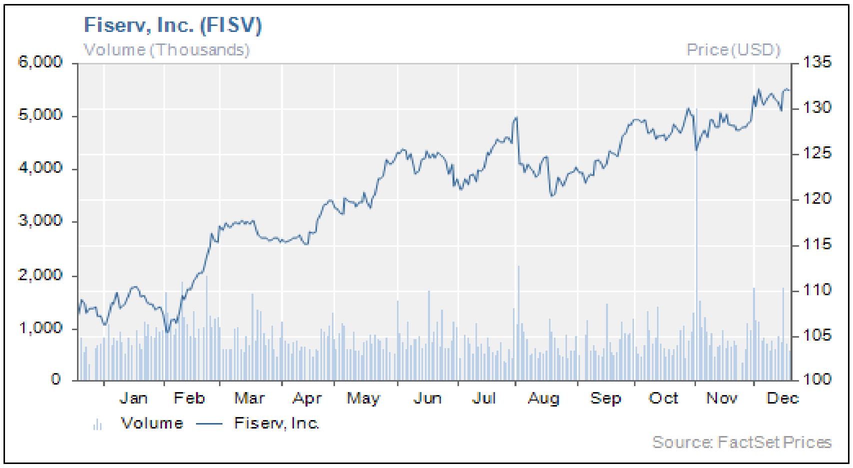
Analyst: Derek Urben

INVESTMENT MANAGEMENT CERTIFICATE PROGRAM February 16, 2018

Recommendation	BUY
Target Price	$168
Current Price	$130.11 (Feb 5)
52 week range	$104.51 - $133.36

Financial Technology

Fiserv.



Share Data	
Ticker:	FISV
Market Cap. (Billion):	$27.54
Inside Ownership	0.4%
Inst. Ownership	90.6%
Beta	0.90
Dividend Yield	0.00%
Payout Ratio	0.00%
Cons. Long-Term Growth Rate	0.0%

	'15	'16	'17E	'18E	'19E
Sales (billions)					
Year	$5.25	$5.51	$5.70	$5.98	$6.29
Gr %		4.8%	3.5%	4.9%	5.2%
Cons				$5.69	$6.02
EPS					
Year	$2.99	$3.98	$5.01	$5.27	$6.03
Gr %		32.9%	25.9%	5.3%	14.4%
Cons	-	-	$5.08	$5.74	$6.39

Ratio	'15	'16	'17	'18E	'19E
ROE (%)	23.9%	35.8%	35.8%	19.4%	18.7%
Industry	16.7%	20.8%	20.6%	25.6%	21.9%
NPM (%)	13.6%	16.9%	19.7%	19.9%	19.9%
Industry	10.6%	12%	11.8%	17.7%	18.3%
A. T/O	0.56	0.58	0.58	0.59	0.61
ROA (%)	7.6%	9.7%	9.7%	11.6%	12.1%
Industry	5.9%	7.1%	7.0%	8.4%	8.8%
A/E	46.6%	46.8%	50.1%	NA	NA

Valuation	'15	'16	'17	'18E
P/E	31.4	32.2	31.4	23.0
Industry	31.6	34.9	49.5	27.3
P/S	4.17	4.35	5.05	4.57
P/B	7.3	9.0	11.7	4.1
P/CF	16.6	16.5	20.2	13.8
EV/EBITDA	19.7	19.3	19.3	18.9

Performance	Stock	Industry
1 Month	2.9%	11.1%
3 Month	5.6%	4.5%
YTD	24.4%	-15.8%
52-week	23.1%	-19.4%
3-year	44.5%	-9.4%

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Summary: I recommend a Buy rating with a 1-year price target of $168. Fiserv's historical strength and long-term, revenue generating customer list provides a stable base for their gross margin and international expansion. While my forecasts are still below market estimates, I believe Fiserv will be given a higher valuation premium due to its competitive edge, shareholder capital allocation, and superior product suite.

Key Drivers:

Bank & Financial Services Spending: As interest rates normalize and digital banking grows due to new generational demand, Fiserv positioned well with its existing banking and financial institutional customers to leverage this growth.

Gross margin expansion and operational efficiency: Fiserv's current gross margin expansion initiative is beating expectations and I predict this outperformance will continue into 2018 and 2019.

P2P Payments Leader: As Peer-to-peer Payments grow exponentially globally, Fiserv's existing Payments Segment will continue to be an application-neutral leader within the processing and architectural layers throughout the networks.

Competition & Industry: Looking at the financial, valuation, and product suite categories, Fiserv continually holds leading positions among its peer group. Valuation multiples continue to be at the mid to low end while profit margin growth and shareholder capital return outpaces the competition.

International Opportunity: Emerging markets are predicted to massively come online within the payments and banking industries within the over the next 2-5 years. Fiserv's existing products have proven to be the industry standard and this market will provide the company with an entirely new revenue opportunity.

Valuation*:* Assuming a stagnant PE ratio and continued earnings growth, FISV is valued at $176.88. On a relative P/CF basis, when looking at its peer group, FISV should be trading at $150.76. The three stage DCF results in an absolute valuation of $157.01.

Risks*:* FISV's largest risk is the continued consolidation of financial institutions. Cyber security, product failure, and increasing debt load are other large risks.

Company Overview

Fiserv, Inc. (FISV) is a financial services IT company that operates through two segments: Payments & Financial. Fiserv's financial segment services banks, credit unions, and other financial companies through its product suite of digital banking, mobile applications, and back office software. Fiserv creates longstanding contracts mostly with middle market (<$25 Billion AUM) depository institutions along with smaller investment banks, trading institutions, and FinTech companies. Their Payments section focuses on P2P payments, electronic payment processes, and merchant / card software. The Payments products include the Zelle™ P2P banking payments app and EMV credit card processing.

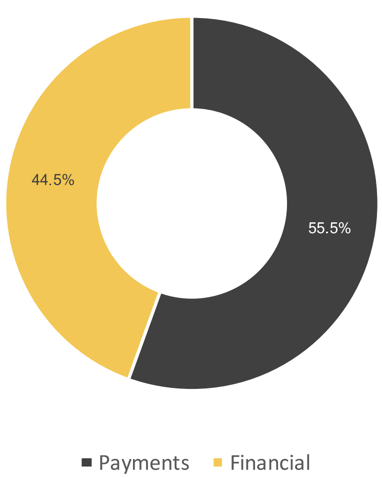
Fiserv's growth catalysts include the accelerating growth of online banking where Fiserv designs the software, processing services, and applications for some of the world's largest banks and credit unions. Additionally, the continued emergence of digital Peer-to-Peer payments is Fiserv's growth engine.

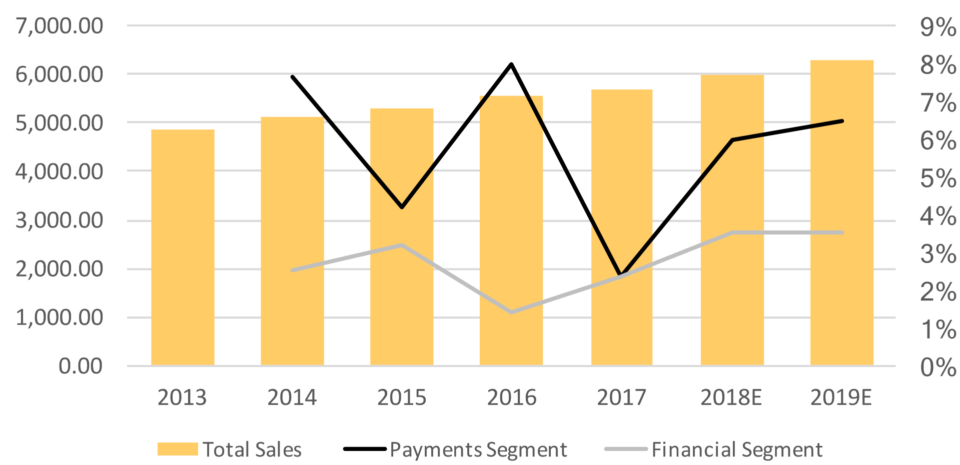
Headquartered in Brookfield, WI, FISV has over 23,000 employees globally. The company was founded in 1984 when First Data Processing & Sunshine State Systems merged to create Fiserv – a data processing company focused on the financial services industry. FISV went public on the NASDAQ in 1986 and became a $1B sales company in 1998.

Fiserv operates through only two business segments, Payments accounts for 56% of sales and their Financial segment accounts for 44% of sales:

- **Payments (56%):** Segment includes electronic banking payments (~30%), card services (25%), billing and merchant solutions (20%), investment servicing (15%) and other services (10%).
- **Financial (44%):** Segment includes account processing (~70%), item processing (15%), and lending solutions (15%).

Figure 1: Fiserv 2017 Business Segmententation & Historical Segment Growth + Sales in Millions of USD





Source: Company Filings

Business/Industry Drivers

Fiserv's company and industry drivers can be found below:

1) Bank & Financial Services Spending
2) Gross Margin Expansion and Operational Efficiency
3) P2P Payments Leader
4) Competition & Industry
5) International Opportunity

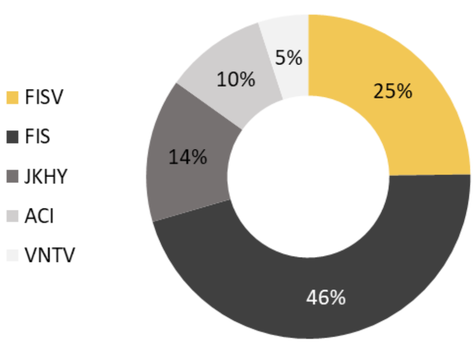
On a population weighted average, digital banking usage will grow 2.7% per year for the next two years.

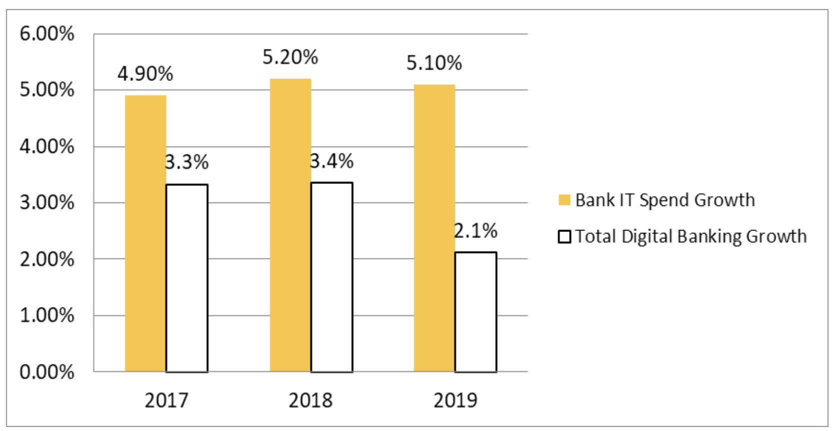
Bank & Financial Services Spending

Financial services security and digitization has been a growing concern globally. Digital banking, of which Fiserv owns 24.8% of the market, is the main sub-segment behind Fiserv's financial business unit. As millienials, baby boomers, and all generations in between demand online banking, banks are continuing to engage Fisev for full turnkey mobile and online banking suites.

