

Trust Bank Initiation

Initiating Coverage on BK, STT & NTRS

■ **STT a Buy; Neutral on BK & NTRS** – Investor sentiment is cautious on the trust banks due to a combination of valuation and concerns about the business model. In contrast, we view asset servicing as a very attractive business. STT is our top pick, because while scale is a big advantage in providing commodity-like back and middle office functions, we believe STT is at the forefront of leveraging its technology and data to provide real value-added services to their clients to help them evaluate risk exposures and performance in order to satisfy increased regulatory and investor requirements, which can be a key differentiator. BK seems to be headed in the same direction as STT, but progress will likely be slower as it needs to address its systems infrastructure. We rate BK a Neutral, but would look at a pullback as an opportunity due to an attractive l/t outlook. NTRS has an attractive wealth management business, but its asset servicing is subscale. While a breakup would make sense, it's hard to see significant value creation since its asset servicing piece seems to be already valued for a potential sale. We rate NTRS a Neutral, but believe its stock offers the least attractive long-term outlook of the three banks.

■ **Business mix has superior returns, above average growth and lower risk profile...** – We estimate normalized returns for STT and BK asset servicing business are in the mid 20% ROTE range, and found that NTRS seems to suffer from lack of scale and a heavy mix of the thinner margin pension business, which puts their returns sub-15%. The businesses have always been well positioned against strong secular trends, but lack of pricing discipline came apparent recently as the sec lending and FX businesses were reset. We are seeing real change in how these businesses are managed, and expect to see more pricing discipline going forward. Asset/wealth management is the other piece to the story. We did a deep dive for each bank, valued each one separately, and came away most impressed with the NTRS franchise.

■ **...And trust banks are a better play on higher rates** – We believe the trust banks are a better rate play than regional banks due to: 1) shorter duration balance sheets; 2) 70% of benefits come in the first 100 bps, 3) sensitivity estimates have a narrower range of outcomes vs regional banks, where deposit betas are influenced by less predictable consumer behavior, and 4) no offset from higher credit costs. Also, given the trust banks are constrained on capital by SLR, we make the argument that higher rates will free up capital as excess deposits run off.

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Company	Ticker	Rating		Target Price		Current Year Earnings Estimates	
		Old	New	Old	New	Old	New
Bank of NY Mellon	BK	NA	2	NA	US\$42.00	NA	US\$2.75
Northern Trst	NTRS	NA	2	NA	US\$70.00	NA	US\$3.20
State Street	STT	NA	1	NA	US\$90.00	NA	US\$4.97

See Appendix A-1 for Analyst Certification, Important Disclosures and non-US research analyst disclosures.

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Executive Summary

Figure 1. We believe STT has the most upside vs the group.

	TP	ETR
STT	\$90	22%
BK	\$42	9%
NTRS	\$70	3%

Source: Citi Research, priced as of 9/19/2014

The consensus view on the trust banks is that they are a good play on higher rates with attractive asset management businesses, but that the group is fairly valued and there is continued concern around the asset servicing business model. After our analysis, we came away very positive on the outlook for the scale players in the asset servicing business and we see superior mid 20% returns on tangible equity, above average growth and low risk profile. Also, we believe they are a very good play on higher short term rates plus additional upside from higher FX volatility.

■ **STT is a Buy; seems ahead of the curve in a very attractive business which should drive outperformance** – STT is a Buy and very clearly our top pick as we believe it is ahead of the curve and well positioned to deliver positive operating leverage. We also believe it represents the most attractive long term investment in our space. While STT might be less asset sensitive vs the group, higher rates will free up trapped capital as excess deposits roll off the balance sheet. On the other hand, if system deposit outflows are less than anticipated and excess deposits prove to be stickier, higher IOER should allow the banks to benefit from higher spreads on cash at the Fed. STT is also most levered to potential FX upside if volatility returns to historical levels. Our 2015 EPS estimate of \$5.45 (vs \$5.36 cons) and 2016 EPS of \$6.35 (vs \$6.17 cons) are both 2% ahead of consensus.

■ **BK is a Neutral with a \$42 target price** – There are many things to like about the company (scale, very asset sensitive, and a good asset management business), but we remain on the sidelines as we believe the systems consolidation may slow near term progress plus valuation is less attractive. Our 2015 EPS estimate is slightly below consensus, but we are above consensus on 2016 due to its asset sensitive balance sheet. BK is trading at nearly ~15x our 2015 EPS estimate (vs closer to ~14x historically).

■ **Not the environment to play defensive; NTRS a Neutral with \$70 TP** – Northern Trust is a very conservatively run bank with a very attractive wealth management platform, which we believe all warrant a premium P/E. However, we believe its asset servicing business is generating returns well below STT and BK, yet that business is also priced at a premium multiple which we believe may reflect the market pricing in a potential sale. The stock seems full at current levels, but downside also seems limited as our estimates are largely in line with consensus. NTRS outperformed during the crisis, but we believe this is not the time to play defense and it is hard to see multiple expansion at these levels.

