CFA Institute Research Challenge

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Team Benchmark

The CFA Institute Research Challenge is a global competition that tests the equity research and valuation, investment report writing, and presentation skills of university students. The following report was prepared in compliance with the Official Rules of the CFA Institute Research Challenge, is submitted by a team of university students as part of this annual educational initiative and should not be considered a professional report.

TransUnion

Exchange: NYSE
Ticker: TRU
GICS Industry: Professional Services
Date: 01/21/2020
Stock Price: $92.48

Recommendation: **BUY**

Upside: $131.00(+42.00%)
Base: $117.00(+27.00%)
Downside: $78.00(-16.00%)

Business Description

TransUnion (TRU) was established in 1968 as a credit reporting agency (CRA) that operates both B2B and B2C. Since then, TRU has grown into one of the largest credit reporting agencies in the world. Known as one of the "Big 3", TRU is the smallest compared to Equifax (EFX) and Experian (EXPN). Furthermore, given TRU's credit histories of more than 75,000 businesses and one billion consumers in nearly 30 countries, the firm has also secured its footprint in many sub industries including: Auto Lending, Collections, Credit Unions, Financial Institutions, Insurance, Fraud, Mortgage, Public Sector, and Short-Term Lending (IBIS).

TRU's unique value proposition is its ability to provide fair and accurate credit reports on millions of consumers to its customers helping them predict the likelihood that the borrower will repay the debt in a timely manner. Consumers are the general credit-active public who use borrowing services while the customers are the lenders such as banks, credit unions and other businesses that grant credit. There are hundreds of CRA's in the marketplace but the main attribute that differentiates the Big 3 from the other CRA's is the size information collected from consumers and active credit users. This information is obtained from the financial services firms, banks, and credit unions. This means that TRU collects and aggregates the data provided from financial services companies and sells it back to them in the form of a credit report; conflicts of interest and regulations prevent these financial institutions from starting their own proprietary credit reporting systems. In summary, CRA's are brokers between the consumer who needs credit and a lender who needs to ensure the borrower will repay on time.

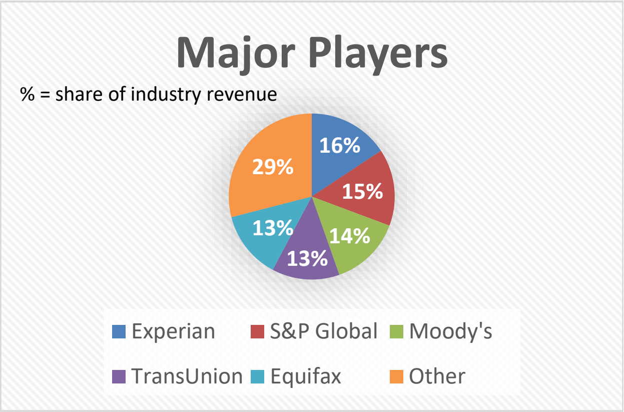
Industry Overview and TRU's Competitive Positioning

Industry is Driven by Consumer Credit

Consumer credit allows consumers to borrow and then repay the lender over time. Because CRA's are the broker between the borrower and the lender, as the number of borrowers goes up more lenders demand credit reports which increases revenue for the CRA's. This relationship between borrowers and lenders is the reason that consumer credit activity drives the industry.

At the industry level, as the economy recovers from the COVID-19 pandemic, banks and other lending institutions are expected to continue issuing more loans which will increase revenue for CRA's. Furthermore, since consumer spending is expected to rise, borrowing is also expected to increase, which will strengthen the need for credit reports from the CRA's. Additionally, the growth of CRAs will be supported by innovation and diversification, as these agencies use new ways to leverage their vast amounts of information.

Exhibit One: Major Players



Big 3 Competitive Distinctions

The competitive distinction among the Big 3 in their primary line of business, providing credit reports for lenders, lies in the accuracy of the reports which comes from the collected and aggregated consumer data. Because quality data is significant to an underwriter 's decision, they often pull from more than one company of the Big 3. Since the collected data for the Big 3 comes from the same providers (same banks, financials firms, etc.) the competition depends on gaining more market share in international and developing markets, as well as new emerging verticals such as media, healthcare, insurance, etc. No direct competitor owns greater market share than 16% (Exhibit 1). In addition, S&P Global and Moody's are direct competitors, however, they primarily focus on the creditworthiness of thousands of businesses and corporations and not so much on consumers. In conclusion, there is significant competition in the CRA industry, however, the main Big 3 players have created an oligopoly that is not only hard to topple but is growing at a steady annual rate of 5-6% (IBIS).

TRU's US Markets (61% of Revenue)

Financial Services

The Financial Services segment is TRU's primary revenue driver within its US markets segment. This B2B segment profits from selling credit reports and consumer data to financial services firms such as banks, credit unions, etc. As these firms prepare to issue consumer loans, credit cards, and various lines of credit to consumers they use credit reports from CRA's to gauge the likelihood of timely repayment. TRU had 2019 revenues of $858 million, trailing only EXPN with $2 billion and slightly ahead of EFX with revenues of $840 million (10-K data). A major driver of US financial services revenue in 2020 was the mortgage segment (11% of US Financial Services) as low mortgage rates have created a spike in mortgage refinancing volumes. The more consumers refinance or open new originations, the more mortgage lenders require consumer credit data to determine premiums and timely repayments.

Healthcare and Insurance

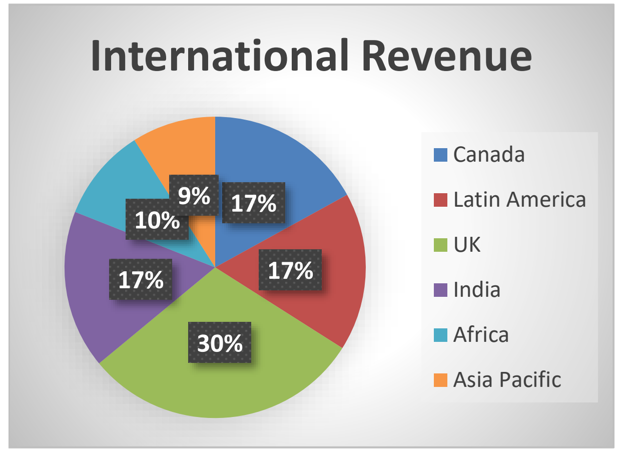
The healthcare and insurance segments are composed of healthcare and insurance companies that pay TRU for their consumers credit data to determine the likelihood of payment for surgeries and various insurance as well as determining a fair premium price. These segments are not the primary revenue drivers for TRU, but they provide value to TRU because they help diversify TRU's portfolio of customers. They are highly correlated with economic conditions. Both segments saw a decrease in revenue in 2020 due to COVID-19 (10-Q Data) but as the economy continues its recovery, these segments are expected to bounce back to positive EPS growth (Bloomberg).

Other Vertical Segment

The "other" vertical segment is a combination of the media, diversified markets, government and collections vertical segments. However, the most valuable segment to TRU is the media vertical, which provides solutions to marketers and ad agencies by aggregating millions of data sources from primarily web streaming services and allows their customers to gain a better understanding of their consumers. The media vertical is an emerging segment that only contributes 2% of total revenue but has promising future growth due to TRU's 3 acquisitions (Tru Signal, Signal and TRU Optik) that will help penetrate the estimated $1 billion total addressable market (IBIS).

International Markets Segment (19% of Revenue)

Exhibit Two: International Revenue



Within TRU's international markets, UK and India (Combined 47% of International revenue) are the primary drivers (Exhibit 2). TRU offers the same solutions listed above for US Markets to International markets with similar customers (banks, lenders, etc.). The international markets provide value to TRU by diversifying TRU's portfolio of customers and increasing their total market share. International markets were hurt from the COVID-19 pandemic because of slowing international economies. In addition, the UK is a tough market to penetrate because EXPN is the market leader, so India has a more promising future for TRU (See below).

TRU's Dominance in Emerging India Vertical

TRU CIBIL is the credit information company within TRU's emerging market vertical in India and accounts for 17% of International revenue for TRU. CIBIL was established in 2000 and is the clear market leader in India because of its data accumulation advantage and competitive pricing strategy.

Data Accumulation Advantage

All credit bureaus in India are licensed by the Reserve Bank of India (RBI) which licensed CIBIL well before all its main competitors (Exhibit 3). This 10-year head start allowed CIBIL to accumulate mass amounts of aggregated data on consumers in India. And with no significant competitors until 2010, CIBIL has had time to advance its algorithms and data collection strategies to grow its business.