The market believes bank consolidation, expanded upon later within the risks section, has dimmed Fiserv's long-term growth prospects. On the other hand, overall bank and credit union spending has continued to grow in Fiserv's target market, the $1B – 10B AUM segment is the leader in IT spending.

Figures 2 & 3: Bank IT Market Share & Bank IT Spend vs. Digital Banking Usage Growth





Source: Company reports & IDC

1 in 3 financial institutions trust Fiserv for its account processing

Currently, IT spending for all financial institutions is 10-15% of their annual budgets and is expected to rise 500bps by 2018. With pressure by both the IMF for digitalization of banking and the U.S. regulatory agencies for increased security through digital processes, Fiserv has positioned itself with both its ongoing contracts and new business to build out the midmarket's IT capabilities. The drivers behind this increased IT spending will come both from customer demand for the tools, features, and security needed along with the increase in banking top-line growth from higher interest rates and loan growth.

On a more macro level, with interest rates expected to begin their normalization path in the next few years, banks and credit unions are going to become more profitable with as net interest rate spreads widen. This increase in topline will also help drive financial services IT spending.

Further, Fiserv management is continuing to target the <$25B AUM financial institutions, with an increased focus on credit unions. According to IDC, total North American financial institution tech spending is going to be $78B in 2017. Assuming Fiserv is on target for its FY2017 financial segment revenue estimate of $2.53B, one could assume that Fiserv holds approximately 3.24% of the total banking IT spending. It is fair to project that banking IT spending will accelerate beyond the IDC & internal Fiserv estimates due to the increase in banking topline revenue from rate normalization and the threat from growing FinTech firms and new technology. Assuming just a 50bps increase in IDC and macro growth estimates would lead to a 7.24% increase in EPS[1].

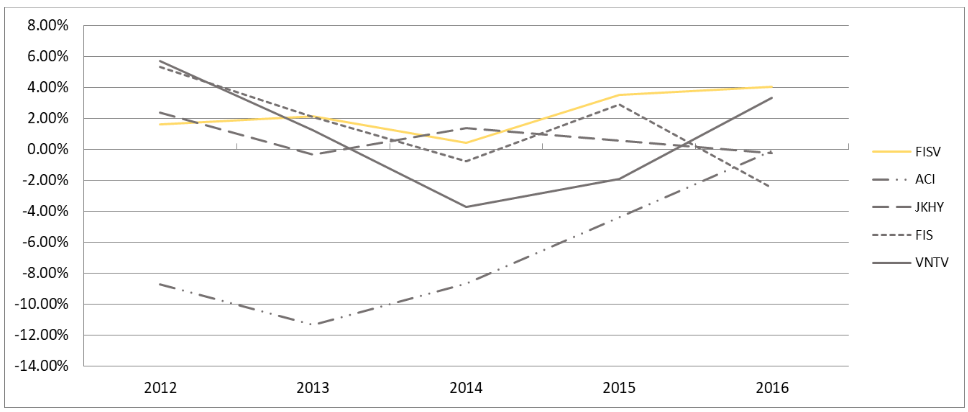
Gross Margin Expansion & Operational Efficiency

One of Fiserv's three long-term shareholder initiative includes "high-quality revenue which we define as long-term and recurring with attractive margin."[2] This has started to take hold with both the gross and operating margins increasing ~4% in 2018 and ~5.92% and 2019, respectively.

Fiserv has experienced the fastest gross margin growth through its workforce optimization and atomization efforts

At the gross margin level, Fiserv has been outpacing all peers on the gross margin growth and is only second to ACI on the absolute gross margin, but as seen in Figure 4 below ACI has been experiencing steep gross margin declines. Fiserv's gross margin improvements are expected to continue with 50bps acceleration for the next 2-3 years according to management commentary.

Figure 4: Fiserv & Peers Gross Margin Growth



Source: Factset

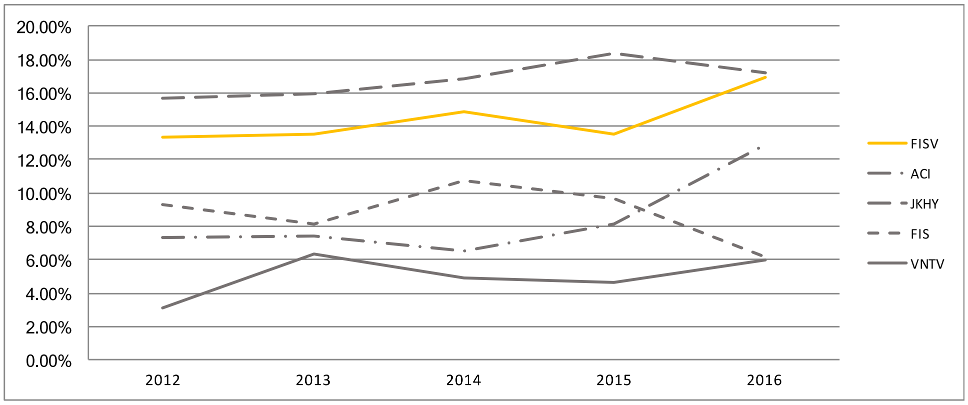
Fiserv's most recent operational initiative included a $60M work force optimization project which the company is well on track to outperform. Historically, Fiserv has had industry leading gross margin growth and has continued to focus on 50bps expansion annually.

Operational efficiency is being achieved through consolidation of Fiserv's data centers and as the firm transitions much of its client process and data to off-site cloud storage. Figure 5 shows Fiserv has historically been operating at lower margins than Jack Henry & Associates – one of its largest direct competitors within the online banking and financial services software space. Over the next few years I expect Fiserv will operate at higher margins compared to JKHY as it continues to focus on operational efficiency.

[1] Assuming stagnant net margins of 16% and an unchanged PE of 31

[2] Q2 2017 Earnings Call Transcript - Factset

Figure 5: Fiserv & Peers Historical Operating Margin



Source: Factset

P2P Payments Leader

The most recent FinTech trend has been the significant growth of Peer-to-Peer (P2P) technology such as blockchain and crypto-currencies. In September 2017, Fiserv brought Zelle to the digital banking market with many of its existing banking and credit union partners along with outside firms. Zelle offers an integrated solution within a user's existing banking applications – unlike Venmo, Paypal, or Square Cash where the users must connect, verify, and integrate the banking connection on their own.

Zelle's biggest value add is its instant account integration with the largest banks

In all, Zelle has been backed, both financially and strategically, by 30 of the largest financial institutions. There has been little to no discussion from Fiserv's management what the Zelle product will do to FISV's existing P2P Payment framework, PopMoney, and the potential cannibalization effect Zelle might cause.

Figure 6: P2P Payment Product Matrix

Product	Zelle	Venmo	Paypal	Square Cash	Messenger	Circle	Bitcoin
Company	Fiserv	Paypal	Paypal	Sqaure	Facebook	Circle	N/A
Bank Integration	Integrated	User	User	User	User	User	N/A
Payment Settlement	Instant	T+2	T+2	T+2	Unkown	T+2	Instant
LatestQuarterly Volume	$16B	$6.8B	$99B	~0.9B	Uknown	Uknown	$59B

Source: Company websites, earnings releases, press releases, blockchain.info

Payment markets rely on network effect – where the product becomes more valuable with every user that joins the payment network - and therefore these applications are some of the hardest to start. Strategically, Fiserv made a successful move in targeting the payment sources, banks and credit unions, and then forcing the users to take a serious look at a product that already ships with any online / digital banking application. With the integration of these banks, Zelle is on track to be available to over 86 million users within the United States – capturing 37.4%[3] of the American banking user base.

Looking forward, as the P2P payment industry evolves and expands, P2P lending will also start to pick up. With the early on difficulties and failures from LendingClub and Prosper MarketPlace, P2P lending has cooled down due to regulatory constraints and P2P due diligence difficulties. It is easy to picture Fiserv and its Zelle / PopMoney products becoming important players within the P2P lending industry when the regulatory approval moves forward.

[3] Using US Census data of 247.8 million adults in the United States and FDIC data of 93% of adults having a bank account

The financial IT segment is becoming increasingly threatened by FinTech startups and blockchain technology

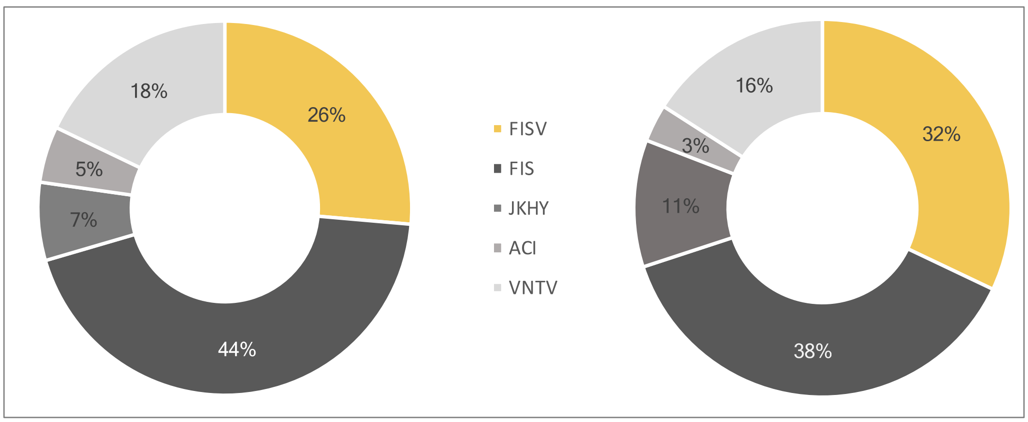
On the other hand, blockchain and cryptographically enabled P2P lending solutions such as SALT and R3ve have gained global traction with their current bypassing of the regulatory frameworks. These decentralized services utilize the P2P architecture of the blockchain and bypass the usual banking payment infrastructure. Fiserv invested $5 million in the Series A of Chain, an enterprise-level blockchain infrastructure company, positioning itself with a leading blockchain company focusing on both the banking architecture and P2P payments industry. This investment is expected to grant Fiserv early access to Chain's banking products that Fiserv could wrap into its existing product offerings.

Competition & Industry

The financial services IT industry is controlled by the main five players listed in Figure 7 & 8, with their market share being over 96% of the total market. New entrants by traditional financial software entrants has been road-blocked by the long-term contracts and relationships that many of the companies have formed with existing banks and credit unions. However, most recently, the introduction of untraditional FinTech and blockchain startups has started to disrupt parts of the industry.

Looking at Fiserv specifically, the company contributes 28% of the markets sales while controlling 32% of the market capitalization, implying that Fiserv's efforts within gross margin expansion, operational efficiency, and long-term, high cash flow contracts has convinced the market to value its sales higher than FISV's peers.

