as a "disrupter" to online degree enablers such as 2U. **Katzman's departure ahead of 2U's 2014 IPO speaks to how much confidence Katzman had in the company that he himself created.**

2U's programs are largely focused around 3 main verticals – social work, nursing/mid-wifery, and teaching. We estimate that these programs alone generate at least ~85%+ of the company's revenues. The company's three largest contracts as of 2014 were the USC Masters in Social Work, the USC Master of Arts in Teaching, and the Georgetown Nursing program. **As of FY2014, those three contracts represented 69% of revenue.**

The company's business model is contract-based, with 2U going out on an individual school-by-school / program-by-program basis to sign up long-dated contracts with universities (~10+ year contracts).

These contracts generally stipulate that 2U is entitled to a percentage of all tuition revenues generated by an online degree program that it administers (i.e. 60-70% of revenues), while being responsible for all of the startup costs associated with the program, as well as almost all of the ongoing costs of finding students to take the program, providing guidance and counseling to those students, and essentially any other expenses associated with the "back office functions" of a university that are necessary to graduate students out of a program.

This is a labor intensive business model. According to the company's 10K, 2U had 15 programs with students enrolled as of the end of 2014 and employed 708 full-time and 76 part-time employees. **The staff to program ratio of ~50 is indicative of the labor intensity in this business model.**

2U takes all of the "risk/liability" associated with administering online degree programs. If a program ends up being a disappointment, 2U is at risk of being unable to recoup its costs.

So despite liberal use of jargon such as "Software as a Service" and "Cloud", in reality this is just a for-profit online education company that leverages other school's brands.

The table below summarizes the reasons why we think the Street is absolutely wrong about 2U:
2U Short Case: The "Cliff" Notes

Claim	Reality
2U is a "SaaS" company	• One key aspect of a true SaaS model is the "portability" of a software solution from one client to the next – 2U's outsourced online program solutions are not portable and have to be custom tailored on a program by program basis (hence the $5-10M spend per program) • 2U is just an outsourced online graduate degree provider. The only difference between a 2U and a Devry/Phoenix is that 2U leverages the brands of Tier 1 universities through revenue sharing arrangements • It bears all the risk of generating leads for its programs like a Quinstreet
2U's addressable market is huge	• 2U focuses on "Tier 1" educational institutions which severely limits its addressable market • TAM is structurally limited by very low acceptance rates at top universities • Online degrees have a very real stigma attached to them • Tier 1 institutions will always be reluctant to offer online degrees • The proportion of students who are "qualified for acceptance to Tier 1 institutions" and who also "prefer an online degree to an on-campus degree" is tiny • There are dozens of well-established competitors, **and many universities already provide online degrees on their own (i.e., without using an outsourced enabler such as 2U)** • The company also faces exclusivity arrangements that will limit its growth going forward
2U's contracts are going to ramp to healthy levels of profitability	• **Founded in 2008, yet company really only consists of 4 programs today (~85%+ of revenue)** • Based on management's own guidance, the NPV of 2U's average contract is around ~$8M using very generous assumptions • 2U invests a huge amount of capital upfront for programs - $5-10M – and bears all the risk of the program if it is a failure • Contracts outside of the top-4 are so far from profitability that margin goals seem unattainable • **2U faces a massive adverse selection risk – universities can offload risky online programs to 2U and 2U faces all of the enrollment risk**
2U's Yale partnership is a big deal	• The Yale partnership is expected to add around 150 total enrollments • That equates to only ~$5M of annual revenues IF successful and not for several more years • **2U's stock price doubled in response to the Yale announcement (adding ~$800M of enterprise value), representing one of the most irrational stock price moves we have ever seen** • The Yale community backlash against the program was also so severe that it is likely to scare other elite universities away from signing up online degree programs
2U's valuation is reasonable	• Even when benchmarked against SaaS businesses', 2U's valuation is a nonsensical outlier!

Flawed Business Logic Massively Overstates Total Addressable Market

A key part of the excitement around 2U's stock is that their addressable market is enormous. Bulls believe that 2U could expand to dozens if not hundreds of online programs. We think this optimistic view is fundamentally flawed.

There are two severe structural limitations on 2U's addressable market:

The first is that 2U goes after only "tier 1" institutions. Current clients of 2U's include highly regarded institutions such as USC, Yale, and NYU. Unsurprisingly, these schools are highly protective of their brands. While they may be willing to dabble in certain masters degrees that make sense for an online program, , it is highly unlikely they would ever open their brands up to online degrees for their "bread and butter" academic programs.

For example, what are the odds that Yale is going to offer an online version of its coveted JD degree? We reckon near zero.

2U's clients openly acknowledge the "stigma" associated with online degrees. Stigmas such as these are hard to shake. The reality is, highly regarded institutions such as Yale are protectively paranoid to defend the perceived value of their institution's degree, and not have it degraded by association with commodity mills such as University of Phoenix.

The inherent flaw of the 2U business model.

2U is responsible for all of the financial risk associated with launching programs. It fronts the capital costs, pays almost all of the ongoing infrastructure expenses, and is only paid on a success basis (65% of revenues). If a program does not scale, 2U ends up in the hole.
So the company is stuck in a precarious position. If it signs up too many clients, it runs the risk of signing bad contracts and losing money because 2U is ultimately taking all the risk of enrolling students into its programs (the universities bear zero risk). We think 2U has already started to fall into this trap as it goes after “brand name” institutions such as Yale, but as a result is entering into programs that are unlikely to ever scale to the levels of enrollment that would be required to actually generate healthy returns on a contract.

Second of all, 2U faces a severe admissions selectivity problem when it goes out to find students to enroll into its programs. In order to maintain brand perceptions associated with their programs, universities that partner with 2U claim that they will use the same admissions criteria for online degrees as they do for on-campus degrees.