Exhibit Three: India Licenses

TRU CIBIL	EXPN
Licensed in 2000	Licensed in 2010
CRIF Highmark	**EFX**
Licensed in 2010	Licensed in 2010

Competitive Pricing Advantage

The data accumulation as well as the public relations that TRU has built well before the other agencies allows TRU to charge a 37% premium for its credit reports compared to its nearest competitors (Exhibit 4). This clear price advantage is a significant indicator of how CIBIL is the market leader in the India emerging vertical.

Exhibit Four: Pricing

TRU CIBIL	EXPN
550 Rs. ($7.50)	399 Rs. ($5.44)
CRIF Highmark	**EFX**
399 Rs. ($5.44)	400 Rs. ($5.45)

Consumer Interactive Market Segment (20% of Revenue)

The consumer interactive segment provides direct and indirect channels of data to consumers in the form of either credit reports or a diversified list of credit tools. Consumers can purchase credit report "bundles" which include the credit report as well as extra services such as credit monitoring, identify theft protection, and fraud support. The additional value that this segment provides to TRU's business is that consumers can report errors on their reports allowing TRU to have more accurate data. This is the reason that TRU's bundle is selling at a higher price compared to their competitors (Exhibit 5).

Exhibit Five: Pricing (per month)

EFX	EXPN
$19.95	$14.95
TRU	
$24.95	

Investment Summary

We are recommending a BUY rating for TRU because our work suggests that risks of greater US government regulations on credit reporting agencies will be less than consensus believes, TRU's emerging media vertical will grow faster than consensus expectations, and mortgage refinancing revenue will be greater than consensus expects.

Our view is more bullish than consensus with our EPS forecast at $4.11 putting us 9% above consensus. In addition, we believe NSR's relative valuation multiple will rise from its current 22% premium to the market to a 50% premium to the market.

Applying a 50% premium to the market multiple to me $4.11 EPS estimate for 2022 results in a one-year price target of $131 which is 42% above yesterday's close.

We differ from consensus because we do not believe consensus understands that regulations and a Public Credit Reporting Agency require time to becomes bills and eventually laws. Our research shows that there are currently no bills or acts even close to being passed. We also understand that politicians spend more time killing bills than passing them which indicates a low probability of a bill ever being passed even if one was introduced. The recent TRU stock sell off right as a Democratic Senate was confirmed proves to us that consensus does not understand the fundamental challenges of passing stricter regulations on CRA's.

We arrived at an above consensus EPS based on our research and discussions with several political figures involved with industry decisions. Our contacts were within financial economics and consumer protection departments. Each confirmed that the US government regulations on CRA's would not be a threat to the industry and that consensus is weighing the risk too heavily. TRU, specifically, will be focusing on streaming data through more centralized and interactive digital landscapes, growing their consumer base and allowing marketers to access organized data. The company will be improving their software systems through recent acquisitions of TruOptik, TruSignal, and Signal. TRU will outperform consensus expectations for their Emerging Media Vertical as well as the Mortgage Segment within Financial Services, through better than consensus mortgage refinancing revenue. Based on this, we forecast the Emerging Verticals and Financial Services segment to grow at a 7.4% and 13.3% CAGR to 2025, respectively. This will drive TRU revenue as these segments account for the largest portion of the company's revenue. We differ from consensus as we believe consensus does not understand the competitive advantage that TRU has gained through their strategic acquisitions and technological innovations.

Growth Rate Expectations

Our FY22E earnings estimate of $4.11 is 9% above consensus, driven in part by our revenue expectation which is 6.5% above consensus. Being the strongest performer among the Big 3, with no single customer accounting for more than 4% of revenue, it is likely that TRU will continue sustained growth without much volatility. The only deceleration in previous growth has come primarily from economic downturns.

Revenue Growth Faster Than Consensus Expectations

US Financial Services

We estimate a 2020 8.4% revenue growth boosted by mortgage volumes which helped offset losses in emerging verticals, primarily healthcare. The 5-year CAGR growth is estimated to be at 13.3% as Financial Services continues to be the primary revenue driver.

Media Emerging Vertical
Moving to US emerging verticals, we expect a 3.4% 2020 revenue growth as the media and insurance verticals offset losses in the healthcare vertical. 5-year CAGR growth is expected at 7.4% as the media vertical picks up significant revenue by 2025.

International
We are forecasting a 2020 revenue loss of 6.6% for emerging markets and a loss of 2.4% for developed markets. 5-year CAGR assumptions are at 4.7% for emerging and 3.4% for developed as India vertical dominates international revenue by 2025.

Consumer Interactive
We estimate a small 2.6% growth in 2020, reaccelerating to mid-single digits in 2022 and beyond, as TRU's marketing partners increase new subscriber marketing after setbacks in 2020(BI: Company Outlook 10/27/20). This assumption is based on historical mid-single digits growth, in addition to expectations about financial institutions expected to increase marketing spend with lead aggregators, who will in turn increase their marketing spend based on that increased revenue (TransUnion Life After COVID Conference). Fraud and ID theft services could outperform market expectations given increases in fraud and ID theft incidences driving new subscriptions and limiting subscription cancellations.

Overview
In total, these assumptions lead us to a firmwide revenue assumption of 3% growth for 2020 which is 1% greater than consensus estimates. Our 5-year CAGR growth is expected at 8.5% which is 2.5% greater than consensus estimates.

Valuation

Base Case Price Target

Our $117 base-case price target is based on 28.5x our FY22E EPS of $4.11. We derive our 28.5x multiple with the assumption the stock commands a 50% premium to the S&P500 multiple, which we are forecasting to be 19.0x one year from now.

Over the past 10 years, the S&P500 median forward P/E ratio has been 16.3x and is currently 22.4x due to distressed earnings as a result of the recession and optimism surrounding a recovery. With 2021 likely to be a year of easy year-over-year comparisons, we expect the multiple to drop below its 10-year highs but not return to its 10-year average due to additional recovery in 2022 and 2023, resulting in a 19.0x multiple assumption.

For our 1-year price target, we believe TRU will command a 50% premium to the market's multiple based on TRU's exceptional track record of EPS growth relative to its competitors. TRU's 5-year EPS CAGR is 30.3%, while Experian and Equifax have averaged 3.8% and 6.5%, respectively. In

Exhibit Six: Our EPS estimates vs Consensus

	2020E	2021E	2022E
Our Estimate	$ 3.21	$ 3.75	$ 4.11
Consensus	$ 2.97	$ 3.31	$ 3.78
Difference %	8%	13%	9%

Exhibit Seven: TRU's FY22 Base Price

Current Price	$ 92.48
2022 Base EPS	$ 4.11
2022 Downside Market Multiple	19.0x
TRU's premium to the market	50%
Upside Valuation Multiple	28.5x
Base Price Target	$ 117

addition to superior earnings growth, TRU's outlook should continue to improve as its verticals hit hard from the pandemic crisis (i.e., healthcare, the largest emerging vertical) begin to improve as hospitals see a return to normal levels in elective surgeries. Currently, the stock is trading at a 22% premium to the market, lower than its 43% historic median, and in line with its two main competitors, despite much higher growth expectations. We believe the weakness in its multiple is unsustainable and will return to previous values, as the market is currently cautious about the potential for recovery in TRU's end markets. We also expect TRU to command a higher trading premium because even with TRU's higher growth prospects, TRU is trading at the same forward P/E as EFX at 27x, while EXPN is trading at 32x.

Upside Scenario

To test our base-case scenario we also consider outcomes under upside and downside scenarios. Our upside scenario calls for a 60% relative P/E ratio for FY22E, which would be near it's all time high of 70% and brings our price target up 12% from our base-case, to $131 which is a 40% change from its current price. We derived our price target from growing the consensus FY2021 EPS of $3.31 by 31%, to an upside estimate of $4.32. This upside could occur if EFX or EXPN experience data breaches, resulting in customer ending their short-term contracts with EFX and EXPN and switching over services to TRU resulting in growing margins and operating leverage greater than expected. There is also the possibility that growth in emerging verticals like India, healthcare, and the US financial services sector grow faster than our estimates leading to greater earnings growth.

Exhibit Eight: TRU's FY22 Upside Price Target

Current Price	$ 92.48
2022 Upside EPS	$ 4.32
2022 Upside Market Multiple	19.0x
TRU's Premium to the market	60%
Upside Valuation Multiple	30.4x
Upside Price Target	$ 131

Downside Scenario

Our downside scenario assumes TRU trades at a 10% discount to the market's multiple for FY22E, resulting in a 17.1x multiple, when applied to our $2.90 EPS estimate, results in a $50 downside price target which is 43% below our base-case price target. Our downside risk includes the emerging markets underperforming in addition to a mortgage volume decline early in 2021, leading to a worse than expected revenue growth in TRU's Financial Services segment. A data breach would result in a loss of customers and consumer confidence leading to significant decline in revenue, regulatory fines and scrutiny affecting future earnings growth negatively.