Figure 2. Our estimates embed impact of forward curve, which puts us slightly ahead of consensus

	'15 EPS	vs Cons	'16 EPS	vs Cons
BK	\$2.65	(1.4%)	\$3.25	2.8%
STT	\$5.45	2.0%	\$6.35	1.7%
NTRS	\$3.85	0.2%	\$4.50	0.3%

Source: Citi Research, as of 9/19/2014

Figure 3. Our target prices imply '16 P/Es of ~13-14x for BK and STT, and ~15.5x for NTRS

Implied Multiples	2015	2016
BK	15.8x	12.9x
STT	16.5x	14.2x
NTRS	18.2x	15.6x

Source: Citi Research

What is in the report:

1) Despite investor concerns we come away more positive on the Trust Bank business mix – The report addresses the key investor concerns for the asset servicing business model, and why we came away more constructive on the asset servicing business for the scale players like BK & STT, where we believe they can achieve >20% normalized returns, but slightly more negative on NTRS which seems to suffer from lack of scale and a heavy mix of the thinner margin pension business, which puts their returns under 15%.

■ **Lack of pricing power is a focus for investors, but we believe the business is managed better today and the impact on returns isn't apparent** – After speaking with the companies and various industry experts, we believe that the businesses are being managed differently to better focus on price and cost control vs their previous 'asset gathering' mantra. In our note we did a waterfall chart to track changes in return on tangible equity from 2006 to current, and the cyclical factors that can drive returns back up to >20% in a normalized

environment. What we found was that despite all the talk about pricing, it is hard to see how it has impacted returns over the past 8 years...if anything, we think the offset of higher volumes on a fixed cost platform has led to slightly higher returns even with the impact of lower pricing.

- **Capital requirements are higher than in the past, but we found this model is less impacted than other banks** – Investors often cite higher capital levels as a reason for pressured returns, and we found that capital requirements are about ~25% higher vs 70% plus for the banks and money centers once you factor in the impact of excess deposits running off as rates rise.
- **Regulatory expense growth seems to be abating, but very tough to have firm conviction** – After speaking with company management and numerous industry experts, it is our sense the trust banks are nearing the end on spending to address the more significant post-crisis regulations. However, regulators are constantly creating, amending, and implementing new and existing rules, which could impact the trust banks differently depending on product and client mix.
- **FX revenues have room to rebound** – In the core custody line of business, we expect some upside as transaction levels pick up. Within the ancillary businesses of foreign exchange and securities lending, we remain conservative in our growth assumptions given the secular impacts weighing on the businesses. If volatility levels return to historical norms from the 2014 lows of ~6 to ~10%, there is a call option on FX revenues that would provide ~7-9% EPS upside to our '15 estimate.

2) We find Trust banks are very good plays on higher rates – We also run through the trust banks' balance sheets to show the drivers of the asset sensitivity, and found that they get the majority of the benefit in the first 100 bp move. After our analysis, NTRS has the most upside (15%) relative to their asset sensitivity disclosure, followed by BK (8%). STT is in-line with their disclosure. NTRS and BK are also the most asset sensitive and should see a >20% benefit to next twelve months earnings while STT is the least asset sensitive at ~10%.

- **We estimate normalized NIMs of ~1.65-1.75%** – From both a top-down basis using our ALCO model and bottoms-up basis from our earnings models, we estimate normal NIMs of ~1.65 -1.75% for all three trust banks.
- **We run a scenario analysis on the potential impact from continued low rates** – Our net interest income and earnings estimates assume that rates follow the forward curve. If rates were to stay flat, we estimate ~5% downside to our '15 estimates and ~10% downside to our '16 estimates.

3) Primers on the asset servicing and asset management businesses – We provide a deep dive into the Asset Servicing businesses in order to create a better framework for understanding the business and where the strengths and weaknesses of each trust bank are. Lastly, we review each of the asset management business models and value them based on peers to help develop sum of the parts analysis, which emphasizes why we see so much value in STT.

Historical Performance

Pre-crisis these names largely traded as a group... – Prior to 2007, these names were, and to some extent still are largely a group call. Dating back to January 2003, the stock price performance of three banks are highly correlated with each other (see Figure 4). Trust bank performance was ~60-70% correlated pre-crisis, increasing to ~80% post-crisis. With a beta averaging ~1.2-1.25, any of these

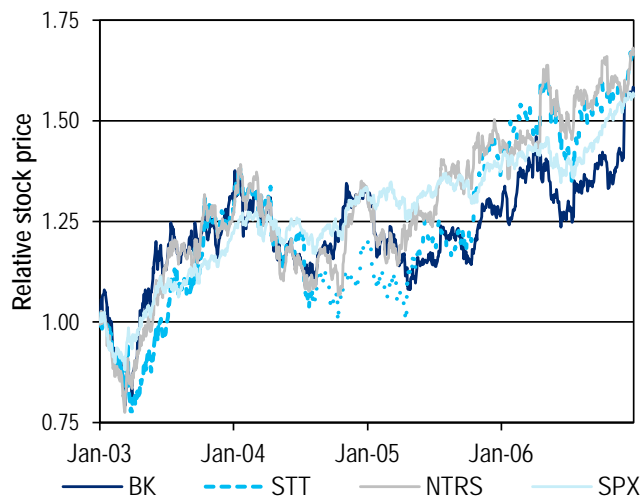
names was a decent investment pre-crisis, with average stock CAGR of ~15% vs the S&P at ~13% (see Figure 4). During this time frame, multiples averaged ~17x, as the business were high returns. Expectations for consistent 11% earnings growth and slight multiple expansion drove outperformance (see Figure 6).