For example, according to Yale’s website, its on-campus PA program has an acceptance rate of around 3%. The selections process for the program is highly rigorous, as evidenced by the academic statistics presented below:

Other Statistics

Total applications	**1100**
Acceptance Rate	3 percent
Average GPA	3.70 (range 3.26-4.00)
Average Science GPA	3.63 (range 3.06-4.00)
Mean GRE %iles	Verbal - 70 Quantitative - 64 Analytical - 67

2 more rows

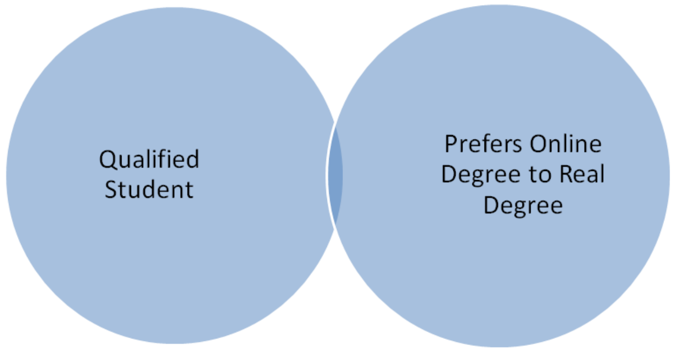
Admissions Statistics - Physician Associate Program - Yale ...
paprogram.**yale**.edu/**admissions**/statistics.aspx Yale University

Feedback

Source: Google

It is crucial to remember that **2U itself is responsible for marketing and signing up students to enroll in its programs**. It foots the up-front capital costs of $5-10M (per management’s claims), and then is on the hook for actually enrolling students in its programs. It is challenging enough to find students qualified enough to get into a program with a 3% acceptance rate**. We think it is even more challenging to go out and find students who are simultaneously QUALIFIED for acceptance but also PREFERENTIAL to an online degree. The difficulty in the business model is described in this one chart**

The 2U Lead Gen Flaw in Chart Form



The company's disclosures strengthen the case that 2U finds it is very costly to acquire students to take its programs. We ran an analysis to arrive at 2U's effective "student acquisition cost" based on numbers the company provides. On its most recent earnings call, 2U indicated that it is hovering around a "Lifetime Value Relative to Acquisition Cost Number" of something in the 3.2x range. Based on our analysis, this implies the company is spending around $16,000 per student that signs up for a 2U program.

Student Acquisition Cost Estimate	
[A] Student Lifetime Value Divided by Acquisition Cost	3.2x
[B] Total Tuition Cost of an Average 2U Degree	80,000
[C] 2U's Revenue On An Average Degree (65% * [A])	52,000
[C] / [A] = Implied Student Acquisition Cost	16,250

Source: Our analysis / data from most recent earnings conference call (Aug 2015)

Given the narrow funnel in hyper-selective programs, student acquisition costs could be significantly higher than the company's current average for programs such as Yale and NYU. This obviously calls into question how 2U could ever make money on highly selective programs.

The Yale Deal Is Economically Irrelevant and Resulted in an Irrational stock movement.

Source: Bloomberg, [Sportslogos.net]

The reason 2U peaked at over $1.5B valuation (currently ~$1.25B) is fairly simple. It's also completely irrational.

The stock was relatively range bound following its IPO, with the stock trading up from $13/sh to $18/sh which is not out of the ordinary for a hot IPO that "beats" expectations.

Then things got crazy. 2U came out in March 2015 and said that it had signed a deal with Yale to offer an online Physician's Assistant program. Investors went absolutely nuts over this deal. The stock was sitting at around $18/sh at the time, and promptly traded up on massive volume following the announcement of the Yale deal.

Citron suggests that 2U investors did not follow the "saga" that followed announcement of the Yale deal. If they had, we are pretty sure the stock would have retraced right back to $18/sh.

First, following the announcement of an online program at Yale, students affiliated with the on-campus PA program went ballistic – with the local school newspaper running opinion pieces slamming the decision to start an online program:

> "According to incoming PA student Lauren Prince MED '17, had she known that her degree would likely be made available online, she would have chosen to matriculate at a different university. Like many other incoming students, she said she had no knowledge that plans were underway to make her degree available online. But Van Rhee said the University had to be discreet about the potential launch partly to guard against illegal financial behavior.."
>
> *-- Source Yale Daily News April 2, 2015*

Summary of Student Concerns from Bloggers

Concerns brought about by members of the PA community (i.e. **Cons to starting an online PA program**): Please realize these are mostly opinions and are summarized here for your own advantage.

- Damage the credibility of the reputation itself by not being well-accepted publicly
- Decrease the reputation of upstanding and rigorous PA programs nationwide
- Create clinical site competition between PA programs around the U.S.
- Programs will not be able to guarantee clinical sites in your area and students will have to provide costs for travel and lodging in areas where sites are available.
- The creation of newer, less well-designed online PA programs will ensue (University of Phoenix, Kaplan, etc.)
- Medical training involves substantial patient interaction that should be developed in concert with coursework, not separately
- Adequate preparation for clinical rotations will not be met with crash courses on campus, including anatomy, procedure workshops, H&P workshops and patient simulations
- May compromise patient care quality due to online degrees not having significant foundation
- Students do not reap benefits of on-campus life that shape medical providers (student clinics, supplemental courses, school organizations, leadership positions, special events, attending grand round lectures, networking or building professional relationships in-person, access to libraries or other on-campus resources
- Clinical content may be 'watered down' and exams may be reused with the potential for more cheating to occur
- Loss of camaraderie between students
- The program may or may not be fully interactive, offering real-time access for questions and staff support
- Medical schools are not following suit
- An online degree will not be equivalent to other degrees
- Yale's PA program is currently undergoing major curriculum changes and may have financial ties to starting a program of such size, including cheaper cost to educate students and more financial gain

Source: Doseofpa Blogspot

YALE GETS A REJECTION LETTER

Even more shocking is that in April 2015, the Yale PA program **did not even get accreditation approval.** The school went to the accreditation committee and requested accreditation on the basis that the online program was a mere "class expansion" of the existing on-campus program. The Accreditation Review Commission on Education for the Physician Assistant denied Yale's request for online accreditation:

Yale Daily News

Online PA program proposal rejected

EMMA PLATOFF & AMAKA UCHEGBU APR 09, 2015

STAFF REPORTERS

The Yale School of Medicine's recently announced online Physician Associate program was not approved as a mere "class expansion" to the existing program by the Accreditation Review Commission on Education for the Physician Assistant, which published its decision online last Thursday.