Exhibit Nine: TRU's FY22 Downside Price Target

Current Price	$ 92.48
2022 Downside EPS	$ 2.90
2022 Downside Market Multiple	19.0x
TRU's Premium to the market	-10%
Upside Valuation Multiple	17.1x
Downside Price Target	$ 50

Comparable Table

Exhibit Ten: Comparable Table

Long Company Name	Market Capitalization	Total Enterprise Value	Shares Outstanding	5 Year Beta	Industry Classification
TransUnion (NYSE:TRU)	**17598.9**	**20886.5**	**190.3**	**1.25**	**Research and Consulting Services**
Equifax Inc. (NYSE:EFX)	21712.1	24591.7	121.6	1.32	Research and Consulting Services
Experian plc (LSE:EXPN)	33140.2	37625.4	913.4	0.23	Research and Consulting Services

Long Company Name	LTM Total Revenue	LTM EBITDA	LTM TEV/EBITDA	LTM Diluted EPS	LTM Gross Margin %	LTM EBITDA Margin %
TransUnion (NYSE:TRU)	**2703.5**	**972.8**	**20.51**	**1.69**	**67%**	**36%**
Equifax Inc. (NYSE:EFX)	3914.9	1040.7	23.63	3.62	58%	27%
Experian plc (LSE:EXPN)	5171.0	1563.0	22.24	0.72	42%	30%

Long Company Name	NTM Revenue	NTM EBITDA	NTM TEV/Forward EBITDA	NTM EPS	NTM LT EPS Growth Rate	NTM Forward P/E
TransUnion (NYSE:TRU)	**2832.1**	**1108.3**	**18.8x**	**3.23**	**12.5%**	**28.6x**
Equifax Inc. (NYSE:EFX)	4332.6	1489.6	16.5x	6.50	10.9%	27.4x
Experian plc (LSE:EXPN)	5535.6	1917.4	19.6x	1.08	9.4%	33.5x

Financial Analysis

Cash flow generation supports expansion

TRU's efforts and investments in innovating its data infrastructure and developing its tools since its IPO in 2015 has dramatically propelled its growth to a 20% 3 Year EBITDA CAGR in 2017-2019. TRU's expansion has also strengthened its competitive positioning by penetrating new markets and diversifying its business segments to differentiate from its peers and to mitigate economic downturns and the potential of tighter government regulation. As a result, TRU's operational efficiency has improved as they have outperformed peers with an EBITDA margin in 2019 at 38% (beating the benchmark at 33%).

TRU's 16 acquisitions the last four years have also led them to taking on leverage, with a 2.9x net debt/ adjusted EBITDA and a debt/ capital structure of 0.62 at the end of 3Q20. In addition to that, TRU has $544mm cash on hand, access to a $300mm revolver, and a covenant of 5.5 Net Debt/ EBITDA. Although TRU's leverage will remain above its peers for a few years, TRU possesses a flexible liquidity position with a current a ratio of 1.55 (88 bps higher than the industry average), and strong cash flow generation (achieved a 22% FCF margin, materially outperforming the benchmark at 7%) which will support their acquisitions and mitigate the risk of the company breaching their covenant. TRU has demonstrated its capability to fund and sustain expansion, and we believe that management will continue to look for strategic growth opportunities through acquisition.

Media vertical to exceed consensus revenue expectations

TRU's 2019 acquisitions of Signal and Tru Signal and its most recent October 2020 acquisition of Tru Optik are breakthroughs into the media vertical segment. TRU is entering the marketing solutions market which we measure to have a $1 billion TAM. Our research indicates that as demand for web-streaming TV services grows rapidly, traditional TV marketing campaigns are being phased out. TRU is adapting to this change through acquiring companies that collect, track, and organize data on household users of web streaming TV services such as HULU, Netflix, Disney+, etc. Specifically, we believe this segment to grow at a 5-year 14% CAGR with 5.7% revenue growth for 2021. Over the next 5 years we expect TRU to turn the media vertical into a primary line of business as the financial service segment revenue slows due to tighter government regulations.

Mortgage revenue to decelerate less than consensus expectations

Overview

The two primary markets for mortgages are the origination for new homebuyers and refinancing for existing mortgages, and revenue is generated from the volume of each market. We believe that 30-year mortgage rates will not rise above 3% in 2021 (forecasted by Fannie Mae) and 3.2% in 2022. We believe that for 15-year mortgage rates will not rise above 2.6%. The average 30-year and 15-year mortgage rate applies for both new homebuyers and for homeowners looking to refinance.

Refinancing for Existing Mortgages

Our research indicates that the MBA refinance for existing mortgage assumptions may be too negative. Based on mortgage interest rates for refinance remaining near record historic lows, in addition to the number of homeowners who are in position to refinance, we think that the demand will remain strong in the first and second quarter, contrary to what the MBA has forecasted. According to Black Knight (Appendix D-6), a company that provides research and data on mortgage and real estate stated that when the average 30-year fixed mortgage rate was at 2.72% and the 15-year fixed mortgage was 2.20% in November 2020, 19.4 million homeowners were in position to save an average of $309 per month by refinancing. Those only included homeowners who have at least 20% equity in their homes, credit scores of 720 or higher, are current on their payment and who stand to cut their payments by at least 0.75% by refinancing. Consensus is fearful of rising federal interest rates, which would inherently rise mortgage rates. We have forecasted a 29% decrease (outside of Fannie Mae's forecast of 38% and the MBA's 46.3%) in refinance volume for homeowners.

Origination of New Mortgages

The Mortgage Bankers Association (MBA) has forecasted an 8.5% increase in new home buyers in the US from $1.42T in 2020 to $1.54T dollars in 2021, which we also expect for TRU.

Total Mortgage Volume

With new homeowner volume remaining strong and refinance volume decelerating at a lower rate than what consensus believes, we have a more optimistic than MBA projections. We expect that refinance volume will slowly decline as strong home buyer demand increases from 2021-2022 to keep business flowing in, especially with the Federal Reserve's support of liquidity with purchases of mortgage-backed securities. We have forecasted a 10% decrease (outside of the MBA's projection at 28%) in total mortgage volume in the 2021, and a 5% decrease in 2022.

Regulation pressures are overblown

With the confirmation of a Democratic presidency and Senate, TRU's stock has sold off as much as 12% from December all-time highs. This was a result of investors weighing the odds of tighter regulations and threatening legislative proposals. Our conclusion is that US government regulations on credit reporting agencies will be lower than consensus believes. We have a strong degree of conviction in our call because our discussion with proprietary sources leads us to believe that regulation pressures are not going to influence valuations for the next two years as there is no proposed legislation close to approval.

Investment Risks

Data Breach Increases Expenses

We are confident that TRU's data security implementations are thorough and will prevent any data breaches. But, as the world saw with EFX in 2017, TRU is not immune to the possibility. If a data breach happened, it would not only reduce TRU's public trust it would also have material increases to its expenses, as TRU would invest its capital into improving its data security in order to gain back the trust of their customers.

Strict US Regulations and PCRA lead to faster earnings decline than expected
We believe TRU's financial services and consumer interactive segments face slowing earnings growth 5-7 years from now if new US regulations are implemented. However, stricter regulations could be passed in 1 year leading to higher expenses, lower profit margins and faster declining earnings. Our proprietary research indicates that a Public Credit Reporting Agency (PCRA) would not likely be passed for another 7 years, however, we could be wrong, and legislatures could push this through in 2 years or less which would result in revenue losses, direct competition and declining earnings growth.

Rising Interest Rates decrease mortgage revenue
We believe TRU's mortgage business will continue to prosper through 2022 due to the low interest rate environment. However, interest rates could rise over the next 12 months and this would likely result in a decrease in the mortgage revenue segment because higher mortgage rates mean less refinances and new originations leading to a fall in demand for credit reporting services. In addition, an increase in interest rates may dissuade TRU management from borrowing which could result in a higher dependence on cash to cover costs which can be perceived as a risk if TRU diminishes its cash supply.

Regulation slows India growth
We believe that TRU will continue to grow its emerging market share in India without pressure from the government. However, stricter regulation than expected from India's government would reduce profit margins, increase expenses and slow the growth of the India vertical.

More Acquisitions lead to even higher leverage
TRU is highly leveraged (2.9x net debt/adjusted EBITDA at 3Q20) but we believe TRU will not have material increases to this leverage by 2022. However, if TRU acquires more companies or incurs more debt their leverage will rise leading to a higher level of risk for investors. This would put more pressure on TRU to justify this higher risk with higher returns and could potentially lead to a lower return on equity if they fail to meet these demands.