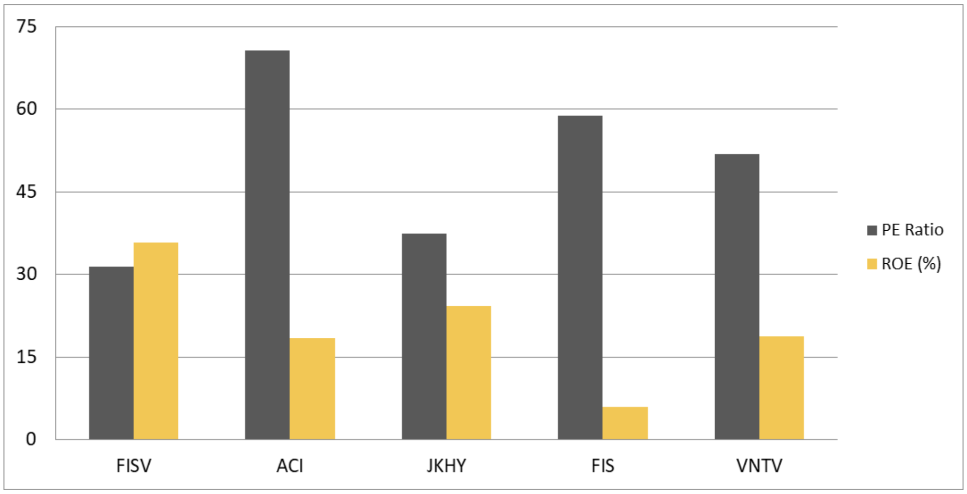
Figures 7 and 8: FISV & Peers Revenue Share (left) & FISV & Peers Market Share (right)



Source: Factset

Against its four main competitors, Fiserv has the lower P/E ratio and the highest ROE (Figure 9) – assuming a peer weighted average PE of 47 and a peer weighted average ROE of 20.00%. The low PE is most likely due to the market being concerned about Fiserv's high debt load in relation to peers; the debt amount will be looked at further within the risks section.

Figure 9: Fiserv & Peers PE Ratio (grey) and Fiserv & Peers Return on Equity (yellow)

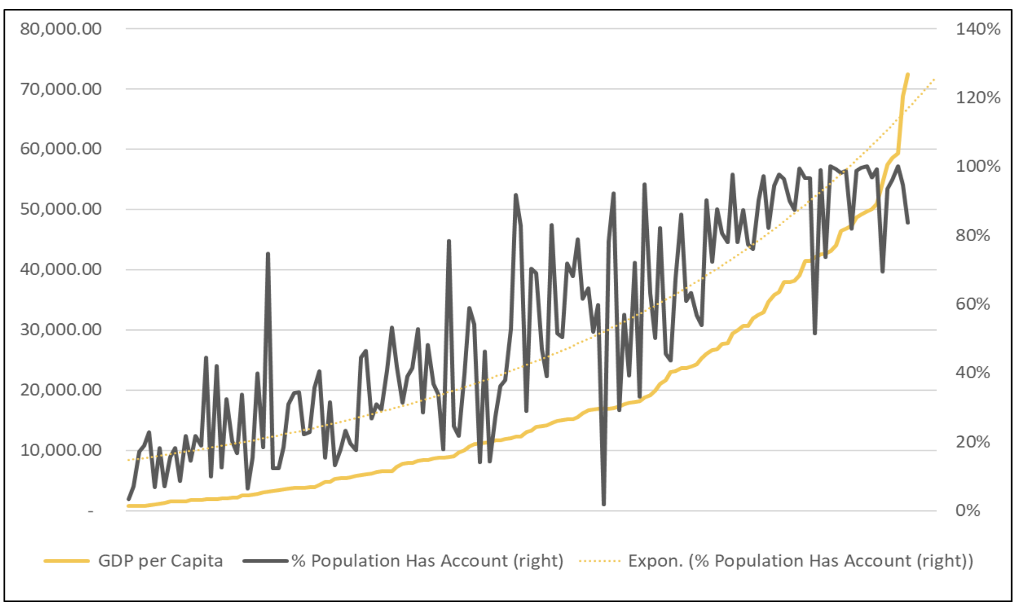


Source: Factset

International Banking Opportunity

The World Bank Group estimates that ~2 billion people globally remain without a bank account[4] with ~233 million individuals creating an account annually[5]. Both the World Bank and the IMF agree that financial technology and digital banking systems will drive global adoption of depository institutions. Specifically, the World Bank estimates that in "Sub-Saharan Africa, 12 percent of adults (64 million adults) have mobile money accounts (compared to just 2 percent worldwide); 45 percent of them have only a mobile money account."[6]

Figure 10: GDP per Capita by Country Compared to Percent of Population that has a Bank Account by Country with Percent of Population Trend line



Source: IMF Estimates, The World Bank, & Bloomberg

[4] http://www.worldbank.org/en/programs/globalfindex
[5] http://www.worldbank.org/en/programs/globalfindex
[6] http://www.worldbank.org/en/programs/globalfindex/overview

As seen in Figure 10, there is a 0.719 correlation coefficient between the percent of population that has a bank account within a country and the GDP per capital by country. As the entire continent of Africa, South Eastern Asia, and Far Western Asia come online with digital banking, Fiserv and the financial services IT industry have a massive opportunity at hand. The IMF estimates that the emerging economies - this is excluding China for this report's purposes - GDP per capita will grow at 5% on average for the next five years. Assuming "emerging" is defined as a nominal GDP per capita below $20,000 and excluding any sanctioned nations or countries that cannot have American financial services within them, there will be ~76 million new bank accounts created in the next twelve months and ~108 million bank accounts created in the following twelve months. In total, the next five years are expected to bring 811 million bank accounts online within the emerging economies alone.[7]

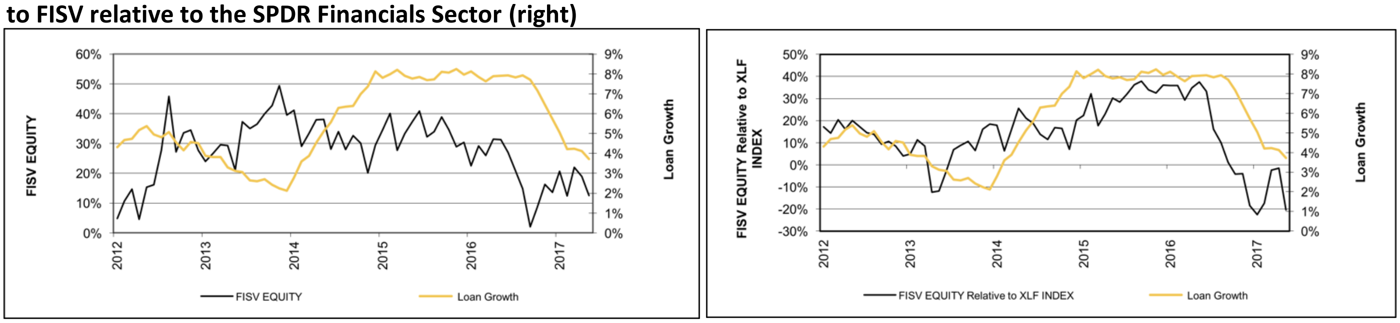
This growth in the digital banking industry is driven by the mobile phone ownership and stable communication infrastructure in the emerging economies. In Kenya alone, it is estimated that more than 88% of the population owns a cellular phone[8] - this figure is higher than many developed nations in Asia and South America.

Macroeconomic Trends

Looking at the broader picture, Fiserv – being a major vendor for financial services – is indirectly linked to banking growth. As interest rate spread increases and loan growth continues, bank IT and general spending will follow. See charts below for loan growth correlation with Fiserv and the financial sector (XLF ETF).

Loan growth change has a correlation coefficient of 0.562 when compared to the Fiserv relative XLF (financial sector) performance. Following the supplier to assembler "spiral" this would make sense as bank suppliers will outperform the banks themselves – especially when the supplier is software / IT based. However, when looking at only Fiserv compared to loan growth there is little to no performance correlation.

Figure 11 & 12: Commercial & Retail Total Loan Growth compared to FISV (left) & Loan Growth Compared to FISV relative to the SPDR Financials Sector (right)



Source: Bloomberg, IMCP

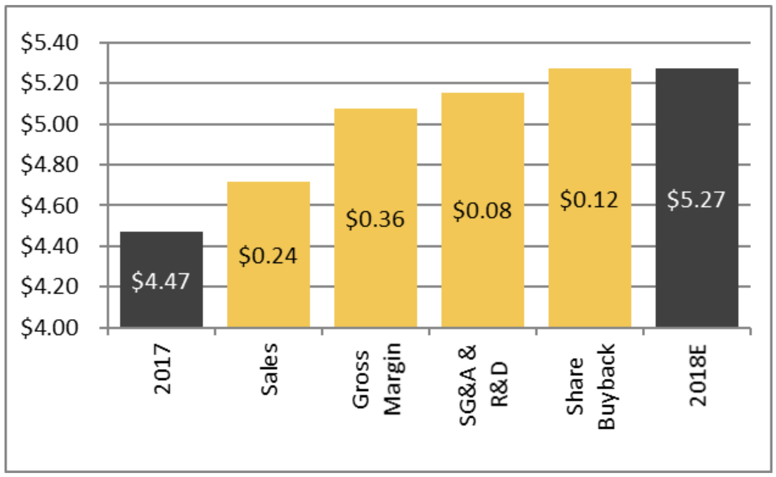
[7] Assuming GDP + 300bps growth rate on account creation for 2 years, +250bps growth for one year, and +200bps growth for the last two years.

[8] http://www.ca.go.ke/index.php/what-we-do/94-news/366-kenya-s-mobile-penetration-hits-88-per-cent

Financial Analysis

I expect FISV's EPS to grow to $5.27 in 2018 – up from $4.47 in 2017. Sales growth, driven by strength in the Payments Segment, will be a large driver with $0.24 in EPS accretion alone. Fiserv's gross margin expansion and operational efficiency initiatives are expected to continue into 2018 and will account for $0.36 and $0.08 respectively. Management expects to continue the current share buyback program in 2018 which will add an additional $0.12 in EPS. Share buybacks could increase in 2018 as the cash balance grows. The Zelle™ investment will also begin to wind down leading to further opportunities for buybacks – management has not mentioned anything regarding debt repayment even as Fiserv's debt-to-assets ratio continues to grow into record territory.

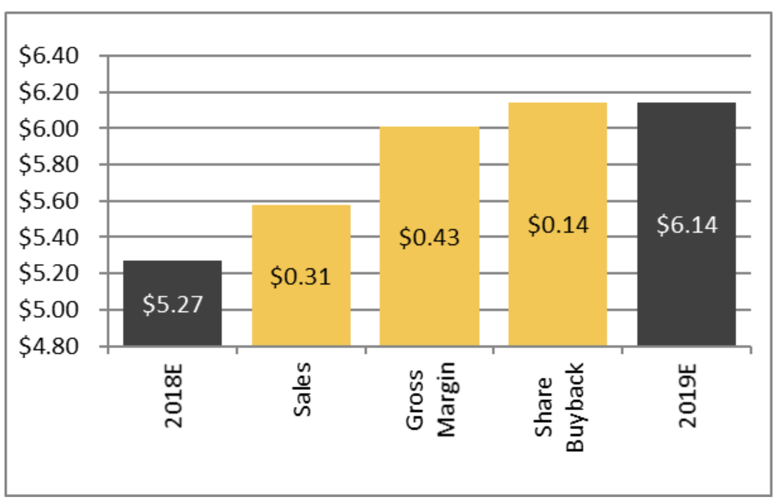
Figure 13: 2018 EPS Drivers Quantification



Source: Company reports, Management commentary, & IMCP

FISV's 2019 EPS will expand to $6.14 from the previous $5.27 in 2018. Sales growth will continue to be a main contributor as the international banking and payments initiative begins to take hold in many of the emerging markets. Further gross margin expansion will lead the EPS uptick as SG&A efficiencies plateau. Share repurchasing will also account for $0.14 as FISV closes out its buyback program.