Source: Yale Daily News

The accreditation saga dragged out in the student paper and ended up being a public nuisance for Yale.

Yale's experience is likely to make other elite universities more "gun shy" about going out and signing up online degree programs. Elite institutions such as Yale do NOT want to face the public embarrassment of accreditation denial.

As of September 2015, the program had not yet received accreditation. Yale had to re-jigger the application and re-apply for the program under a separate entity name that specifically spells out that it is an online program separate from the on-campus program. Arguably, this is an implicit admission that the online degree is perceived "differently" than the on-campus degree.

Assuming Yale is able to recover from this embarrassment, we run analysis below based on public information available from Yale's website:

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Update on Yale PA Online Degree Program

September 2015 April 2015

Dear Yale Physician Associate Community,

Jim Van Rhee, our Physician Associate Program Director, and I met with the PA Program faculty on August 19 and with students in the PA Program on August 28 and again on September 4 to discuss the status of the proposal to launch a Yale Online PA program.

The goal of the conversation was to share the medical school leadership's current thinking about the initiative and listen to the ideas and perspectives of our faculty and students. We appreciated the open dialogue and the many thoughtful ideas that were shared with us.

Within the next few weeks, the leadership of the Yale School of Medicine plans to contact the Accreditation Review Commission on Education for the Physician Assistant (ARC-PA) to request that we begin the accreditation process for the online program. Based on your feedback as well as that from the ARC-PA, there will be several key differences from the original proposal that was made earlier this year. These include:

- Applying to receive accreditation for a new, separate online program rather than an expansion of the existing residential program.
- Naming the program "Yale Physician Assistant Online."
- Having only one cohort of students start per year.
- Keeping the first cohort to no more than 50 and the largest expected cohort to no more than 150.

Source: Yale PA Program

It appears that investors missed that the Yale program is unlikely to scale to more than 50 students per year with only one cohort per year in the medium-term. This essentially renders the program almost irrelevant (perhaps generating $1-3M of annual EBITDA at maturity – and this is only IF you believe management's margin targets – which we don't). Here is the simple math:

	Scenario	
	Base	High
Yale PA Program Cost (Total Tuition)	84	84
Average Duration	2.5	2.5
Annual Tuition	34	34
Students Accepted Per Year	50	150
Peak Enrollment	125	375
Implied Annual Tuition ($MM)	4	13
2U Take Rate	65%	65%
Implied 2U Annual Revenue from Yale Program at Maturity ($MM)	3	8
Contribution Margin (assuming Mgmt Guidance of 35% Margin)	1	3

Source: Our analysis

2U's valuation increased by over 800M since the announcement of Yale. So any investor who bought this stock up following the Yale announcement has basically put a ~150x revenue multiple on Yale's **peak potential annual revenue and an ~420x multiple of peak potential annual EBITDA.**

The Business Model Simply Does Not Scale -- and it can be proved.

Management has given fairly concrete guidance about its long-term objective for 2U's business. Management has said that upfront it spends anywhere from $5-10M on a program for content creation, initial hiring needs, and initial lead gen needs. We assume the low end of this figure in our analysis ($5M).

Management also says that over time, 2U will ramp its EBITDA margins to the 35% range (see the 3Q 2015 Investor Relations presentation as well as commentary from earnings calls). It also indicated that it's most mature programs today are in the mid to high-20s EBITDA margin range (this is based on color provided on the May 2015 earnings call).

For simplicity, in this analysis we assume that the corporate EBITDA margins are equivalent to the program EBITDA contribution margins (i.e. our analysis assumes central overhead is allocated to programs on a pro rata basis, and then to be fair does not burden the company with central overhead when arriving at our target price).

Management has also been talking about the average program going forward of having around enrollment of ~650 on average. We deduce the 650 figure based on a statistic quoted in a Wall Street initiating coverage report that states that 2U management expects annual revenue per average program to be in the $16.7M range (source: Robert W. Baird report). Management has claimed that the reason for massive losses in the business today is that the ramp periods on program are greater than 5 years. Management's claim is that programs do not reach peak enrollment until several years out (we disagree with this assertion as we show below, but for the purposes of our DCF, we take management's claim at face value).

Management has said it earns 60-70% take rates (we'll assume 65% at the midpoint) on tuition collected, and that an average program costs $80k over its average lifetime duration of 2.5 years (implying annual tuition of 32k/yr). We also acknowledge that education inflation has run well ahead of annual inflation, so assume tuition hikes of 4% in our DCF model.

In the spirit of being "academic", we decided to take a trip back to school and run a DCF model to calculate the present value of a 2U contract. We also run a waterfall to make sure we are properly modeling cohorts – i.e. we assume a ramp period for enrollments in which growth is robust in the early years then eventually settles out.

We are also using only a 10% discount rate – a rate that we view as being far too low given the inherent risks of these contracts. As readers will see, the choice of discount rate is not particularly relevant given the anemic cash flows that are generated from the contract.

Finally, given that average contract lengths are in the ~10 year range, we assume the last cohort worth of revenue generating students graduate in the 12th year. In years 11/12 we ratchet expenses down (to express the program being in wind down mode).

We do not assume any taxes in this model given that 2U's NOL is likely to be in-place for the entirety of its history (a silver lining for a company with such huge operating losses).