Environmental, Social, and Governance

ESG Reports
For evaluating TRU's ESG performance, we use MSCI's ESG reports because MSCI uses industry leading natural language processing (NLP) and AI driven machine learning to research and build its reports, which are found to be superior to traditional "ESG Scores" that pull publicly available information from company documents that lack insight (Integrity Research Associates).

ESG Rating: BBB
Our research indicates that the BBB rating given to TRU by MSCI is justifiable, although we believe that in 1-2 years TRU can achieve an A or greater rating. This is based on TRU's initiatives to increase privacy and data security and improve its societal and political standing. TRU currently holds a flawless record of consumer financial protection and we believe its IT implementations will continue to improve this protection.

Environmental
TRU has a minimal environmental footprint as it is a technology-based professional services company. However, TRU is limiting negative environmental impacts where possible like the campaign to implement

water efficiency improvements, an energy efficient
elevator, and the elimination of single use plastics in the Chicago office by 2021. We believe this indicates effort and awareness of the environmental issues impacting the world and we believe TRU will continue to do everything it can to limit environmental impacts.

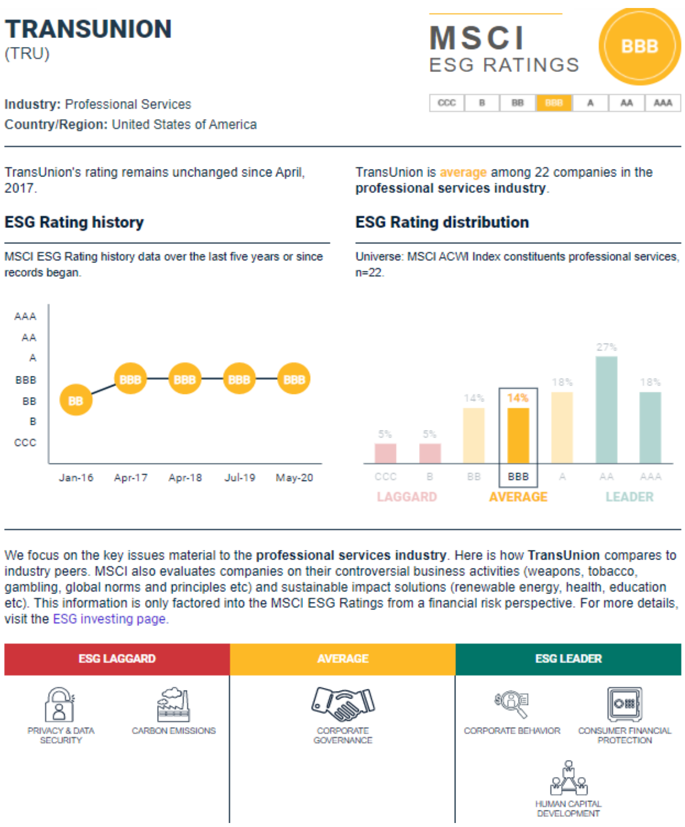
Social

We believe three components define TRU's social aspect of ESG. The first is TRU's commitments to its employees. Our research concludes that TRU is investing time and effort into associate and diversity training and provides its employees with competitive salaries and benefits, flexible time off, pet insurance, gender confirmation procedures, and other industry-leading benefits. The second is TRU's obligations to the societies they operate, with consumers being priority number one. Consumers are not the customers; they are the product, and we believe TRU will continue to maintain its social standing with the public. The third component is the political environments that TRU operates in. The industry has faced scrutiny, however, TRU has had no data breaches, only one lawsuit in the last 2 years, and no direct scrutiny from policymakers. Our conclusion is that TRU will continue to exceed all these standards in the next 1-2 years making TRU an above average ESG investment.

Governance

Our research into TRU's board of directors, management team, and stock and option compensation do not indicate any sign of malfeasance or discrimination. We have also discovered an impressive zero complaints of wrongdoing by the board of directors, executive leadership, or any employees. The past positive historical decisions of each member on the board of directors and the management team indicates to us that there is a low probability of any governance issues arising in the next 1-2 years.

Exhibit Eleven: MSCI TRU ESG Report



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List of Abbreviations

Abbreviation	Full Term
TRU	Transunion
CRA	Credit Reporting Agency
NYSE	New York Stock Exchange

B2B	Business-To-Business
B2C	Business-To-Customer
Big 3	Transunion, Experian and Equifax
EFX	Equifax
EXPN	Experian
SWOT	Strengths, Weaknesses, Opportunities, Threats
US	United States
RBI	Reserve Bank of India
P/E	Price/Earnings
FY22E	Fiscal Year 2022 Estimate
EPS	Earnings Per Share
CAGR	Compound Annual Growth Rate
IPO	Initial Public Offering
EBITDA	Earnings Before Interest, Taxes, Depreciation, and Amortization
FCF	Free Cash Flows
TAM	Total Addressable Market
T.V.	Television
MBA	Mortgage Bankers Association
PCRA	Public Credit Reporting Agency
U.K.	United Kingdom
ESG	Environmental, Social, Governance
MSCI	Morgan Stanley Capital International
NLP	Natural Language Processing
AI	Artificial Intelligence
IT	Information Technology

Appendix A: Financials

Appendix A-1: Income Statement

(dollars in millions)	2015	2016	2017	2018	2019		2020E	2021E	2022E	2023E	2024E	2025E
Income Statement Data:												
Revenue	$ 1,506.80	$ 1,704.90	$ 1,933.80	$ 2,317.20	$ 2,656.10		$ 2,735.1	$ 2,855.9	$ 3,095.6	$ 3,398.9	$ 3,763.7	$ 4,209.8
Revenue Growth Rate		13.1%	13.4%	19.8%	14.6%		3.0%	7.5%	8.4%	9.8%	10.7%	11.9
Operating expenses:												
Cost of services	531.60	579.10	645.70	790.10	874.10		820.52	828.22	959.62	1,019.68	1,091.47	1,220.84
% of revenue	35.3%	34.0%	33.4%	34.1%	32.9%		34.5%	32.0%	31.0%	30.0%	29.0%	29.0
Selling, general and administrative	499.70	560.10	585.40	707.70	812.10		864.00	861.60	897.71	968.70	1,053.83	1,178.74
% of revenue	33.2%	32.9%	30.3%	30.5%	30.6%		31.0%	30.0%	29.0%	28.5%	28.0%	28.0
Depreciation and amortization	278.40	265.20	238.00	306.90	362.10	**avg hist.**	367.60	375.00	386.94	407.87	432.82	463.08
% of revenue		15.6%	12.3%	13.2%	13.6%	13.7%	13.5%	13.0%	12.5%	12.0%	11.5%	11.0
Total operating expense	1,309.70	1,404.40	1,469.10	1,804.70	2,048.30		2,052.8	2,065.4	2,244.9	2,396.8	2,578.7	2,863.2
Operating income (loss)	**197.10**	**300.50**	**464.70**	**512.50**	**607.80**		**$ 682.3**	**$ 790.5**	**$ 850.7**	**$ 1,002.1**	**$ 1,185.0**	**$ 1,346.6**
Non-operating income and expense	(170.50)	(95.10)	(92.20)	(169.00)	(167.30)							
Interest expense							(123.0)	(112.0)	(103.0)			
interest income							5.6	8.0	10.0			
other income and expense, net							(9.2)	(16.0)	(16.0)			
earnings from equity method investments							8.9	10.8	12.6			
earnings before incoem taxes	26.60	205.40	372.50	343.50	440.50		555.7	670.5	741.7	1,002.1	1,185.0	1,346.6
(Provision) benefit for income taxes	(11.30)	(74.00)	79.10	(54.50)	(83.90)		(133.4)	(160.9)	(178.0)	(240.5)	(284.4)	(323.2
NI/ loss from continuing ops	15.30	131.40	451.60	289.00	356.60		422.3	509.6	563.7	761.6	900.6	1,023.4
Discontinued operations, net of tax	-	-	-	(1.50)	(4.60)		-	-	-	-	-	-
Net income	15.30	131.40	451.60	287.50	352.00		422.3	509.6	563.7	761.6	900.6	1,023.4
Less: net income attributable to						**hist avg**						
noncontrolling interests	(9.40)	(10.80)	(10.40)	(10.90)	(5.10)	**(9.32)**	(10.00)	(10.00)	(10.00)	(10.00)	(10.00)	(10.00
Net income (loss) attributable to												
TransUnion	$ 5.90	$ 120.60	$ 441.20	$ 276.60	$ 346.90		$ 412.3	$ 499.6	$ 553.7	$ 751.6	$ 890.6	$ 1,013.4
stock based comp							50.0	62.8	67.9	80.0	90.0	100.
m&A							13.0	0.0	0.0	0.0	0.0	0.
Tech transformation							20.0	50.0	60.0	0.0	0.0	0.
Amortization of Intangibles				181	206.5		192.7	188.0	192.7	219.6	192.8	
Change in provision for income taxes							(70.2)	(79.3)	(85.0)	(61.0)	(60.0)	(60.0
Adj. Net income							$ 617.8	$ 721.1	$ 789.3	$ 990.2	$ 1,113.4	$ 1,053.4
Adjusted EPS							$ 3.21	$ 3.75	$ 4.11	$ 5.27	$ 5.99	$ 5.66
Shares Outstanding												
Diluted	166.80	184.60	189.90	190.90	191.80		192.5	192.5	192.0	188.0	186.0	186.0