Figure 14: 2019 EPS Drivers Quantification



Source: Company reports, Management commentary, & IMCP

Estimate & Consensus Comparison

Looking at the four main financial benchmarks below, my estimates are mostly lower across the board – except for an above average gross margin figure as FISV's automation and efficiency initiatives expand further. The 2018 numbers are relatively lower than 2019 since I believe there will be a hesitancy throughout the banking industry as interest rates don't rise as fast as the market believes. Additionally, banks won't carry the interest spreads down their P&L and into increased spending. Moving into 2019, I believe the internationalization of P2P payments and online banking will begin to expand more rapidly and FISV will be positioned well to take advantage of this new opportunity.

Figure 15: FISV Estimates vs. Market Consensus

	Estimate		Consensus	
	2018E	2019E	2018E	2019E
Revenue	$5,976	$6,286	$6,024	$6,295
Gross Margin	$2,928	$3,206	$2,876	$2,911
Net Income	$1,014	$1,119	$1,186	$1,256
EPS	$5.27	$6.14	$5.74	$6.39

Source: FactSet, Estimates

My revenue estimates are lower as management commented that M&A targets will remain small and non-material to top-line growth as FISV continues to target back-office technology for their M&A strategy and not companies that will significantly change FISV's financial standing in the short-term.

My EPS estimates may rise if management continues to expand their share buyback program if no other cash intensive investments or acquisition targets arise. One management comment that is interesting is that shares repurchases are "generally held for issuance in connection with our equity plans" and not directly used for fundraising down the road. This does align with the fact that FISV's share count has steadily declined from 394M in 2014 to 223.9 today.

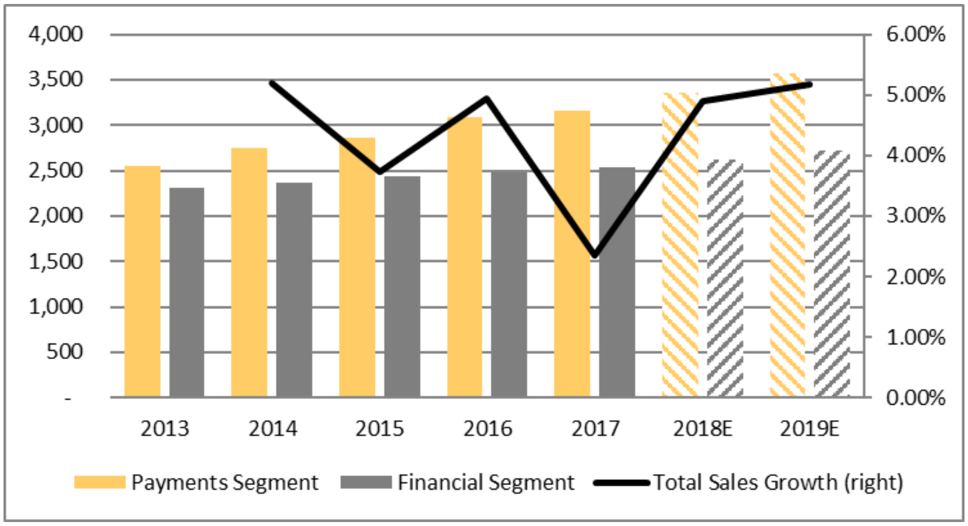
Revenues

FISV's overall revenue growth has been steady over the last four years with an average annual growth rate of 4.1%. The Payments Segment has been the growth engine with an average growth rate of 5.5% as the P2P payments, credit payments, and payments infrastructure industries quickly expand both domestically and abroad.

The strength within the Payments Segment has made up for the sluggish (2.4% annually) growth within the Financial Segment due to the low interest rate environment and poor loan growth within the banking industry leading to a stagnation in investment and spending. The recent uptick in bank consolidation has also proven itself as an ongoing risk for FISV as their customer base shrinks in unit size and larger financial institutions take much of the account processes and technology stack in-house.

Looking forward, I expect 2018 to see a ~100bps jump in the slower Financial Segment as interest rates normalize globally and banks begin to have more funds to spend within their interest spreads. Additionally, as digital banking and security move further into the spotlight, smaller banks and regional credit unions will be forced by their customer base and regulators to increase the spending on technology. I also believe 2019 will be the year that many of the developing nations within EMEA and SEA come to market within digital banking.

Figure 16: Revenue Breakdown & Sales Growth 2013-2019E



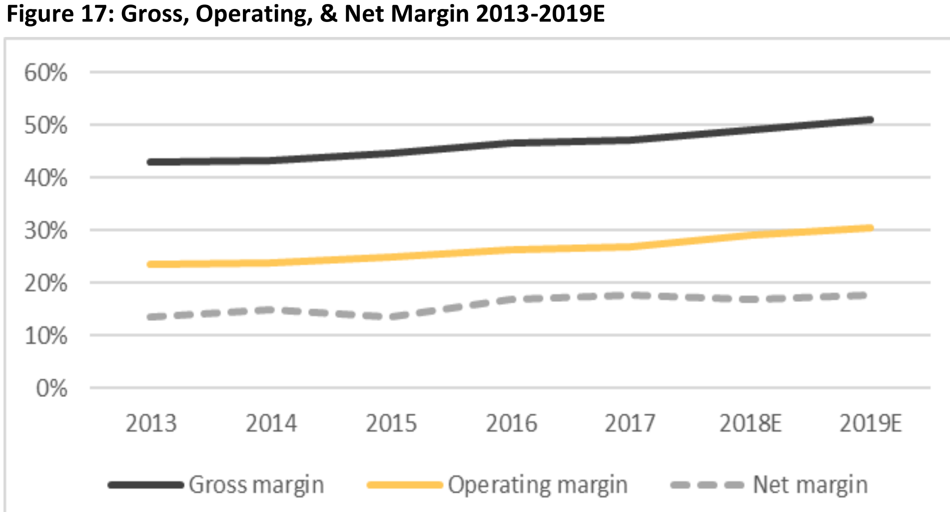
Source: Company reports, IMCP, & estimates

The payments segment will continue to be the growth engine for FISV as global P2P payments rapidly expand with 6.0% & 6.5% top-line growth in 2018 and 2019 respectively. FISV understands the FinTech disruptions within the P2P arena pose a large risk to its other financial business unit as robo-banking, online wealth management, and digital currencies begin to shift the banking and financial services world. The firm's payment segment acts almost as a direct hedge to this risk as FISV has invested largely in the architectural layer of the P2P payments industry and not directly in the consumer facing application layer which can easily change with the low stickiness of applications. In other words, as the payments, shadow banking, and non-traditional banking sector grows and takes market share away from the traditional banks, FISV is well positioned to guard itself against this potential migration.

Operating Income and Margins

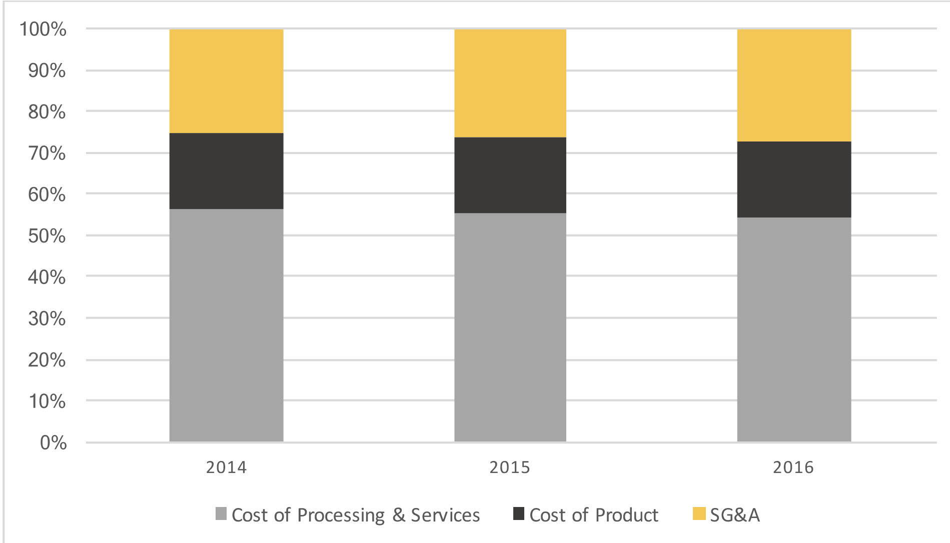
Direct costs, which account for ~75% of FISV's expenses include cost of product / software, cost of processing, and cost of services. The gross margin gains in both 2016 and 2017 came from an "increase in higher-margin software license revenue" as FISV builds on its already long-standing customer base and brings longer-term contracts to market.

Figure 17: Gross, Operating, & Net Margin 2013-2019E



Source: Company Filings, Estimates

Figure 18: Historical Breakdown of Costs



Source: Company Filings

Looking at Figure 18, FISV's gross margin expansion has been successfully implemented as the technology stack moves into the cloud, direct workforce optimization and consolidation occurs, and more business shifts into the payments segment. I hypothesize that the Financial Segment revenues are of lower quality when compared to the Payments Segment as the large financial institutions have far more negotiation leverage with FISV when compared to smaller P2P payment apps, credit processors, and other Payments customers.

Return on Equity

FISV's ROE is the highest among its industry competitors as seen in Figure 9. Driven by FISV's exceptional net margin and return on assets, its ROE over the last 4 years has been steadily increasing and outpacing most of the industry's broader growth. Looking forward, Gross and operating margin expansion will drive ROE higher but I also expect FISV's higher than normal debt load to artificially prop up this ROE.

Figure 19: FISV Return on Equity Breakdown

3-Stage DuPont Analysis							
	2013	2014	2015	2016	2017	2018E	2019E
3-stage							
Net income / sales		14.9%	13.6%	16.9%	17.6%	17.0%	17.8%
Sales / avg assets		0.56	0.56	0.59	0.60	0.60	0.61
ROA		8.4%	7.6%	10.0%	10.5%	10.3%	10.9%
Avg assets / avg equity		2.57	2.74	3.14	3.67	3.88	3.93
ROE		21.5%	20.7%	31.2%	38.5%	39.8%	42.8%

Free Cash Flow

Figure 20: FCF FY2013 – FY2019E

Free Cash Flow	2013	2014	2015	2016	2017	2018E	2019E
NOPAT	$746	$765	$882	$894	$1,000	$1,137	$1,258
Growth		*2.6%*	*15.3%*	*1.3%*	*11.9%*	*13.7%*	*10.6%*
NWC*	741	921	955	933	1,013	1,063	1,118
Net fixed assets	7,085	7,941	7,851	7,834	8,015	8,187	8,382
Total net operating capital*	$7,826	$8,862	$8,806	$8,767	$9,028	$9,249	$9,499
Growth		*13.2%*	*-0.6%*	*-0.4%*	*3.0%*	*2.5%*	*2.7%*
- Change in NWC*		180	34	(22)	80	50	55
- Change in NFA		856	(90)	(17)	181	172	195
FCFF*		($271)	$938	$933	739	$915	$1,008
Growth			*-446.2%*	*-0.6%*	*-20.8%*	*23.9%*	*10.1%*
- After-tax interest expense	103	99	107	98	106	123	139
FCFE**		($370)	$831	$835	$633	$792	$869
Growth			*-324.9%*	*0.5%*	*-24.2%*	*25.2%*	*9.7%*

* NWC excludes cash
** No adjustment is made for debt

Outside of the sharp 2014 decrease[9], FISV's free cash flow has been relatively stable over the last four years. The modest jump in NWC and NFA in 2017 were due to FISV's M&A strategy continuing to be one of its largest uses of cash – management considers M&A a cornerstone to FISV's technology and product portfolio as the payments and financial infrastructure industries move far faster than organic internal R&D.