Based on those assumptions, this is the NPV of an average program:

Illustrative Economics For Class with Expected Size of 650

Unit Economics of a Student			
Degree Cost ($ 000s)	80	2U Mgmt Guidance on Rev/Program/Year	16.7
2U Take Rate	65%	2U Take Rate	65%
2U Revenue on a Student	52	Tuition Per Program Per Year ($MM)	25.7
2U Contribution Margin Per Student @ Maturity	35%	Average Program Duration	2
		Degree Cost	80
		Implied Student Enrolees Per Progarm	642

Year of Program	1	2	3	4	5	6	7	8	9	10	11	12	
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	
Total Enrollment in Program	80	208	360	496	596	640	650	650	650	650	390	130	
Tuition Per Year Per Student	32	33	35	36	37	39	40	42	44	46	47	49	
Take Rate	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	
TWOU Revenue Per Student	21	22	22	23	24	25	26	27	28	30	31	32	
Annual 2U Revenue ($M)	2	4	8	12	14	16	17	18	18	19	12	4	
Total Costs	(6)	(6)	(8)	(10)	(11)	(11)	(12)	(12)	(12)	(12)	(11)	(6)	
Pre-tax $ Contribution ($M)	(4)	(2)	0	2	4	5	5	6	6	7	1	(1)	
Contribution Margin %	(240%)	(40%)	3%	15%	25%	29%	31%	33%	35%	35%	6%	(35%)	
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Cash Flows (post-Tax)	(5)	(3)	(2)	0	2	4	5	5	6	6	7	1	(1)
Hurdle Rate	10%												
NPV in $MM	8.0												

Source: Our analysis

In other words, a contract with a 650 enrollment count (which mind you, would be a fairly large program) is worth around $8M in enterprise value. Or, around 17 cents per share. Even if 2U were to be able get to 72 of these 650-enrollee contracts, the stock looks massively overvalued. 2U has 24 contracts today – many of which are not yet even active – and expects to add six contracts per year, meaning it would take around 8 years for it to have reached a goal of 72 total contracts. So a tripling of contracts over the next 8 years would result in a DCF valuation for this business of only ~$576M (around $14 at best)

We doubt the company ever executes 72 separate program contracts, but we develop this statistic to demonstrate how egregiously inflated the company's current valuation is.

Assuming an average enrollment figure of 650, you would need almost 200 contracts to justify the current valuation. It would take almost **three decades** for the company to get the contracts required to justify the current valuation assuming 2U continues on its current pacing of six contracts per year.

DCF Value of an Average 650 Student Contract	8
Current TEV	1,500
Implied # of Contracted Needed to Justify TEV	188
Less: Current # of Contracts	(24)
Future Contracts Needed	164
Contracts Added Per Year	6
Years Required to Justify Valuation	27

Let's think about what a 650 peak enrollment figure means in terms of actual 2U contracts. At peak, the Yale contract is currently capped at only ~125 peak enrollees (50 students per year with average duration of 2.5 years) and even if Yale decides to blow the program size out, the Yale administration has promised to cap enrollment at ~375 total enrollees (150 admitted students per year). So hitting a 650 average enrollment figures is not an easy task by any means.

Even the USC contracts – the Masters in Social Work and Masters in Teaching – which currently represent ~45% of 2U revenues ($65M or so) are only worth ~$50-60M using the DCF analysis above. There was clearly something special (and likely non-replicable) about those contracts given that the company has been around for almost 8 years now and still generates almost half of its revenues from them.

While the next few pages might be ponderous in its detail, it is necessary to understand that Citron has combed through the economics of their 2U's contracts in detail to analyze if this business model has any viability.

Bad Contracts – Not Ramp Periods –Causing Massive Losses

In order to justify its losses, management spins the "SaaS" story using this claim:

> *"We invest in the future so therefore have losses today. Over time, our losses will abate because it takes a long time to ramp programs. When programs are fully ramped, we'll be making a lot more money. So ignore our losses today".*

Needless to say, we consider this version of the company's operations to be a fiction. Our analysis suggests that the company's current losses are primarily driven by a number of subscale / poorly performing new contracts. In other words, new deals outside of USC/Georgetown appear to us to be losing a lot of money.

We do not believe these losses are due to the programs being immature / ramping. We found evidence that certain 2U programs reached a healthy level of enrollment in a very short time span which refutes the idea that new programs have long ramp periods. Instead, we think the losses are due to many of the newer programs being fundamentally uneconomical, due to 2U having already penetrated the most lucrative portions of its addressable market.

Here is a chart to wrap your head around the losses on new programs. In 2014, USC and Georgetown (representing 3 of the company's 15 programs at YE14 – see p20 of FY14 10K) were the company's oldest and therefore most mature clients. Combined, the two generated around 69% of 2014 revenue.

On the May 2015 earnings call, the CFO of 2U indicated that the "most mature programs" were operating in the mid to high 20s EBITDA margin range. Using those two data points, we can estimate what the EBITDA losses look like on the "immature" programs (the 12 other programs).

USC + Georgetown % of Rev (2014)	69%
2014 Revenue	110
2014 Revenue from USC/Georgetown	76
Est. '14 Margin on USC/Georgetown	25%
[A] 2014 USC/Georgetown EBITDA	19
[B] 2014 Total Company Adj. EBITDA	(15)
Total Graduate Programs as of YE14	15
Total Outside of USC/Georgetown	12
Revenue Outside of Georgetown/USC	31%
Implied Revenue on All Other Programs	34
[B] - [A] Implied EBITDA on All Other Programs	(34)

Our analysis suggests that the 12 programs outside of USC/Georgetown were generating revenue of $34M in 2014, and EBITDA losses of the same magnitude. To us, this suggests that either USC/Georgetown margins are **not actually in the mid-20s, or that new programs are simply losing money ... a lot of money**.

The enrollment data refutes the theory that time/contract ramp vectors will cure these operating losses. Testing the veracity of management's claims around long ramp periods requires looking at how programs have done over time. Management does not disclose enrollment on a per program basis, but the data is out there. So we've pieced together data on this to answer a fundamental question – **how long does it really take for a program to ramp? And are long ramp periods truly the cause of depressed earnings?** Or, are newer contracts simply subscale and uneconomic?

Based on financial disclosures, the USC programs today represent ~45% of revenue (down from 55% of revenues in 2014 based on our estimates) or ~$67M of revenues. Those programs have been around since 2009-2010 and are therefore undeniably "ramped" in nature.