Appendix A-2: Balance Sheet

TRANSUNION AND SUBSIDIARIES Consolidated Balance Sheets (in millions, except per share data)	December 31,	December 31,	December 31,	December 31,	December 31,
	2017	2018	2019	2020E	2021E
Cash and cash equivalents	116	187	274	600	799
Accounts Receivable	327	457	444	445	477
Other current assets	146	137	170	120	120
Current assets of discontinued operations	-	61	-	-	-
Total current assets	**589**	**842**	**888**	**1165**	**1396**
Net Property, Plant, and Equipment	199	220	219	219	233
Goodwill	2,369	3,294	3,378	3,378	3,378
Other Intangibles	1,826	2,548	2,392	2,206	1,974
Other Long-Term Operating Assets	137	136	236	236	236
Total assets	**5,120**	**7,040**	**7,113**	**7,204**	**7,217**
Accounts Payable	131	170	176	186	199
Short-term debt and current portion of long-term debt	119	72	59	59	59
Other current liabilities	208	284	337	337	337
Total current liabilities	**458**	**526**	**572**	**582**	**595**
Long-term debt	2,345	3,976	3,598	3,398	3,198
Deferred taxes	419	478	439	439	439
Other liabilities	71	55	165	165	165
Long Term Non-Operating Liabilities	-	23	-	-	
Total liabilities	**3,293**	**5,058**	**4,774**	**4,584**	**4,397**
Preferred Stock	-	-	-	-	
Common Stock	2	2	2	2	2
Additional Paid in Capital	1,864	1,947	2,022	2,022	2,022
Retained Earnings	137	363	652	934	1233
(Treasury Stock)	-139	-140	-179	-179	-279
Other Equity	-135	-283	-252	-252	-252
Shareholder's Equity	**1,729**	**1,889**	**2,245**	**2,527**	**2,726**
Minority Interest	96	93	94	94	94
Total Equity	**1,825**	**1,982**	**2,339**	**2,621**	**2,820**
Total liabilities and stockholders' equity	**5,118**	**7,040**	**7,113**	**7,205**	**7,217**

Appendix A-3: Cash Flow Statement

TransUnion (TRU US) - Standardized

In Millions of USD except Per Share 12 Months Ending	FY 2016 12/31/2016	FY 2017 12/31/2017	FY 2018 12/31/2018	FY 2019 12/31/2019	Last 12M 09/30/2020
Cash from Operating Activities					
+ Net Income	120.6	441.2	276.6	346.9	324.4
+ Depreciation & Amortization	265.2	238.0	306.9	362.1	364.1
+ Non-Cash Items	43.7	-178.4	67.5	57.4	86.7
+ Stock-Based Compensation	24.4	33.1	57.9	51.0	50.9
+ Deferred Income Taxes	-22.2	-212.8	-69.0	-22.5	-38.0
+ Other Non-Cash Adj	41.5	1.3	78.6	28.9	73.8
+ Chg in Non-Cash Work Cap	-39.6	-35.0	-93.1	13.0	-20.7
+ (Inc) Dec in Accts Receiv	-42.5	-44.7	-113.8	7.3	-22.9
+ Inc (Dec) in Accts Payable	2.9	9.7	20.7	5.7	2.2
+ Net Cash From Disc Ops	0.0	0.0	-2.2	-2.7	0.0
Cash from Operating Activities	**389.9**	**465.8**	**555.7**	**776.7**	**754.5**
Cash from Investing Activities					
+ Change in Fixed & Intang	-124.0	-135.3	-180.1	-198.5	-198.1
+ Acq of Fixed & Intang	-124.0	-135.3	-180.1	-198.5	-198.1
+ Acq of Fixed Prod Assets	*-124.0*	*-135.3*	*-180.1*	*-198.5*	*-198.1*
+ Net Cash From Acq & Div	-6.2	-13.5	0.0	0.0	-40.3
+ Cash for Acq of Subs	-6.2	-13.5	0.0	0.0	-40.3
+ Other Investing Activities	-365.6	-332.0	-1,837.5	-5.4	36.1
Cash from Investing Activities	**-495.8**	**-480.8**	**-2,017.7**	**-203.9**	**-202.3**
Cash from Financing Activities					
+ Dividends Paid	0.0	0.0	-41.6	-56.8	-57.5
+ Cash From (Repayment) Debt	155.7	85.9	1,600.7	-398.1	-135.6
+ Cash (Repurchase) of Equity	11.6	-106.4	26.2	24.4	23.7
+ Increase in Capital Stock	12.3	27.1	26.2	24.4	23.7
+ Decrease in Capital Stock	-0.7	-133.5	0.0	0.0	0.0
+ Other Financing Activities	-13.5	-31.2	-45.1	-56.2	-54.2
+ Net Cash From Disc Ops	0.0	0.0	—	—	0.0
Cash from Financing Activities	**153.8**	**-51.7**	**1,540.2**	**-486.7**	**-223.6**
Effect of Foreign Exchange Rates	1.1	0.3	-6.6	0.6	-10.5
Net Changes in Cash	**49.0**	**-66.4**	**71.6**	**86.7**	**318.1**
Cash Paid for Taxes	**93.6**	**120.2**	**111.1**	**111.7**	
Cash Paid for Interest	**87.9**	**90.2**	**132.1**	**163.5**	

Source: Bloomberg

Appendix A-4: Key Financial Ratios

Liquidity		2017	2018	2019	2020F	2021F
Current Ratio		1.3	1.6	1.6	2.0	2.3
Quick Ratio		1.3	1.6	1.6	2.0	2.3

Appendix A-5: WACC Analysis:

WACC		Source
Risk free rate	1.12%	US 10 year treasury yield (Bloomberg)
equity risk premium	7.86%	Bloomberg
Beta	1.29	Derived from covariance to SP500 Index, adjusted for future assumption of movement toward market beta.
Cost of Equity	11.26%	
cost of debt	1.30%	Bloomberg
weight of debt	18.70%	Bloomberg
weight of equity	81.30%	Bloomberg
WACC:	**9.40%**	

Appendix A-6: Profitability Analysis:

Profitability	2017	2018	2019	2020F	2021F	2022F	2023F
Operating Margin (%)	24.0%	22.1%	22.9%	24.9%	27.7%	27.5%	29.5%
EBITDA Margin (%)	36.3%	35.4%	36.5%	38.4%	40.8%	40.0%	41.5%
Net Margin (%)	23.4%	12.4%	13.3%	15.4%	17.8%	18.2%	22.4%
Return on Assets (%)	8.8%	4.1%	4.9%	5.9%	5.9%	7.1%	8.0%
Return on Equity (%)	24.7%	14.5%	15.0%	16.7%	18.7%	19.1%	24.0%

Growth (%YoY)	3 - Year Hist CAGR	2017	2018	2019	2020F	2021F	2022F	2023F	3 - Year Proj. CAGR
Revenue	*15.9*	13.4%	19.8%	14.6%	3.0%	4.4%	8.4%	9.8%	13.4%
EBIT	*26.5*	54.6%	10.3%	18.6%	12.3%	15.9%	7.6%	17.8%	15.4%
EBITDA	*20.1*	24.2%	16.6%	18.4%	8.2%	11.0%	6.2%	13.9%	16.3%
Earnings	*24.5*	243.7%	-36.3%	22.4%	20.0%	20.7%	10.6%	35.1%	25.2%

TransUnion (TRU US) - Profitability

In Millions of USD except Per 12 Months Ending	FY 2016 12/31/2016	FY 2017 12/31/2017	FY 2018 12/31/2018	FY 2019 12/31/2019
Returns				
Return on Invested Capital	5%	13%	8%	8%
Effective Tax Rate	36%	—	16%	19%
Dvd Payout Ratio	0%	0%	15%	16%