I expect FCFE to remain around the $650M - $850M range over the next two years as FISV builds out it P2P payments infrastructure via M&A and continues to buy back shares as profitability increases. I could see a pick-up in investment as international markets come online and FISV capture the global payment network opportunity as touched on in the drivers section.

[9] Due to a large acquisition leading to an increase in intangible assets on FISV's balance sheet

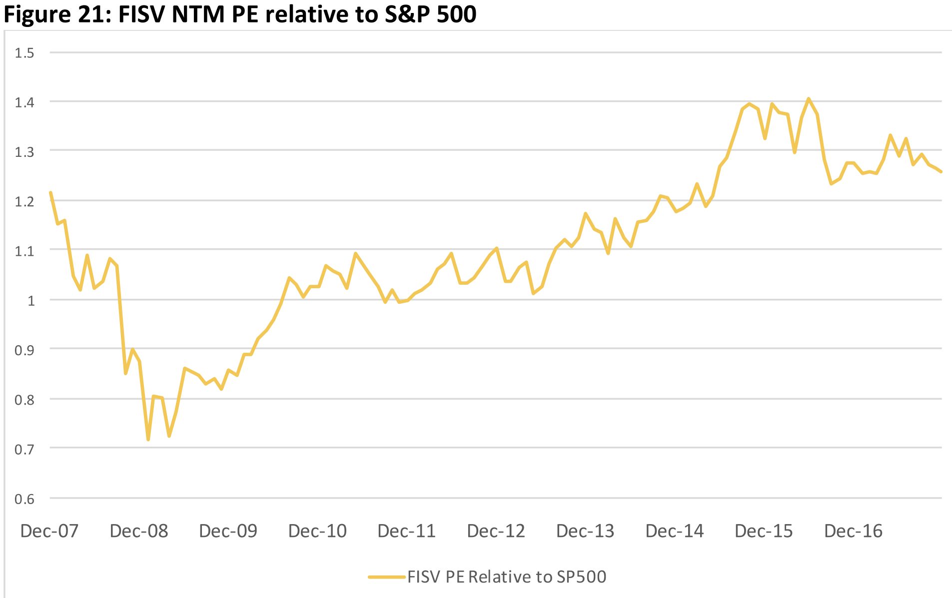
Valuation

FISV was valued using a one year EPS outlook, a market peer weighted PE ratio multiple, and a 3-stage DCF model. Looking at the current PE and 2018E EPS, I find a one-year discounted price of $176.88, a ~36% premium over today's price. Moving onto a peer weighted PE multiple, FISV is valued at ~$198 due to the high PE's of ACIW and FIS. The PE multiple price results in a ~50% premium on today's price. The relative valuation section finds a fully valued FISV at today's price of ~142. Finally, the absolute valuation presented within the 3-stage DCF model values FISV at $157, a ~19% premium at current prices. Averaging these valuation methods leads to a target price of $168.47.

Trading History

FISV is trading at a ~10.7% premium to its 10-year S&P 500 relative PE valuation average. While valuations are still ripe, earnings have caught up recently both in respect to FISV and the broader market. FISV's absolute PE reached 33.28 in early 2016 as broader market valuations were higher across the board.

Figure 21: FISV NTM PE relative to S&P 500



Source: Factset

If we assume FISV maintains its current NTM PE of 31.2 through the end of 2018 it should trade up to $164 assuming the above EPS estimates in Figure 15.

- Price 2018E = NTM P/E x EPS 2018E = 31.2 x $6.14 = $191.57

Discounting this one year price horizon back to today would yield a current price expectation of ~$152 assuming a cost of equity of 8.3% as discussed in the DCF section below.

- Price(Today) = Price(2018E) / (1+WACC)^1 = 191.57 / (1+0.083) = $176.88

Relative Valuation

The peer group of FISV is relatively small but provides an interesting landscape for relative valuation purposes. FISV currently and historically has had the highest ROE of its peers but the lowest PE ratio – I believe this is due to the high debt load that FISV has taken on to increase its equity return ratios. Turning to Price-to-Sales, FISV has one of the higher PS ratios due to its profitability strength and outlook on margin expansion which the market values highly.

Figure 22: Comparable Companies as of 12/15/2017

Comp Sheet (12/15/2017)

		Current	Market	Price Change						Earnings Growth								LT Debt/	S&P	LTM Dividend	
Ticker	Name	Price	Value	1 day	1 Mo	3 Mo	6 Mo	52 Wk	YTD	LTG	NTM	2015	2016	2017	2018	Pst 5yr	Beta	Equity	Rating	Yield	Payout
FISV	FISERV INC	$131.83	$27,473	0.1	3.0	6.0	7.3	25.8	24.0	10.9	31.9%	-16.4%	-11.0%	15.6%	4.1%	20.4%	0.80	2.14	B+	0.00%	0.0%
FIS	FIDELITY NATIONAL INFO SVCS	$95.71	$31,955	(0.1)	3.2	2.5	13.1	26.7	26.5	12.2	194.2%	36.1%	-9.6%	-9.5%	-1.4%	2.5%	0.85	0.88	B+	1.20%	70.2%
JKHY	HENRY (JACK) & ASSOCIATES	$116.89	$9,028	(0.3)	2.8	14.0	13.2	30.6	31.7	11.9	5.3%	5.8%	4.2%	11.6%	8.6%		0.72	-	A+	1.08%	38.2%
ACIW	ACI WORLDWIDE INC	$22.38	$2,654	(0.0)	(4.1)	(1.0)	(2.0)	12.8	23.3	12.3	66.0%	-60.1%	-99.1%		2.3%	19.1%	1.46	0.87	B+	0.00%	
VNTV	VANTIV INC	$74.62	$12,129	(0.2)	7.7	3.0	18.2	30.1	25.2	14.5	153.8%	-12.6%	-17.0%	3.5%	-14.9%	78.4%	0.58	8.24		0.00%	
Average			#########	-$0.13	$2.52	$4.51	$9.97	$25.21	$26.14	$12.34	90%	-9.4%	-26.5%	5.3%	-0.3%	30.1%	0.88	2.43		$0.00	$0.36
Median			$12,129	-$0.15	$2.99	$2.97	$13.12	$26.67	$25.16	$12.18	66.04%	-12.59%	-11.05%	7.53%	2.33%	19.79%	0.80	0.88		$0.00	$0.38
SPX	S&P 500 INDEX	$2,660		0.3	3.0	6.9	9.4	17.7	18.8			-0.1%	0.5%	10.3%	11.7%						

		2017		P/E							2017	2017			EV/	P/CF	P/CF	ales Growth			Book
Ticker	Website	ROE	P/B	2014	2015	2016	TTM	NTM	2017	2018	NPM	P/S	OM	ROIC	EBIT	Current	5-yr	NTM	STM	Pst 5yr	Equity
FISV	http://www.fiserv.com	27.9%	11.71	16.8	25.9	33.8	31.4	23.8	36.3	34.9	3.5%	1.47	26.2%	13.3%	19.3	19.6	15.3	6.0%	5.0%	4.9%	$11.25
FIS	http://www.fisglobal.com	15.5%	3.19	16.5	11.8	16.3	59.4	20.2	22.8	23.1	2.2%	0.46	17.1%	2.8%	22.1	16.5	12.9	-0.8%	3.9%	10.0%	$29.98
JKHY	http://www.jackhenry.com	25.7%	8.70	19.9	23.6	25.7	36.9	35.0	30.4	28.0	0.8%	0.27	25.1%	21.7%	22.1	21.4		5.8%		6.9%	$13.44
ACIW	http://www.aciworldwide.com	-0.2%	3.43	-6.9	-18.3		69.9	42.1	52.0	50.9	0.0%	0.21	13.8%	8.9%	38.0	16.2		-0.2%		16.7%	$6.52
VNTV	http://www.vantiv.com	18.8%	21.73	7.8	12.4	18.8	51.5	20.3	22.8	26.7	2.0%	0.47	15.2%	5.1%	22.5	14.4	12.6	-42.2%	8.8%	17.1%	$3.43
Average		17.5%	9.75	10.81	11.09	23.67	49.81	28.27	32.85	32.71	1.7%	0.58	19.5%	10.8%	#######	17.63	13.58	-6.3%	5.9%	11.1%	
Median		18.8%	8.70	16.50	12.41	22.27	51.46	23.77	30.36	27.96	2.0%	0.46	17.1%	8.9%	22.13	16.54	12.92	-0.2%	5.0%	10.0%	
SPX	S&P 500 INDEX			17.31	17.21	18.76			20.21	18.10											

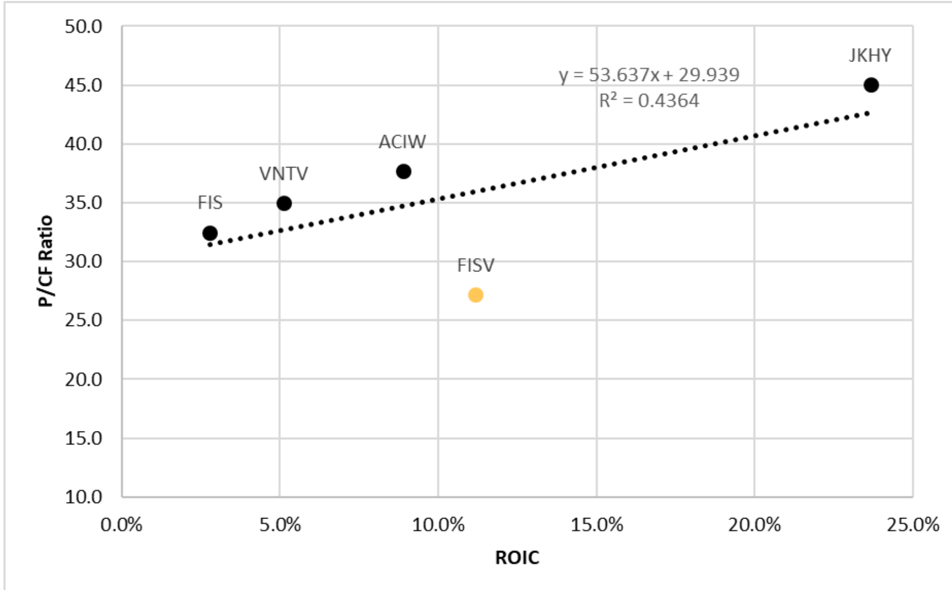
Source: IMCP, FactSet

Since FISV and its peers are software companies, they have fairly volatile earnings and extremely high cash flows, I elected to compare P/CF as a function of the firms ROIC ratio. As seen in Figure 23, the peer group follows a highly correlated regression when comparing ROIC to P/CF. If FISV is taken out of the regression function, the R-squared value becomes 0.98 – an extremely strong correlation. As seen below, utilizing the peer average for the ROIC function, FISV is fully valued at today's price on a discounted basis.