Management is essentially pointing to these programs as being examples of "more mature" programs. In numerous instances, management has alluded to the USC Social Work program as being the largest of all of its programs so using tuition data points that are publicly available (i.e. the Education and Social Work program websites) as well as some of our own assumptions, we arrive at the following enrollment sizing analysis of the USC program:

Program Name	Progarm Cost	Duration	$000s Annual Tuition	$MM Total Revenues	$MM 2U Revs (65%)	Actual # Implied Enrollment
USC Education	51,264	2.5	44	45	29	1,035
USC Social Work	98,000	2.3	28	58	38	2,071
				103	67	3,106

Source: Our analysis, Robert Baird initiating coverage report on 2U, and USC's website

Management says that it takes ~5-6 years to ramp to "USC" levels of enrollment (1k+ students), and that all of its programs will eventually get to these levels over a long period of time.

But does it really take that long to know what programs "worked" versus "did not work"?

Based on straightforward analysis of underlying programs, it appears that good programs ramp very quickly, and other programs end up just stuck in the mud in a subscale level of enrollment that is likely to prevent 2U from ever earning a healthy return on capital.

Simmons University launched a nursing program in 2013 – just 2 years ago. We found an article online that suggests Simmons' nursing program is **already** scaled to 1,000 students:

The Boston Globe

Simmons College's painful choice to move MBA online

By The Editorial Board AUGUST 27, 2015

In a decision that shocked many of its alumnae, Simmons College has decided to shutter its brick-and-mortar, women-only MBA program and offer the degree online only. At a time when there's an urgent need for more women in business and tech, one could easily imagine a growing role for Simmons. Instead, dwindling enrollment and a less-than-lustrous financial picture weighed down the 40-year-old program, despite a distinctive niche and an impressive roster of alumnae.

It's a painful development straight out of a business school case study on disruptive technology and changing market conditions. Simmons officials hold that the transition to an online program, which takes effect next March, is essential in light of the challenging and highly competitive market for MBA students nationally. That's attributable, in part, to the fact that many business schools are attempting to boost their own gender diversity and aggressively recruiting women. Simmons president Helen Drinan characterized the move as being part of a larger, longer-term strategy to strengthen the online offerings of the school's graduate programs. This follows a successful launch of an online-only nursing master's degree program two years ago — there are about 1,000 students enrolled in it now, Drinan says. But full-time enrollment in the MBA program has declined. According to data provided by the school, the number has decreased 38 percent since 2008. Currently, there are 105 students in the MBA program, both full-time and part-time. "From our point of view, the strength of the program can't be sustained only on the part-time side," says Drinan. "It's not a good financial model."

Still, the decision caught alumnae by surprise, leaving many to wonder why the administration had not harnessed the power of the school's far-flung network. Drinan has a ready response: "You can't have your alumnae solving your enrollment problems."

Source: Boston Globe

Pretty impressive ramp time right? Two years to get to 1,000 students – identical in size to what we estimate the USC Masters in Education to be.

To continue testing our thesis, we found the enrollment data for UNC's MPA program – **a program also launched in 2013. That program currently has 191 students enrolled** – which, based on our DCF, would suggest the program is essentially generating **little to no economic value**:

Source: [UNC]()

Yet another program launched in 2013 was a Masters of Law at WashU. While we couldn't gather the current enrollment, we did find an article in which a representative of the program indicated the goal was to get to 100 students per year in the online program (assuming a ~2 year duration that would imply around 200 total enrollees in the program at any given time). Based on our DCF analysis, this type of contract just does not make much economic sense given the $5-10M of upfront spend:

Kent D. Syverud, the dean of the Washington University School of Law, said he hoped to enroll more than 100 students a year in the online program. Mary Butkus

Source: [NY Times]()

And what about more recent programs? 2U signed up a Masters in Data Science program with UC Berkeley. It was launched in 2014 – so obviously it is earlier in its ramp period. But

Simmons was already at 1,000 students two years into its launch according to press reports, and UNC's MPA was already at 191 students two years into its launch. So Berkeley should be at least half way to where UNC is today, right?

UC Berkeley School of Information's Online Master of Information and Data Science Program Hosts Inaugural Immersion for Students

Program brings online and on-campus students and professors together for the first time for a high-impact learning experience held in conjunction with I School's DataEDGE conference

BERKELEY, Calif. – May 8, 2014 – Students enrolled in UC Berkeley School of Information's Master of Information and Data Science (MIDS) program will participate in their first immersion this week, providing students and faculty in the online program the opportunity to meet in person for the first time. Offered twice per year, the immersions focus on the development of leadership skills and relationship building with peers and faculty, allowing students the chance to fully immerse themselves in the local Bay Area tech culture. The inaugural immersion experience is being held in conjunction with the I School's annual DataEDGE conference, an intimate two-day conference to explore the promises and challenges of data.

During the immersion, students will participate in a number of workshops, social events, and a mixer with current I School students from on-campus programs. The DataEDGE conference also allows students the opportunity to hear from top influencers in the industry, including Jeff Hammerbacher, co-founder and chief scientist at Cloudera; Quentin Hardy, deputy tech editor of *The New York Times*; and John Foreman, chief data scientist at MailChimp.

"Each week, students in our MIDS program participate in live, face-to-face classes with fellow students and professors who represent a wide range of professional backgrounds and reside in locations across the country," said AnnaLee Saxenian, Dean of the UC Berkeley School of Information. "While the online platform serves as an excellent facilitator to connect students with course content and faculty, we still believe there is power in students meeting one another in person to share personal experiences. Twice a year, we will host immersions that provide MIDS students the chance to meet faculty and classmates while hearing from leading experts in the field. There is no better opportunity for our students to learn from and network with data science leaders. We're excited to welcome MIDS students to Berkeley this week as they soak up the I School culture in person."

Students enrolled in the MIDS program represent diverse backgrounds, with educational and work experience ranging from neuroscience to aeronautical engineering to economics. With 29 students from 13 U.S. states, students from the program's first two cohorts will meet this week on UC Berkeley's campus.

Source: UC Berkeley

Nope – wrong. Total enrollment in the Berkeley program currently sits at merely 29 students. Even if enrollment picked up to 100 students over time, we find it hard to believe that 2U will ever make any amount of money in the Berkeley contract.

Let's do the quick math on this Berkeley program to get a sense for unit economics.