Source: Bloomberg

Appendix A-7: Share Price History

https://www.macrotrends.net/stocks/charts/TRU/transunion/stock-price-history

Appendix B: Valuation

Appendix B-1: Revenue Growth Assumptions

Revenue Growth Assumptions	2019	2020	2021	2022	2023	2024	2025	CAGR
USIS								
Financial Services	849.0	920.3	1040.0	1177.2	1345.6	1547.4	1788.8	
% growth		8.4%	13.0%	13.2%	14.3%	15.0%	15.6%	13.3%
Emerging Verticals:	760.6	786.5	831.3	883.7	957.9	1047.9	1166.3	
% growth		3.4%	5.7%	6.3%	8.4%	9.4%	11.3%	7.4%
International								
Emerging Markets	332.7	310.7	324.4	344.2	369.3	399.2	435.2	
% growth		-6.6%	4.4%	6.1%	7.3%	8.1%	9.0%	4.7%
Developed Markets	290.8	283.8	291.2	301.1	314.0	331.3	353.9	
% growth		-2.4%	2.6%	3.4%	4.3%	5.5%	6.8%	3.4%
Consumer Interactive	497.8	510.7	536.8	571.1	611.7	658.8	712.8	
% growth		2.6%	5.1%	6.4%	7.1%	7.7%	8.2%	6.2%
Total Revenue:	2,730.9	2,812.1	3,023.7	3,277.3	3,598.5	3,984.7	4,457.0	
% growth		3.0%	7.5%	8.4%	9.8%	10.7%	11.9%	8.5%

Appendix B-2: TRU Relative P/E & Growth Rate

Appendix B-3: EXPN Relative P/E & Growth Rate

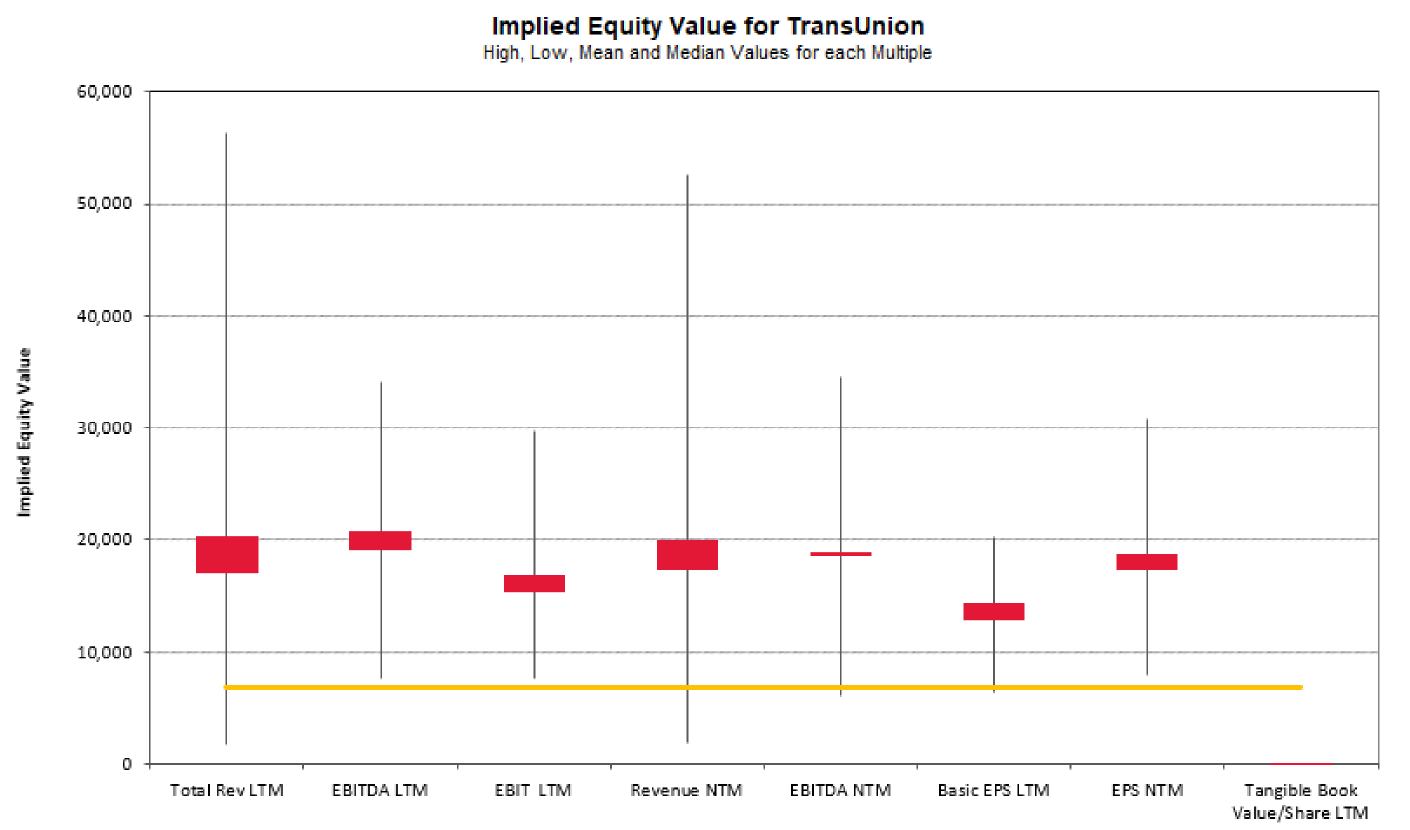
Appendix B-4: EFX Relative P/E & Growth Rate

Appendix B-5: TRU Implied Equity Value Chart

VALUATION CHART S&P Capital IQ

Currency	USD
Date	1/21/2021

Company Comp Set



Source: S&P Capital IQ

Appendix C: Company Information

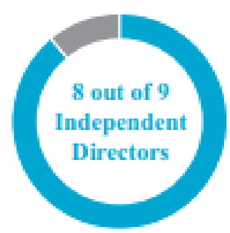
Appendix C-1: Board of Directors

Name	Age[1]	Director Since	Independent	Occupation	Committee Memberships	Other Public Company Boards
George M. Awad	59	2013	☑	Principal, Gibraltar Capital Corporation	• Audit and Compliance	• None
Christopher A. Cartwright	54	2019		President and CEO, TransUnion	• Executive	• None
Suzanne P. Clark	52	2017	☑	President, U.S. Chamber of Commerce	• Audit and Compliance • TPC	• AGCO Corporation (NYSE: AGCO)
Kermit R. Crawford	60	2019[2]	☑	Former President and COO, Rite Aid Pharmacy	• None	• The Allstate Corporation (NYSE: ALL)
Russell P. Fradin	64	2018	☑	Operating Partner, Clayton, Dubilier & Rice	• Nominating and Corporate Governance • TPC (Chairperson) • Executive	• Best Buy Co. (NYSE: BBY)
Pamela A. Joseph	61	2015	☑	CEO, Clearent, LLC	• Audit and Compliance (Chairperson) • Executive	• Paychex, Inc. (NASDAQ: PAYX)