- Estimated P/CF 2018 = Estimated 2018E ROIC (12.4%) x 53.64 + 29.94 = 36.59
- Target Price = Estimated P/CF (36.59) x 2018E CF/Share (4.12) = $150.76

Discounting back to the present at a 8.3% cost of equity leads to a current target price of $139.2 which would imply that FISV is fully valued using the cash flow valuation metric.

Figure 23: ROIC vs. P/CF Ratio



Source: IMCP

For a final relative comparison, I created a fundamental vs. firm valuation scatterplot. As seen in Figure 24, the fundamental metrics are long term growth of earnings, return on equity, and net profit margins of the different firms. Turning to valuation, price to sales and price to cash flow were used since the financial technology sector is highly driven by earnings and profitability growth.

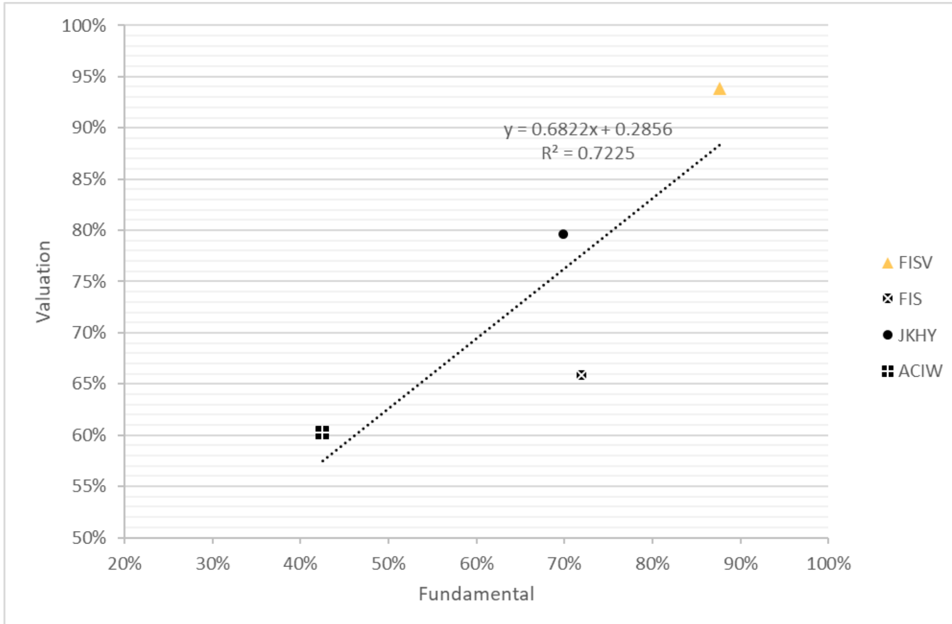
Figure 24: Composite valuation, % of range

							Fundamental			Valuation	
						Weight	50.0%	25.0%	25.0%	25.0%	75.0%
		Rank			Weighted		Earnings				
Ticker	Name	Diff	Diff	Value	Fund	Value	LTG	ROE	NPM	P/S	P/CF
FISV	FISERV INC	1	-94%	0%	88%	94%	75%	100%	100%	100%	92%
FIS	FIDELITY NATIONAL INFO SVCS	3	-66%	0%	72%	66%	84%	55%	63%	31%	77%
JKHY	HENRY (JACK) & ASSOCIATES	2	-80%	0%	70%	80%	82%	92%	23%	19%	100%
ACIW	ACI WORLDWIDE INC	4	-60%	0%	42%	60%	85%	-1%	0%	14%	76%

Source: IMCP

Please note while the correlation strength is not as strong as I would like to see it, none of the other fundamental vs. valuation metrics reached a R-squared value of even 0.25 or above except for the above mix of LTG of earnings, ROE, and NPM vs. P/S and P/CF.

Figure 25: Composite relative valuation



Source: IMCP

<u>Discounted Cash Flow Analysis</u>

A three stage discounted cash flow model was also used to value FISV.

Below you will find the breakdown of the Capital Asset Pricing Model (CAPM) assumptions that led to the discounting factor within the DCF:

- The risk-free rate, as represented by the ten year Treasury bond yield, is 2.38%.
- A one year beta of 0.90 was used as FISV has historically less risk and volatility than the broader market.
- A long-term market rate of return of 9% was assumed.

Given the above assumptions, the cost of equity is 8.34% (2.38 + 0.90 (9.0 – 2.38)).

Stage One – The first step within the model assumes 2018E and 2019E cash flow to equity (FCFE). Assuming outstanding shares of 192.3M and 185.4M in 2018E and 2019E leads to a cash flow per share of $4.12 and $4.69, respectively. Using a cost of equity of 8.34%, the cash flow per share discounts to $3.80 and $3.99. Therefore, the first stage of the DCF model contributes $7.80 to the present value.

Stage Two – The second step within the DCF looks at the years between 2020 and 2024. During these years, FCFE is derived from revenue growth, NOPAT margin and share growth. I assume sales growth of 3.5% falling to 3.0% by 2024. I expect NOPAT margin to continue its expansion from 16.5% to 17.5% by 2024 led by gross margin expansion and operational efficiencies as touched on in the drivers section. Outstanding shares are expected to fall -2.0% and -1.0% in 2020 and 2021, respectively.

Figure 32: FCFE and discounted FCFE, 2018-2024

	First Stage		Second Stage				
	2018	2019	2020	2021	2022	2023	2024
FCFE	$4.12	$4.69	$3.29	$3.62	$3.75	$4.04	$4.48
Discounted FCFE	$3.80	$3.99	$2.58	$2.63	$2.51	$2.50	$2.56

Added together, the 2020 – 2024 discounted cash flows total $12.78.

Stage Three – 2020 – 2024 net income is found much like the figures within stage two in that I assume the NOPAT figures and deduct the interest expense to reach the bottom line income. Fully diluted EPS is expected to increase from $5.12 in 2020 to $6.29 in 2024.

Figure 33: EPS estimates for 2018 – 2024

	2018	2019	2020	2021	2022	2023	2024
EPS	$5.27	$6.03	$5.12	$5.54	$5.73	$5.91	$6.29
Growth		*14.4%*	*-15.2%*	*8.2%*	*3.5%*	*3.2%*	*6.4%*

The third stage of the DCF model requires a terminal year PE ratio to find the terminal value. FISV's PE today sits around 33 and has expanded recently to reach historical highs, ignoring the illogical high values seen within the dot com era of 2001. As FISV's growth continues and profitability rises, I expect the PE to move upwards towards 38 in the terminal year. As seen in the drivers section, the market capitalization averaged PE for FISV's peer group currently stands at 47 so I am still assuming a steep discount when comparing it to the competitor group. FISV's PE could be held down slightly if it does not reduce its higher than market debt levels.

Assuming a terminal EPS of $6.29 and the above PE of 38, I find a terminal value of $239. Discounting this figure back to today I get a discounted terminal value of $136.44, assuming a discount factor of 0.57.

Total Present Value – Assuming the three stages above, I come to a present, discounted value of $157.01 per share.

Scenario Analysis

The Financial Technology and IT services sector is a highly volatile market in terms of technological advances, new entrants, and security concerns. See below for a brief overview of the different bull and bear cases that could be made for FISV's two year outlook.

Sales Growth – FISV has had historical high – that is, higher than GDP growth – sales growth. One bull-case that could be made for FISV is the acceleration of this sale growth as the digitization of banking and payments takes hold globally. Adjusting top-line growth to 5.9% 2018E would lead to a new EPS of $5.33 in 2018E. Assuming no expansion in FISV's PE, this would result in a discounted price of $153.55.

The bear case could be made for FISV if revenue growth slows due to the accelerating influx of new competitors within the payments and FinTech space. As blockchain technology takes hold and draws banks, companies, and consumers away from the incumbent technologies and onto open-source, decentralized, and more secure platforms, FISV could lose significant market share. This downturn could draw EPS down to $5.10 which would imply a discounted price of $147.

Margin Expansion – FISV has one of the highest gross and operating margins when comparing it to the peer group. Much of this success is drawn from the longer term, low servicing contracts that FISV enters with its banking and payments customers. A bull case could be made for gross margin to expand to 52% by 2019E as increased automation and pricing power is created by FISV's dominance in the market.

The market could argue a bear case as the entry of substitutes and competition increases, forcing FISV to lower contract prices and increase the after-sale servicing to beat out competition.

Share Repurchase Program – FISV has continually pledged to return excess capital to shareholders and I believe the firm will instate a new share repurchase program once the current one ends in the next year. The bull case could be made by the market if the sales and margin growth above continues and FISV finds itself with excess cash to distribute. Share repurchase programs could lead to an EPS range of $5.50 – $5.75 depending on the capital outlay management is comfortable with. This would result in a current price of $158 - $165, again assuming no change in PE.

Business Risks

<u>Banking consolidation:</u>

Due to the FED's capital requirements and stricter regulations, banking and financial institutions have continued their consolidation trend over the last decade. The risk posed by this consolidation is two-fold. First, FISV's customer list begins to shorten and it becomes reliant on fewer customers. Second, as banks consolidate and become larger through mergers, many of them will decide to bring the technology development in-house due to economies of scale and security.

<u>Cyber-security & product failures:</u>

As the cyber security arena becomes increasingly attacked, FISV's products must prove to be safe for both the consumer and banks to use. If even one of FISV's products fail due to poor security practices, many of company's customers will be forced by the consumer or government to leave and use other solutions.

<u>Increased debt load:</u>

FISV's debt-to-assets ratio is at an all-time high of 0.5 which could lead investors to discount the stock due to the increased debt risk. With that said, FISV's Debt-to-EBITDA of 2.46 is comfortably below its 10-year average of 2.95.

<u>Goodwill & intangible asset write-down:</u>

Due to FISV's increased M&A activity, its balance sheet has become heavily loaded with goodwill and intangible assets. Currently, these two assets together account for 74% of the total asset base. Historically, FISV's Intangible assets-to-total assets ratio has averaged around 71.3%.

Appendix:

Appendix 1: Porter's 5 Forces

Threat of New Entrants – Moderate

FISV has created financial business moats with their longer-term contracts with customers – especially in the Financial Segment covering banks, credit unions, and insurance companies, all of which have inherent stickiness of suppliers to begin with. With that said, their Payments Segment is relatively easy to disrupt with newer, faster, and cheaper technology and applications. It should also be noted that FISV and its peers often acquire any smaller technology firms aiming to compete before they reach a competitive size.

Threat of Substitutes - Moderate

Outside of open-source blockchain protocols or projects, FISV and its competitors have a relatively strong contractual grip within the financial services technology sector.

Supplier Power - Low

Much like the upstream competition to financial institutions and payment application companies, the downstream supplier base is highly competitive and "drop and play" software is growing within the cloud infrastructure industry.

Buyer Power – Very High

FISV and its peers all enter bidding processes when a new large financial or payment customer comes to the market for a technology investment. FISV management has mentioned in numerous earnings calls that the institutions they sell to have strict pay ranges and timelines for FISV and its peers to bid on.