This math is very rough but is generous from the perspective of 2U.

The program tuition costs about $60k in total (about 2,200 per unit for 27 units). We think the average duration is around 1.5 years. So over a 10 year life cycle, roughly 6.7 cohorts will graduate through this program (10 years divided by 1.5 year average duration – rough, but approximately accurate).

Those 6.7 cohorts will have 29 students graduate per cohort on average (in reality the number of students per cohort is likely smaller than 29, given that there were 2 cohorts captured in the 29 figure in the article above, but we are being generous in our analysis) and each student will spend $60,000 per degree conferred. TWOU will take 65% of the revenue generated.

6.7 cohorts x 29 students/cohort x 60,000 revenue/student x 65% take rate = 7.6M of lifetime contract revenue.

At a 35% contribution margin, that means that over the **entire course of the contract**, the program is worth about $2.6M in terms of contribution dollars to 2U (before upfront program spend).

Assuming 2U spent the low end of its upfront investment guidance – only $5M – to launch this program, here's a program with an ROI of 0.52x (spending $5M to generate 2.6M of cash flow over a contract lifetime). Said another way, 2U is losing money on this contract.

In summary: USC has one program with ~2,000 students, and one with ~1,000 students. Simmons has two-year old nursing program with ~1,000 students already. But the UNC MPA, the WashU Masters in Law, and the Berkeley Data Science degrees all appear to be 80-90% smaller than the USC and Simmons programs despite being at least reasonably well ramped.

So why is this happening? Why is 2U getting stuck with very small programs? The quote below from a Higher Ed journal article summarizes the problem:

> Kenneth Hartman, who analyzes online learning for Eduventures, had a more anecdotal example. He described a recent discussion with a college administrator contemplating going online for the first time and having no infrastructure in place to do so. "Someone has to take on the risk of starting a new program, and I can guarantee you, this institution, like a lot of them, is not going to want to take on that risk. He doesn't have that money lying around."
>
> *-- Source: Inside Higher Ed April 9, 2015*

Simply put, 2U is subject to adverse selection bias in its contracts. Universities are most likely to offload the programs that are most risky.

If a university has a contract that is a home run, it is most likely to keep it in-house rather than pay out 60-70% of revenues to 2U. At the end of the day, there is nothing particularly technologically advanced about bringing programs in-house. As mentioned earlier in this article, one of the founders of 2U (John Katzman) left the company and is now coming up with ways to replicate 2U's model in a more low-cost and capital efficient way that **produces revenue shares that are half of 2U's current take rates**.

If universities are sitting on a higher risk contracts (i.e. high risk that they can't fill seats), they would much rather offload the risk to an outsourced provider than keep it in-house.

Bulls will then ask the obvious question - why would Simmons College be willing to give up a lucrative nursing program to 2U (1,000 students is a good sized program)?

Simple – because Simmons likely negotiated the nursing contract as part of a broader deal in which 2U agreed to take on 5 other online degrees that 2U would have never wanted to execute on an individual basis due to light enrollment expectations. This program is referred to as "Simmons Enterprise".

For example, 2U also signed up the Simmons online MBA around the same time as the nursing program. According to the Boston Globe article cited above, Simmons had only 105 students in its bricks & mortar MBA program prior to converting it to a purely digital program and outsourcing it to 2U. Therefore, the Simmons MBA program appears to be a rather small, high risk program. So even in instances in which 2U appears to be "getting a good deal" – i.e. getting the lucrative Simmons nursing program – it is also getting saddled with a hidden "risky deal" payload (e.g. the Simmons MBA).

Addressable Market Is Limited by Contractual Exclusivity Arrangements

It is Citron's opinion that the addressable market 2U can go after is far smaller than the market currently credits them for. We furthermore believe that 2U is severely constrained by contractual exclusivity arrangements that limit the company's ability to freely add programs that may encroach on the competitive turf of existing programs.

The exclusivity arrangements make plenty of sense. If you are the Admissions Dean at USC, you would be perturbed if 2U started offering a competing program for UCLA. UCLA is down the street from USC, is probably seen as directly competitive with USC, and goes after a similar candidate pool to USC.

Our research also suggests that there is a strong regional bias in the student university selection process even for online programs (i.e. students in California are more likely to want to take an online degree in California rather than in New York City). The CEO of 2U even said that there is a "distinct regional effect to all of Higher Ed" on his August 2014 earnings call in regards to this phenomenon.

Therefore, universities are unlikely to freely allow 2U to sign up a regional competitor, creating some degree of "regional exclusivity" in the model. This regional exclusivity, combined with 2U's focus on top-tier institutions, constrains its ability to expand beyond 2-3 programs per vertical – a metric it is already bumping up against in some of its most lucrative verticals – nursing, MBAs, and social work.

Rather than speculate on the issues these potential exclusivity arrangements could cause for 2U's growth, we will let the company's 10-K disclosures speak for themselves:

10-K Exclusivity Disclosures Straight From 2 U's 10-K's

We have agreed to incur, and we may incur in the future, costs to terminate the exclusivity obligations in some of our client contracts.

Some of our client contracts, particularly our earliest contracts, limit our ability to enable competitive programs with other schools. We have determined that enabling one or more of these contractually prohibited competitive programs is desirable within our business strategy. As a result, we have agreed with certain clients to incur costs to eliminate some or all of the exclusivity obligations in their contracts with us. We have also agreed with one client to invest up to agreed upon levels in marketing to achieve specified program performance.

We may determine in the future that enabling additional contractually prohibited competitive programs is desirable, and we may therefore agree with additional clients to incur costs to reduce or eliminate the exclusivity obligations contained in their contracts with us.

If the competitive programs we ultimately enable fail to reach scale or cannot be scaled at a reasonable cost, or if we need to incur costs to prevent the original client programs from suffering as a result of our offering competitive programs, our ability to grow our business and achieve profitability would be impaired.

Our clients may disagree with our decision to offer competitive programs pursuant to the contracts we have with them.