Board of Directors Highlights

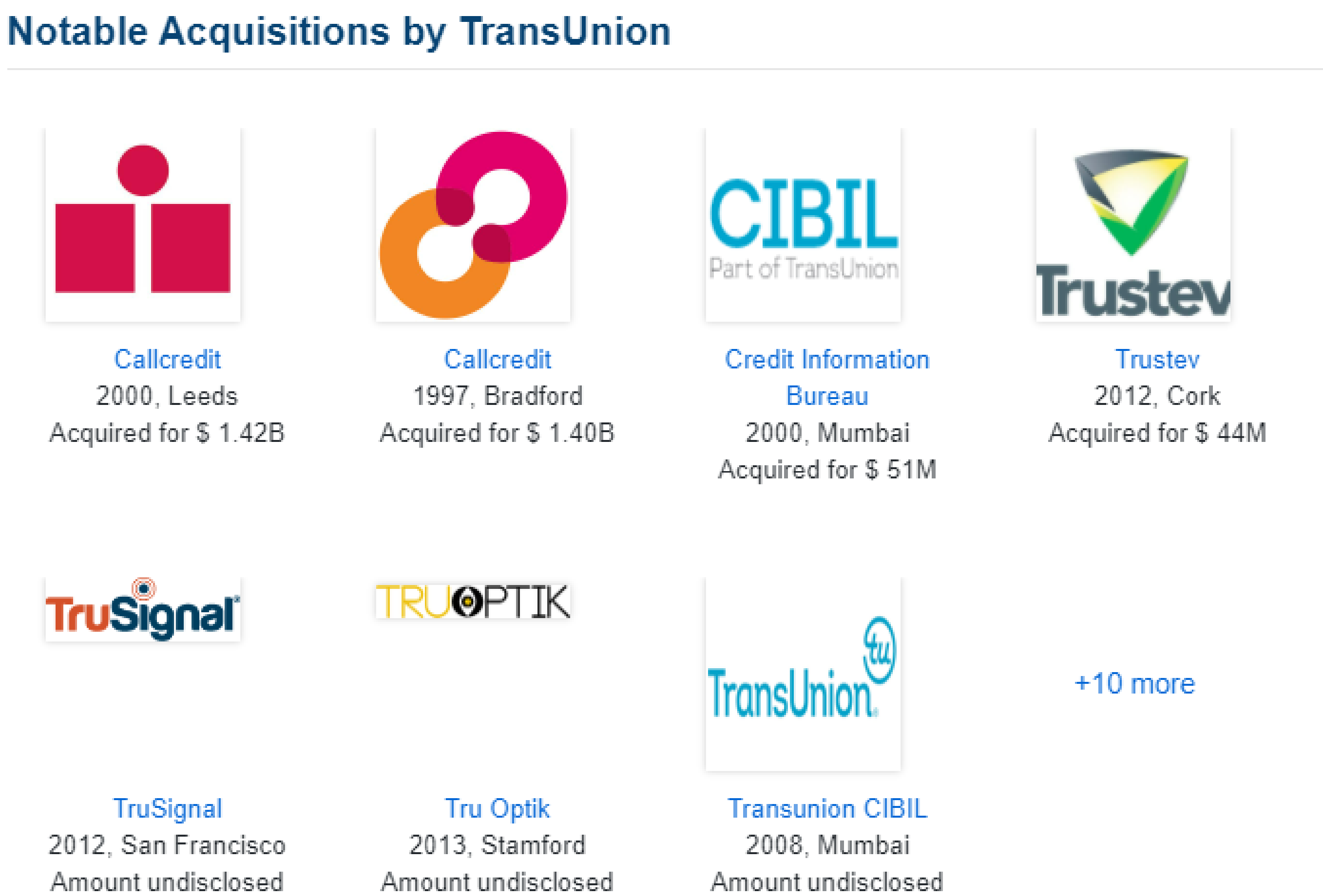
4.1 Years

Average Tenure of Independent Directors



TRU 2020 Proxy Statement

Appendix C-2: Acquisitions



https://tracxn.com/d/acquisitions/acquisitionsbyTransUnion

Appendix C-3: Litigations

TransUnion Sued in Federal Class Action for Continuing to Misreport Innocent Consumers as Terrorists on Credit Reports Despite Previous Punitive Damages Verdicts Against It for Similar Misreporting

https://www.prnewswire.com/news-releases/transunion-sued-in-federal-class-action-for-continuing-to-misreport-innocent-consumers-as-terrorists-on-credit-reports-despite-previous-punitive-damages-verdicts-against-it-for-similar-misreporting-301118210.html

Appendix D: Industry and Competitive Positioning

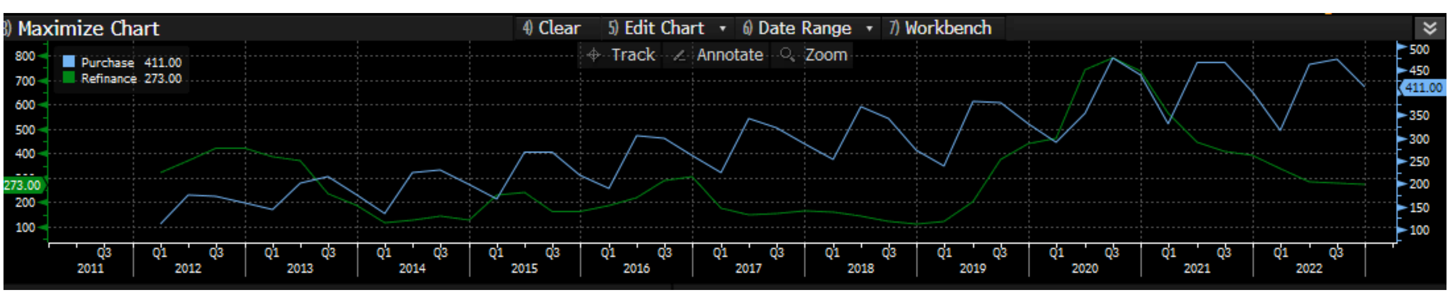
Appendix D-1: SWOT

STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
• Over 90,000 sources of consumer and commercial data with 25% y/y data growth since 2010 • CreditVision acquisition is already growing to 4% of 2019 total revenue • 20 other acquisitions while maintaining caapital spending within 8% of sales • Being part of an oligopoly keeps barriers to entry exceptionally high	• Weak performance during FY20 due to 92% correlation with US GDP • Decrease in consumer credit and lending activity caused sharp declines in Financial Services and International Consumer Interactive segment , which accounts for 62% of TRU revenue	• Media Vertical increases the potential to acquire net new customers, increasing TRU database capabilities • Media Vertical is set to become an international, multi-billion dollar TAM opportunity • Expected growth due to TruSignal, Signal, and TruOptik acquisitons from 2019	• TRU customers are under a contract for less than a year • Emerging Markets requires federal regulatory approval and better understanding of the surrounding ecosystem before establishment • PCRA has potential ultimately eliminate up to 10% of TRU revenue

Appendix D-2: Porter's Five Forces Analysis

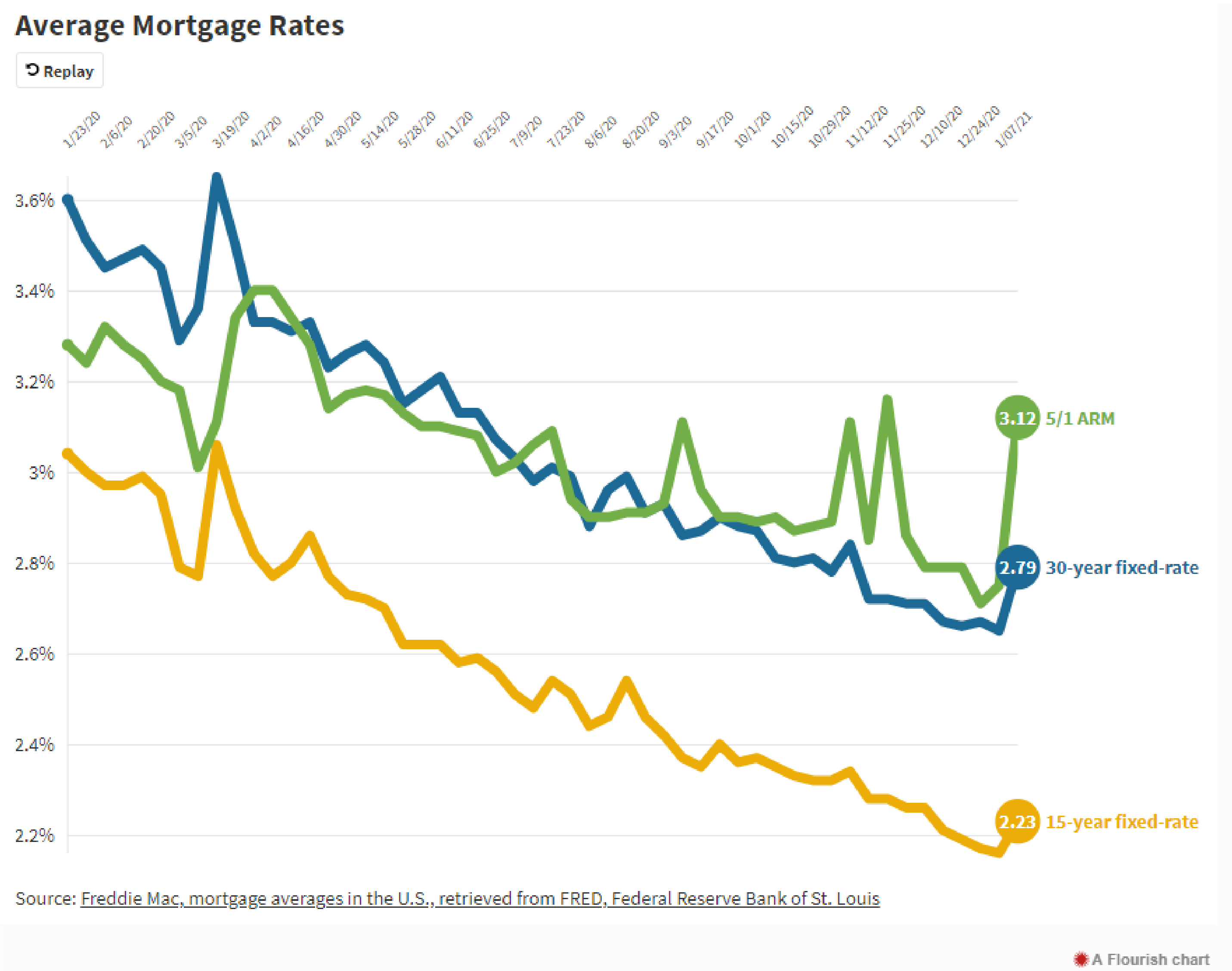
The CRA Industry is highly concentrated, with only 3 companies making up the entire market: TRU, EXPN, and EFX. Due to high capital requirements, the rise of regulatory scrutiny, and the oligopoly's data, analytics, and technological innovation makes it practically impossible for new companies to enter the market. No more than 3% of revenue was attributed to one TRU customer, reflecting the company's diversified customer base and low buyer power, as TRU's services are critical for their customers. The top priority for TRU consumers is highly accurate and complete information. TRU's services, database of millions of customers, and high-tech digitization preventing data breaches and improving transaction speed makes bargaining power of suppliers low. Substitution is kept low by offering competitive services through digitalized solutions and rising amounts of consumer data per company. No one company could singlehandedly maintain growth to substitute another. The Big 3 compete by improving diversification of product lines, hiring top talent, and maintaining data security using new strategies. These strategies, along with synergistic growth to gain greater market share, will keep competitive rivalry high. Gaining greater market share will also keep barriers to entry high.