Intensity of Competition – Very High

As touched on in the Buyer Power section, the financial technology and payments technology sector is quite competitive. FISV mostly operates with comparable, US-only companies. Internationally, there are even more firms competing with the emerging markets and their new digital banking industry that is coming online.

Appendix 2: SWOT Analysis

Strengths	Weaknesses
Long-term revenue generating contracts with some of the largest financial institutions Gross margin expansion strength	Lack of diversification outside of financial service focus High debt load posing a large risk according to capital markets Little to no international exposure
Opportunities	**Threats**
Global digital banking coming online Blockchain and self-banking technology P2P Payments indsutry outpacing banking growth	Blockchain & digital assets could outspace the innovation in current FinTech & P2P payments and make much of the technology irrelevant

Appendix 3: Income Statement

Income Statement						Base Case		Bull Case		Bear Case	
	2013	2014	2015	2016	2017	2018E	2019E	2018E	2019E	2018E	2019E
Sales	$4,814	$5,066	$5,254	$5,505	$5,698	$5,976	$6,286	$6,033	$6,407	$5,901	$6,110
Costs of Product	2,746	2,881	2,909	2,949	3,011	3,048	3,080	3,077	3,203	3,245	3,422
Gross Margin	2,068	2,185	2,345	2,556	2,687	2,928	3,206	2,956	3,203	2,655	2,689
SG&A, R&D, and other	942	975	1,034	1,101	1,163	1,195	1,289	1,237	1,345	1,180	1,192
EBIT	1,126	1,210	1,311	1,455	1,524	1,733	1,917	1,720	1,858	1,475	1,497
Interest	155	156	159	159	161	187	212	187	212	187	212
EBT	971	1,047	1,152	1,275	1,363	1,546	1,705	1,532	1,646	1,288	1,285
Taxes	328	385	377	492	469	532	587	527	566	443	442
Income	650	754	712	930	1,050	1,014	1,119	1,005	1,080	845	843
Other	-	-	-	-	-	-	-	-	-	-	-
Net Income	650	754	712	930	1,001	1,014	1,119	1,005	1,080	845	843
Basic Shares	266.0	252.0	238.0	233.9	200.0	192.3	185.4	192.3	185.4	192.3	185.4
EPS	$2.44	$2.99	$2.99	$3.98	$5.01	$5.27	$6.03	$5.23	$5.82	$4.39	$4.55
DPS	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

Appendix 4: Balance Sheets

Balance Sheet						Base Case		Bull Case		Bear Case	
	2013	2014	2015	2016	2017	2018E	2019E	2018E	2019E	2018E	2019E
Cash	358	400	294	275	300	342	561	245	332	291	382
Operating assets ex cash	1,054	1,172	1,192	1,231	1,428	1,498	1,575	1,512	1,606	1,479	1,531
Operating assets	1,412	1,572	1,486	1,506	1,728	1,840	2,137	1,757	1,937	1,769	1,913
Operating liabilities	313	251	237	298	415	435	458	439	467	430	445
NOWC	1,099	1,321	1,249	1,208	1,313	1,405	1,679	1,318	1,470	1,340	1,468
NOWC ex cash (NWC)	741	921	955	933	1,013	1,063	1,118	1,073	1,139	1,049	1,086
NFA	7,085	7,941	7,851	7,834	8,015	8,187	8,382	8,265	8,542	8,083	8,147
Invested capital	*$8,184*	*$9,262*	*$9,100*	*$9,042*	*$9,328*	*$9,592*	*$10,060*	*$9,583*	*$10,012*	*$9,423*	*$9,616*
Marketable securities	-	-	-	-	-	-	-	-	-	-	-
Total assets	***$8,497***	***$9,513***	***$9,337***	***$9,340***	***$9,743***	***$10,027***	***$10,518***	***$10,022***	***$10,479***	***$9,852***	***$10,061***
Short-term and long-term debt	$3,230	$3,848	$3,803	$4,293	$4,562	$4,812	$5,162	$4,812	$5,162	$4,812	$5,162
Other liabilities	1,537	1,829	2,002	2,089	2,225	2,225	2,225	2,225	2,225	2,225	2,225
Debt/equity-like securities	-	-	-	-	-	-	-	-	-	-	-
Equity	3,417	3,585	3,295	2,660	2,541	2,555	2,673	2,546	2,625	2,386	2,229
Total supplied capital	*$8,184*	*$9,262*	*$9,100*	*$9,042*	*$9,328*	*$9,592*	*$10,060*	*$9,583*	*$10,012*	*$9,423*	*$9,616*
Total liabilities and equity	***$8,497***	***$9,513***	***$9,337***	***$9,340***	***$9,743***	***$10,027***	***$10,518***	***$10,022***	***$10,479***	***$9,852***	***$10,061***

Appendix 5: Sales Forecast

Sales						Base Case		Bull Case		Bear Case	
Items	**2013**	**2014**	**2015**	**2016**	**2017**	**2018E**	**2019E**	**2018E**	**2019E**	**2018E**	**2019E**
Total Sales	**$4,861**	**$5,114**	**$5,305**	**$5,567**	**$5,698**	**5,976**	**$6,286**	**6,033**	**$6,407**	**$5,901**	**$6,110**
Total Sales Growth		*5.2%*	*3.7%*	*4.9%*	*2.4%*	*4.9%*	*5.2%*	*5.9%*	*6.2%*	*3.6%*	*3.6%*
Payments Segment	2,552	2,747	2,862	3,090	3,163	3,352	3,570	3,384	3,638	3,289	3,421
Growth		*7.6%*	*4.2%*	*8.0%*	*2.4%*	*6.0%*	*6.5%*	*7.0%*	*7.5%*	*4.0%*	*4.0%*
% of sales	*52.5%*	*53.7%*	*53.9%*	*55.5%*	*55.5%*	*56.1%*	*56.8%*	*56.1%*	*56.8%*	*55.7%*	*56.0%*
Financial Segment	2,309	2,367	2,443	2,477	2,535	2,624	2,716	2,649	2,769	2,611	2,690
Growth		*2.5%*	*3.2%*	*1.4%*	*2.4%*	*3.5%*	*3.5%*	*4.5%*	*4.5%*	*3.0%*	*3.0%*
% of sales	*47.5%*	*46.3%*	*46.1%*	*44.5%*	*44.5%*	*2.0%*	*43.2%*	*43.9%*	*43.2%*	*44.3%*	*44.0%*
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
United States	4,861	5,114	5,305	5,567	5,698	5,976	6,286	6,033	6,407	5,901	6,110
Growth		*5.2%*	*3.7%*	*4.9%*	*2.4%*	*4.9%*	*5.2%*	*5.9%*	*6.2%*	*3.6%*	*3.6%*
% of sales	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*

Appendix 6: Ratios

Ratios						Base Case		Bull Case		Bear Case	
	2013	2014	2015	2016	2017	2018E	2019E	2018E	2019E	2018E	2019E
Profitability											
Gross margin	43.0%	43.1%	44.6%	46.4%	47.2%	49.0%	51.0%	50.0%	52.0%	45.0%	44.0%
Operating (EBIT) margin	23.4%	23.9%	25.0%	26.4%	26.7%	29.0%	30.5%	30.0%	32.0%	25.0%	24.5%
Net profit margin	13.5%	14.9%	13.6%	16.9%	17.6%	17.0%	17.8%	17.7%	19.0%	14.1%	13.7%
Activity											
NFA (gross) turnover		0.67	0.67	0.70	0.72	0.74	0.76	0.74	0.76	0.73	0.75
Total asset turnover		0.56	0.56	0.59	0.60	0.60	0.61	0.61	0.64	0.60	0.59
Liquidity											
Op asset / op liab	4.51	6.26	6.27	5.05	4.16	4.23	4.67	3.69	3.31	4.55	5.37
NOWC Percent of sales		23.9%	24.5%	22.3%	22.1%	22.7%	24.5%	20.7%	17.6%	24.0%	28.4%
Solvency											
Debt to assets	38.0%	40.4%	40.7%	46.0%	46.8%	48.0%	49.1%	48.7%	51.2%	47.9%	49.0%
Debt to equity	94.5%	107.3%	115.4%	161.4%	179.5%	188.3%	193.1%	199.6%	231.3%	187.2%	190.8%
Other liab to assets	18.1%	19.2%	21.4%	22.4%	22.8%	22.2%	21.2%	22.5%	22.1%	22.2%	21.1%
Total debt to assets	56.1%	59.7%	62.2%	68.3%	69.7%	70.2%	70.2%	71.2%	73.2%	70.1%	70.1%
Total liabilities to assets	59.8%	62.3%	64.7%	71.5%	73.9%	74.5%	74.6%	75.6%	77.9%	74.4%	74.3%
Debt to EBIT	2.87	3.18	2.90	2.95	2.99	2.78	2.69	2.66	2.52	3.26	3.45
EBIT/interest	7.26	7.76	8.25	9.15	9.47	9.24	9.05	10.16	10.82	6.99	6.67
Debt to total net op capital	39.5%	41.5%	41.8%	47.5%	48.9%	50.2%	51.3%	50.9%	53.7%	50.1%	51.1%
ROIC											
NOPAT to sales	15.5%	15.1%	16.8%	16.2%	17.5%	19.0%	20.0%	19.7%	21.0%	16.4%	16.1%
Sales to NWC		6.10	5.60	5.83	5.86	5.76	5.77	5.79	5.79	5.72	5.72
Sales to NFA		0.67	0.67	0.70	0.72	0.74	0.76	1.46	0.76	1.46	0.75
Sales to IC ex cash		0.61	0.59	0.63	0.64	0.65	0.67	0.66	0.67	0.65	0.67
Total ROIC ex cash		9.2%	10.0%	10.2%	11.2%	12.4%	13.4%	12.9%	14.1%	10.7%	10.7%
NOPAT to sales	15.5%	15.1%	16.8%	16.2%	17.5%	19.0%	20.0%	19.7%	21.0%	16.4%	16.1%
Sales to NOWC		4.19	4.09	4.48	4.52	4.40	4.08	4.83	5.67	4.16	3.52
Sales to NFA		0.67	0.67	0.70	0.72	0.74	0.76	1.46	0.76	1.46	0.75
Sales to IC		0.58	0.57	0.61	0.62	0.63	0.64	0.64	0.67	0.62	0.62
Total ROIC		8.8%	9.6%	9.9%	10.9%	12.0%	12.8%	12.6%	14.1%	10.2%	10.0%
NOPAT to sales	15.5%	15.1%	16.8%	16.2%	17.5%	19.0%	20.0%	19.7%	21.0%	16.4%	16.1%
Sales to EOY NWC	6.50	5.50	5.50	5.90	5.62	5.62	5.62	5.62	5.62	5.62	5.62
Sales to EOY NFA	0.68	0.64	0.67	0.70	0.71	0.73	0.75	0.73	0.75	0.73	0.75
Sales to EOY IC ex cash	0.62	0.57	0.60	0.63	0.63	0.65	0.66	0.65	0.66	0.65	0.66
Total ROIC using EOY IC ex ca:	9.5%	8.6%	10.0%	10.2%	11.1%	12.3%	13.2%	12.7%	13.9%	10.6%	10.6%
NOPAT to sales	15.5%	15.1%	16.8%	16.2%	17.5%	19.0%	20.0%	19.7%	21.0%	16.4%	16.1%
Sales to EOY NOWC	4.38	3.83	4.21	4.56	4.34	4.25	3.74	5.10	5.95	3.87	3.14
Sales to EOY NFA	0.68	0.64	0.67	0.70	0.71	0.73	0.75	0.73	0.75	0.73	0.75
Sales to EOY IC	0.59	0.55	0.58	0.61	0.61	0.62	0.62	0.64	0.67	0.61	0.61
Total ROIC using EOY IC	9.1%	8.3%	9.7%	9.9%	10.7%	11.9%	12.5%	12.6%	14.0%	10.1%	9.7%
ROE											
5-stage											
EBIT / sales		23.9%	25.0%	26.4%	26.7%	29.0%	30.5%	30.0%	32.0%	25.0%	24.5%
Sales / avg assets		0.56	0.56	0.59	0.60	0.60	0.61	0.61	0.64	0.60	0.59
EBT / EBIT		86.5%	87.9%	87.6%	89.4%	89.2%	88.9%	90.2%	90.8%	85.7%	85.0%
Net income /EBT		72.0%	61.8%	72.9%	73.4%	65.6%	65.6%	65.6%	65.6%	65.6%	65.6%
ROA		8.4%	7.6%	10.0%	10.5%	10.3%	10.9%	10.9%	12.2%	8.4%	8.1%
Avg assets / avg equity		2.57	2.74	3.14	3.67	3.88	3.93	3.96	4.30	3.87	3.90
ROE		21.5%	20.7%	31.2%	38.5%	39.8%	42.8%	43.2%	52.6%	32.4%	31.6%
3-stage											
Net income / sales		14.9%	13.6%	16.9%	17.6%	17.0%	17.8%	17.7%	19.0%	14.1%	13.7%
Sales / avg assets		0.56	0.56	0.59	0.60	0.60	0.61	0.61	0.64	0.60	0.59
ROA		8.4%	7.6%	10.0%	10.5%	10.3%	10.9%	10.9%	12.2%	8.4%	8.1%
Avg assets / avg equity		2.57	2.74	3.14	3.67	3.88	3.93	3.96	4.30	3.87	3.90
ROE		21.5%	20.7%	31.2%	38.5%	39.8%	42.8%	43.2%	52.6%	32.4%	31.6%
Payout Ratio		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Retention Ratio		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Sustainable Growth Rate		21.5%	20.7%	31.2%	38.5%	39.8%	42.8%	43.2%	52.6%	32.4%	31.6%