Our contracts with our clients include terms addressing the parties' respective rights to offer competitive programs. For example, some of our contracts permit us to offer competitive programs with other schools whose potential students are not academically qualified or otherwise interested in the program we offer with that client. Some of our other contracts prohibit us from offering competitive programs with specific schools. In addition, any contract limitations on our ability to offer competitive programs are inapplicable if our client either refuses to scale the program to accommodate all students qualifying for admission into the program, or raises the program admissions standards above those described in the contract at the time it was executed. If we elect to offer competitive programs in reliance on these contractual provisions, our clients may disagree with our interpretation of those provisions or with our interpretation of the facts surrounding our decision to offer a competitive program. Any disagreement with our clients over our decision to offer competitive programs could result in claims for breach of contract and equitable relief, and could cause damage to our reputation and impair our ability to grow our business and achieve profitability.

-- P 23of 2 U, 10-K filed Feb 26, 2015

So 2U’s TAM (total addressable market) is likely to be limited and governed by its existing clients.

As 2U notes in its 10K risk factors section, it historically entered exclusivity arrangements with its early university clients that limited its ability to partner with other schools on the same program. The logic of these agreements from the perspective of universities is sound. There is an inherent conflict of interest whenever you have multiple programs offered under the same vertical, particularly from a student acquisition perspective. However, 2U has renegotiated some of its contracts to get out of exclusivity arrangements in order to bring on partners under the same vertical.

The market has applauded the expansion into secondary and tertiary programs because the Street views this “horizontal expansion” as a sign that 2U’s TAM has grown. The Street also views this expansion as being potentially accretive to margins. From the Street’s perspective, margins should be better on secondary/tertiary contracts because 2U should theoretically get leverage on its lead generation spend (2U should be able to use leads from School A in order to funnel students to School B).

In our view, this line of reasoning is flawed. First, 2U has already pulled the secondary/tertiary lever within its largest (and most lucrative) verticals. The verticals that have had the most historical enrollment potential are: 1) Nursing 2) Social Work 3) MBA and 4) Education. 2U has already pulled the "horizontal expansion" lever on every one of those verticals except Education (the company indicates on p13 of its FY2014 10K that it is under some exclusivity clauses on its USC programs that may prevent it from launching programs for competing schools).

	Nursing	Social Work	MBA	Education
Primary Partner	Georgetown	USC	UNC	USC
Secondary Partner	Simmons	Simmons	Simmons	
Tertiary Partner	USC		American U.	

Second, university partners likely understand that these secondary and tertiary contracts come with better economics and lower upfront costs to 2U. Therefore, one could reasonably expect that 2U should see pricing pressure or contract modifications as part of negotiations over secondary/tertiary contracts, and also potentially in the renewal process for primary contracts. There is precedent for renegotiations surrounding exclusivity. According to the company's 10-K, UNC was able to extract monetary consideration from 2U in exchange for releasing 2U from an exclusivity arrangement on its MBA program.

> In addition, in February 2015, the University of North Carolina at Chapel Hill's Kenan-Flagler Business School, which is our third client, elected as part of a broader amendment to their existing contract, to extend the initial term of that agreement for an additional 10 years. As part of this amendment, Kenan-Flagler also agreed to eliminate the majority of the exclusivity obligations contained in the original agreement with regard to our offering of competitive programs with other schools. We provided economic consideration to Kenan-Flagler as a part of this amendment, including agreeing to invest up to agreed upon levels in marketing the program, though the contractually specified revenue share percentage in the original agreement remained the same. With this amendment, Kenan-Flagler's contract with us now extends to 2030.
>
> *-- P 4 - 5 of 2 U, 10-K filed Feb 26, 2015*

Generally, 2U is likely to always find itself in a precarious negotiating position with its university partners. A university can certainly force action on a contract, but it is hard to imagine any online education enabler being willing to sue a university over breach of contract given the reputational risks associated with such a move.

Competition is Intense

Given 2U's niche focus, it goes without saying that the company is far from being a "category killer" that should demand a premium valuation. In fact, there are literally dozens of competitors in the online tech enabler space. The competitive grid is laid out below:

THE BIG FIVE	THE MIDDLE MARKET		THE NICHE PLAYERS
2U	All Campus	Greenwood Hall	Educate Online
Academic Partnerships	Apollidon	Helix Education	GlobalHealth Education
Bisk	Blackboard	Hobsons	Higher Education Partners
Pearson Embanet	Capital Education	HotChalk	Orbis Education
Wiley Education Services (formerly Deltak)	Colloquy	Integrated Education Services	Significant Systems
	ComCourse	Joined	
	D2L Corporation	Laureate Partners	
	Educators Serving Educators	Learning House	
	Emerge Education	PlattForm	
	Everspring	Synergis Education	

Source: [Inside Higher Ed]

The most telling sign that this is a low barrier to entry industry is that 2U doesn't even appear to have exclusivity with its largest partner USC. We found an article claiming that Embanet powers USC's Master of Public Administration program.

Business Wire
A Berkshire Hathaway Company

HOME SERVICES NEWS EDUCATION ABOUT US Search

USC Partners with Embanet to Launch Online Master of Public Administration Program

October 06, 2010 01:36 PM Eastern Daylight Time

SCHAUMBURG, Ill.--(BUSINESS WIRE)--The University of Southern California's (USC) prestigious School of Policy, Planning, and Development (SPPD) will be offering its renowned Master of Public Administration (MPA) program online through a partnership with Embanet, a leading global online learning services provider to the country's top institutions. SPPD continues to rank among the best graduate schools in the country, and its MPA degree program was ranked seventh in the nation in the US News & World Report 2008 survey of public administration, public policy and public affairs programs. The online program will launch in Fall 2011.

A pioneer in online learning, Embanet has been partnering with prominent public and private institutions for nearly a decade, including among others Vanderbilt University, Boston University, George Washington University, and USC. In addition to the Master of Public Administration, Embanet supports USC's online Master of Science in Geographic Information Science and Technology, and its online Master of Communication Management, which will launch in Fall 2011. Embanet provides universities with capital, program and course conversion, marketing and enrollment services, online faculty training, student services, and technology hosting and support. Embanet will provide a full suite of customized services to support the new online MPA program.