Appendix D-3: Mortgage Refinancing vs New Home Purchases Volume



Source (Bloomberg - from Mortgage Bankers Association)
New home purchases (blue) vs. Refinance (Green)

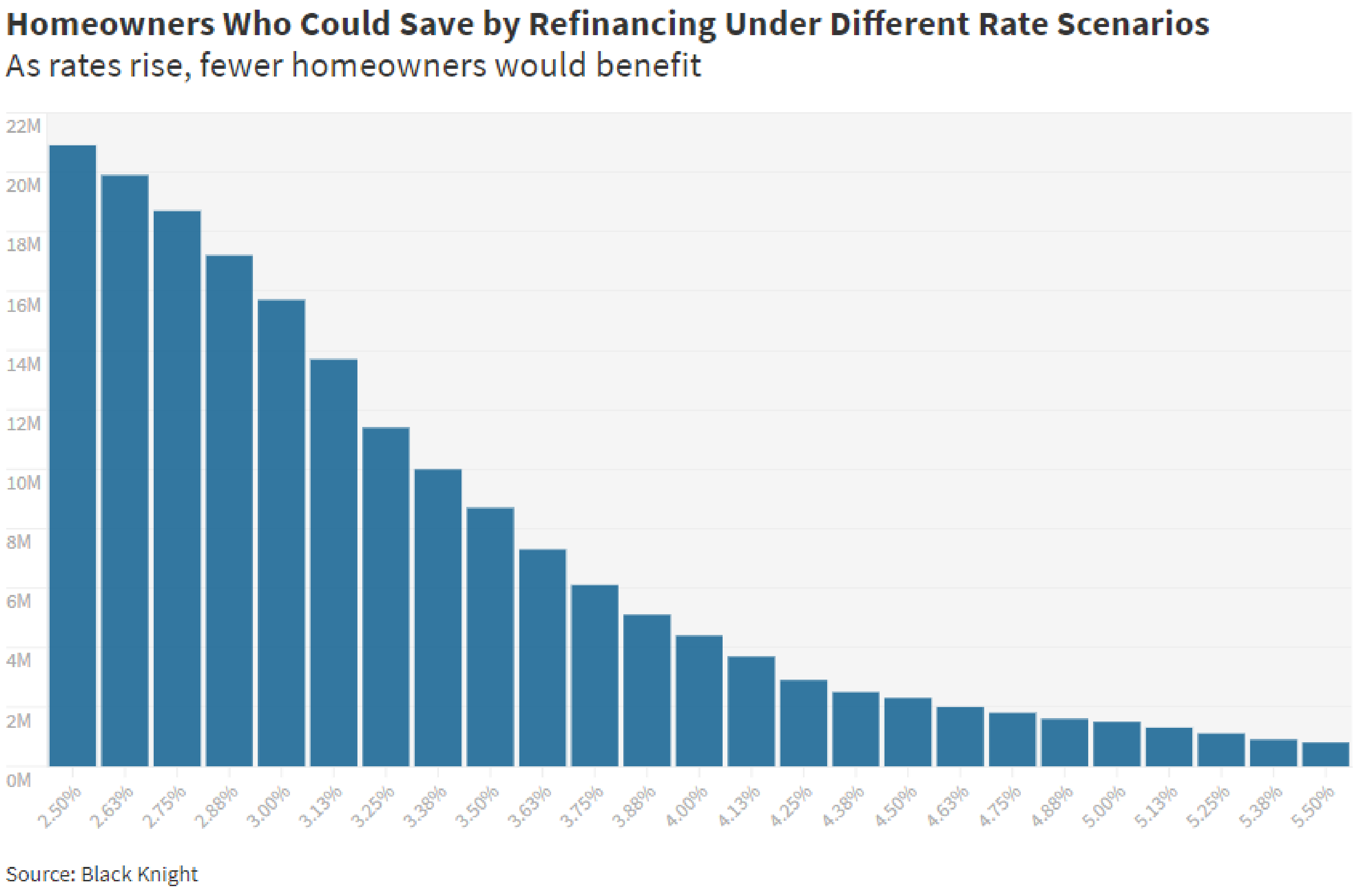
Appendix D-4: Average Mortgage Rates



Average mortgage rates
ARM = Adjustable – rate mortgage
(Forbes Advisor)

https://www.forbes.com/advisor/mortgages/mortgage-interest-rates-forecast/#:~:text=Refinancing%20Will%20Slow%20in%202021&text=The%20MBA%20predicts%20that%20refinancing,according%20to%20MBA's%20latest%20forecast.

Appendix D-5: Mortgage Volume Refinancing by Mortgage Rate



https://www.forbes.com/advisor/mortgages/mortgage-interest-rates-forecast/#:~:text=Refinancing%20Will%20Slow%20in%202021&text=The%20MBA%20predicts%20that%20refinancing,according%20to%20MBA's%20latest%20forecast.

Appendix E: Sources

- Bloomberg Terminal
- ThomsonOne
- CapitalIQ
- IBISworld
- ThinkOrSwim
- MacroTrends
- WeForum
- EDGAR
- FRED Economic Research
- Yahoo Finance
- Morning Star Sell Side Reports
- Morgan Stanley Sell Side Reports
- William Blair Sell Side Reports
- Goldman Sachs Sell Side Reports

- JPMorgan Chase Sell Side Reports

2020 Q3- 10Q

- “PDF.” TransUnion , 27 Oct. 2020.

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- “TransUnion Announces Third Quarter 2020 Results.” TransUnion, 2 Oct. 2020.

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2020 Q2- 10 Q

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2020 Q2- Earnings Report

- “FORM 8-K.” TransUnion , 27 July 2020.

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2020 Q1- 10Q

- “FORM 10-Q.” TransUnion, 28 Apr. 2020.

https://otp.tools.investis.com/clients/us/transunion/SEC/sec-show.aspx?Type=html&FilingId=14098683&CIK=0001552033&Index=10000

2020 Q1- 8K

- “FORM 8-K.” TransUnion, 28 Apr. 2020.

https://otp.tools.investis.com/clients/us/transunion/SEC/sec-show.aspx?Type=html&FilingId=14098674&CIK=0001552033&Index=10000

2020 Q1- 8k

- “FORM 8-K.” TransUnion , 28 Apr. 2020.

https://otp.tools.investis.com/clients/us/transunion/SEC/sec-show.aspx?Type=html&FilingId=14098674&CIK=0001552033&Index=10000

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- “2019 Annual Report .” TransUnion , 14 Feb. 2020.

https://otp.tools.investis.com/clients/us/transunion/SEC/sec-show.aspx?Type=html&FilingId=13231168&CIK=0001552033&Index=10000

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https://investors.transunion.com/~/media/Files/T/Transunion-IR/annual-reports/2019/2020-proxy-statement.pdf

2018 Annual Report

- “2018 Annual Report .” TransUnion , 14 Feb. 2019.

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