Appendix 7: Comps Sheet

Comp Sheet (12/15/2017)

Ticker	Name	Current Price	Market Value	Price Change 1 day	1 Mo	3 Mo	6 Mo	52 Wk	YTD	Earnings Growth LTG	NTM	2015	2016	2017	2018	Pst 5yr	Beta	LT Debt/ Equity	S&P Rating	LTM Dividend Yield	Payout
FISV	FISERV INC	$131.83	$27,473	0.1	3.0	6.0	7.3	25.8	24.0	10.9	31.9%	-16.4%	-11.0%	15.6%	4.1%	20.4%	0.80	2.14	B+	0.00%	0.0%
FIS	FIDELITY NATIONAL INFO SVCS	$95.71	$31,955	(0.1)	3.2	2.5	13.1	26.7	26.5	12.2	194.2%	36.1%	-9.6%	-9.5%	-1.4%	2.5%	0.85	0.88	B+	1.20%	70.2%
JKHY	HENRY (JACK) & ASSOCIATES	$116.89	$9,028	(0.3)	2.8	14.0	13.2	30.6	31.7	11.9	5.3%	5.8%	4.2%	11.6%	8.6%		0.72	-	A+	1.08%	38.2%
ACIW	ACI WORLDWIDE INC	$22.38	$2,654	(0.0)	(4.1)	(3.0)	(2.0)	12.8	23.3	12.3	66.0%	-60.1%	-99.1%		2.3%	19.1%	1.46	0.87	B+	0.00%	
VNTV	VANTIV INC	$74.62	$12,129	(0.2)	7.7	3.0	18.2	30.1	25.2	14.5	153.8%	-12.6%	-17.0%	3.5%	-14.9%	78.4%	0.58	8.24		0.00%	
Average			##########	-$0.13	$2.52	$4.51	$9.97	$25.21	$26.14	$12.34	90%	-9.4%	-26.5%	5.3%	-0.3%	30.1%	0.88	2.43		$0.00	$0.36
Median			$12,129	-$0.15	$2.99	$2.97	$13.12	$26.67	$25.16	$12.18	66.04%	-12.59%	-11.05%	7.53%	2.33%	19.79%	0.80	0.88		$0.00	$0.38
SPX	S&P 500 INDEX	$2,660		0.3	3.0	6.9	9.4	17.7	18.8			-0.1%	0.5%	10.3%	11.7%						

Ticker	Website	2017 ROE	P/B	P/E 2014	2015	2016	TTM	NTM	2017	2018	2017 NPM	2017 P/S	OM	ROIC	EV/ EBIT	P/CF Current	P/CF 5-yr	Sales Growth NTM	STM	Pst 5yr	Book Equity
FISV	http://www.fiserv.com	27.9%	11.71	16.8	25.9	33.8	31.4	23.8	36.3	34.9	3.5%	1.47	26.2%	13.3%	19.3	19.6	15.3	6.0%	5.0%	4.9%	$11.25
FIS	http://www.fisglobal.com	15.5%	3.19	16.5	11.8	16.3	59.4	20.2	22.8	23.1	2.2%	0.46	17.1%	2.8%	22.1	16.5	12.9	-0.8%	3.9%	10.0%	$29.98
JKHY	http://www.jackhenry.com	25.7%	8.70	19.9	23.6	25.7	36.9	35.0	30.4	28.0	0.8%	0.27	25.1%	23.7%	22.1	21.4		5.8%		6.9%	$13.44
ACIW	http://www.aciworldwide.com	-0.2%	3.43	-6.9	-18.3		69.9	42.1	52.0	50.9	0.0%	0.21	13.8%	8.9%	38.0	16.2		-0.2%		16.7%	$6.52
VNTV	http://www.vantiv.com	18.8%	21.73	7.8	12.4	18.8	51.5	20.3	22.8	26.7	2.0%	0.47	15.2%	5.1%	22.5	14.4	12.6	-42.2%	8.8%	17.1%	$3.43
Average		17.5%	9.75	10.81	11.09	23.67	49.81	28.27	32.85	32.71	1.7%	0.58	19.5%	10.8%	2478.7%	17.63	13.58	-6.3%	5.9%	11.1%	
Median		18.8%	8.70	16.50	12.41	22.27	51.46	23.77	30.36	27.96	2.0%	0.46	17.1%	8.9%	22.13	16.54	12.92	-0.2%	5.0%	10.0%	
SPX	S&P 500 INDEX			17.31	17.21	18.76			20.21	18.10											

Appendix 8: 3-stage DCF Model

3 Stage Discounted Cash Flow

		Year						
		1	2	3	4	5	6	7
		First Stage		Second Stage				
		2018	2019	2020	2021	2022	2023	2024
Sales Growth		*4.9%*	*5.2%*	*3.5%*	*3.5%*	*3.5%*	*3.2%*	*3.0%*
NOPAT / S		*19.0%*	*20.0%*	*16.5%*	*17.0%*	*17.0%*	*17.0%*	*17.5%*
S / NWC		*5.62*	*5.62*	*5.62*	*5.62*	*5.62*	*5.62*	*5.62*
S / NFA (EOY)		*0.73*	*0.75*	*0.75*	*0.75*	*0.75*	*0.75*	*0.75*
S / IC (EOY)		*0.65*	*0.66*	*0.66*	*0.66*	*0.66*	*0.66*	*0.66*
ROIC (EOY)		*12.3%*	*13.2%*	*10.9%*	*11.2%*	*11.2%*	*11.2%*	*11.6%*
ROIC (BOY)			*13.6%*	*11.3%*	*11.6%*	*11.6%*	*11.6%*	*11.9%*
Share Growth			*-3.6%*	*-2.0%*	*-1.0%*	*0.0%*	*0.0%*	*0.0%*
Sales		$5,976	$6,286	$6,506	$6,734	$6,970	$7,193	$7,408
NOPAT		$1,137	$1,258	$1,074	$1,145	$1,185	$1,223	$1,296
Growth			*10.6%*	*-14.6%*	*6.6%*	*3.5%*	*3.2%*	*6.0%*
- Change in NWC		50	55	39	40	42	40	38
NWC EOY		*1063*	*1118*	*1157*	*1197*	*1239*	*1279*	*1317*
Growth NWC			*5.2%*	*3.5%*	*3.5%*	*3.5%*	*3.2%*	*3.0%*
- Chg NFA		172	195	293	304	314	297	288
NFA EOY		*8,187*	*8,382*	*8,675*	*8,979*	*9,293*	*9,590*	*9,878*
Growth NFA			*2.4%*	*3.5%*	*3.5%*	*3.5%*	*3.2%*	*3.0%*
Total inv in op cap		221	250	332	344	356	337	326
Total net op cap		9249	9499	9832	10176	10532	10869	11195
FCFF		$915	$1,008	$741	$801	$829	$886	$970
% of sales		*15.3%*	*16.0%*	*11.4%*	*11.9%*	*11.9%*	*12.3%*	*13.1%*
Growth			*10.1%*	*-26.5%*	*8.0%*	*3.5%*	*6.9%*	*9.6%*
- Interest (1-tax rate)		123	139	144	149	154	160	165
Growth			*13.1%*	*3.5%*	*3.5%*	*3.5%*	*3.5%*	*3.5%*
FCFE w/o debt		$792	$869	$597	$652	$675	$726	$805
% of sales		*13.3%*	*13.8%*	*9.2%*	*9.7%*	*9.7%*	*10.1%*	*10.9%*
Growth			*9.7%*	*-31.3%*	*9.1%*	*3.5%*	*7.7%*	*10.9%*
/ No Shares		192.3	185.4	181.7	179.9	179.9	179.9	179.9
FCFE		$4.12	$4.69	$3.29	$3.62	$3.75	$4.04	$4.48
Growth			*13.7%*	*-29.9%*	*10.2%*	*3.5%*	*7.7%*	*10.9%*
*** Discount factor**		0.92	0.85	0.79	0.73	0.67	0.62	0.57
Discounted FCFE		$3.80	$3.99	$2.58	$2.63	$2.51	$2.50	$2.56
		Third Stage						
Terminal value P/E								
	Net income	$1,014	$1,119	$930	$996	$1,031	$1,063	$1,131
	% of sales	*17.0%*	*17.8%*	*14.3%*	*14.8%*	*14.8%*	*14.8%*	*15.3%*
	EPS	$5.27	$6.03	$5.12	$5.54	$5.73	$5.91	$6.29
	Growth		*14.4%*	*-15.2%*	*8.2%*	*3.5%*	*3.2%*	*6.4%*
	Terminal P/E							38.00
	* Terminal EPS							$6.29
	Terminal value							$239.00
	* Discount factor							0.57
	Discounted terminal value							$136.44

Summary

First stage	$7.80	Present value of first 2 year cash flow	
Second stage	$12.78	Present value of year 3-7 cash flow	
Third stage	$136.44	Present value of terminal value P/E	
Value (P/E)	**$157.01**	= value at beg of fiscal yr	2018