"Embanet brings to the partnership an understanding of the academic rigors of the program as well as the deep expertise and support services that will allow us to provide our students with the outstanding experience they have come to expect from USC."

Source: [Businesswire]

Our research turned up a USC online [Masters in Engineering] program. We called the school to ask who powers the program and were stunned to find **it is executed in-house**.

Therefore, not only is 2U competing against the Embanet's of the world, but it is also competing against its very own clients.

Summarizing Valuation

Citron hopes readers making it this far will not have their heads in the “Cloud” and still be foggy about 2U's dismal financial prospects.

Assuming the company scales to 48 contracts from 24 today (i.e. doubling its contract count -- highly unlikely in our view, given the TAM issues we identified above) with an average of 650 students per contract, this business would be worth around $384M in 2020 (at that time some of these contracts still will not be ramped, but we’ll be generous in our valuation approach). Discounting that back by 10% to today gets you to a present value of the 48 contracts of around ~$230M. Adding in the cash currently on the balance sheet ($180M pro forma for the capital raise) gets you to an equity value for the firm of ~$410M, which implies:

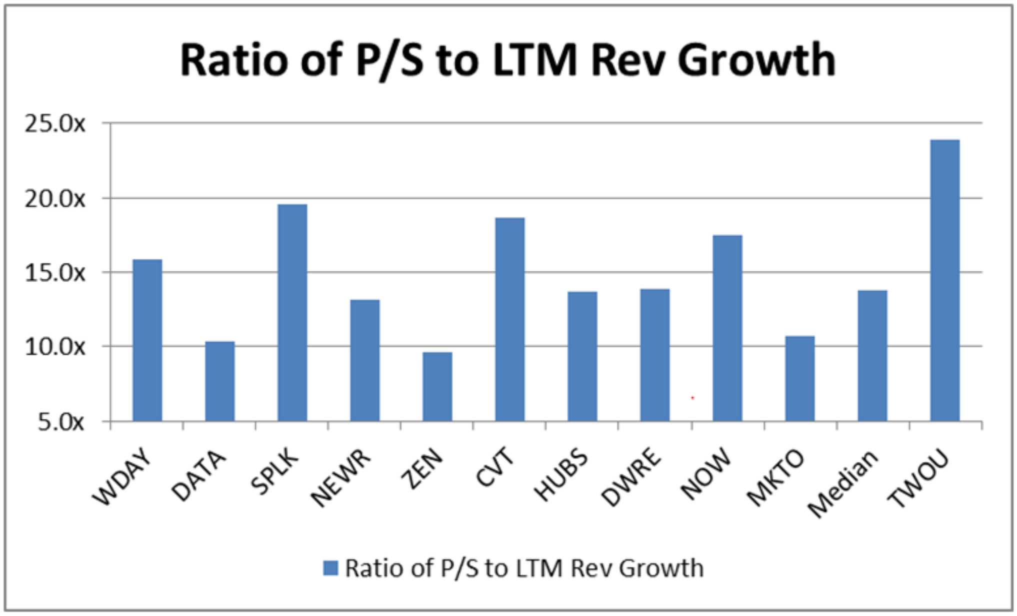
Current Contracts	24
Contracts Per year	6
New Contracts Signed by YE 2020	24
Total Contracts in 2020	48
Average DCF Value Per Contract	8
Value of all Contracts in 2020	384
Discount Rate	10%
Duration to Discount Back	5.3
Value of Contracts in Today's Terms	233
Plus Cash on Hand (adj for 2ndary)	180
Total Enterprise Value Today	413
Implied Value Per Share	8.8
% Downside	(75%)

~67% downside from the stock’s current levels.

We note that in order to actually get to 48 contracts, the company may actually need to raise more capital, but we believe that the $180M of cash on the balance sheet should be sufficient to allow the company to get near its goal of 48 contracts assuming $5-10M of spend per new partner.

Even upholding the myth that 2U is indeed a SaaS company, the valuation of the company is still totally out of whack.

For our Hail Mary, we gave it the old college try, trying identify some thread-thin rationale to justify a valuation for 2U. Here's a simple comparison of price-to-sales ratios for actual SaaS companies, and other nosebleed-high software names comparing their LTM revenue growth rates to TWOU.



Source: Our Analysis. Bloomberg/Capital iQ.
Uses NTM price to sales (pulled as of 9/25/15) and
uses LTM (most recently reported period) revenue growth.

If you are desperately seeking SaaS exposure, why buy 2U for 10x 2015E sales (growing revenue at 34% in the LTM period) when you could buy Workday (WDAY) – a "best in class" SaaS name – for the same valuation despite it having LTM revenue growth of 58%!

-- Source: Bloomberg

Prior to the secondary, with the company sitting on almost ~$88M of cash and supposedly having so many of its programs ramping to profitability in the next few years we ask one simple question:

Why did 2U need to raise $100M of "growth capital" in a very recent secondary offering?

The company was supposedly going to be EBITDA positive by 2017 – and $88M of cash on the balance sheet should have been enough money to launch anywhere from 8-16 programs…This should have been more than enough cash to support the company's ambitious plans for 6 program launches per year and should have been more than enough to carry the company through 2017 when management has said it will start generating cash flow.

All of this leads us to believe that 2U could miss 2016 EBITDA estimates, and is furthermore unlikely to hit its 2017 goals of getting to EBITDA breakeven levels. If it continues signing up sub-scale contracts, we have a hard time seeing how this company will ever attain profitability.

There has been M&A activity in the space, so we think we would be doing a disservice to readers by not calling out precedent M&A transactions. Even on a strategic takeout basis, 2U looks highly overvalued. Pearson paid 14x EBITDA for Embanet Compass ($650M TEV) and

Wiley paid 4x trailing revenues for Deltak. Both comps point to substantial downside for 2U from current levels.

So, if after reading this note you continue to think of 2U as a "Cloud" business, just remember:
Not every "Cloud" has a silver lining. Sometimes it's just a storm.

Conclusion

U 2: Give it an "F" in investability.

Cautious Investing to All