Figure 4. Trust banks modestly outperformed pre-crisis . . .

Jan '03 - Dec '06					
Correlation	BK	STT	NTRS	Stock Returns	CAGR
BK	1.00			64%	13%
STT	0.62	1.00		73%	15%
NTRS	0.72	0.72	1.00	73%	15%
SPX	0.68	0.61	0.71	61%	13%

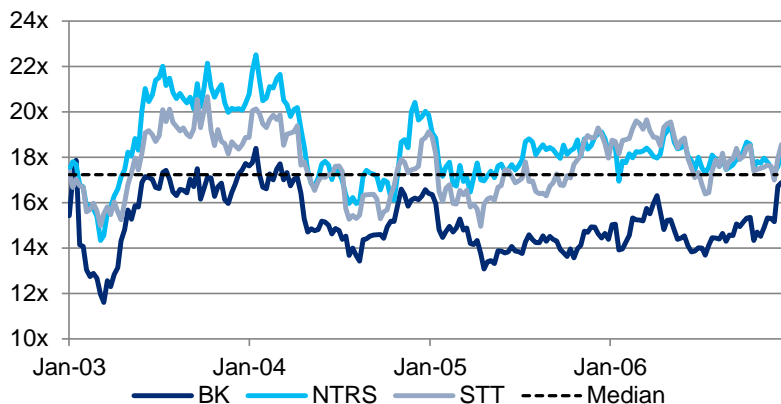
Source: Citi Research, Bloomberg, Factset prices as of 12/31/06

Figure 5. . . . And tended to trade as a group from 2003-2006



Source: Citi Research, Bloomberg, Factset

Figure 6. Trust Bank P/E multiples were stable pre-crisis, with earnings growth driving performance



Source: Citi Research, Factset prices as of 12/31/06

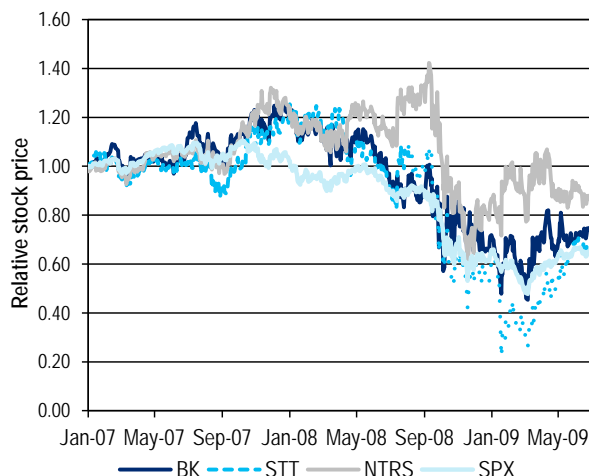
NTRS outperformed during the crisis . . . – Concerns over counterparty risk and off balance sheet exposures for large financial institutions during the crisis drove weaker performance in STT and BK during the crisis. We highlight NTRS's relative outperformance, as investors sought a simpler and more conservatively managed model. During this time frame NTRS outperformed BK and STT by 18%.

Figure 7. During the crisis, NTRS was the safe-haven. . .

Dec'06 - June '09				
Correlation	BK	STT	NTRS	Stock Returns
BK	1.00			(30%)
STT	0.76	1.00		(30%)
NTRS	0.83	0.69	1.00	(12%)
SPX	0.79	0.69	0.80	(35%)

Source: Citi Research, Bloomberg, Factset prices as of 6/30/09,

Figure 8. . . . And outperformed the group by 18%



Source: Citi Research, Bloomberg, Factset

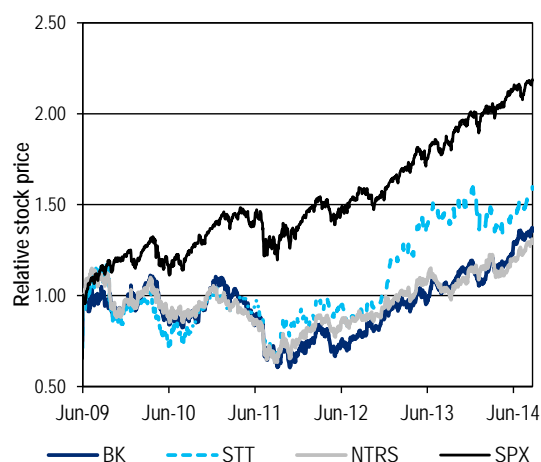
...And post crisis the trust banks have underperformed – Post crisis, the trust banks have provided 5-10% annual return vs 15% for the S&P 500 (see Figure 9). Beginning in 2013, STT outperformed the group significantly (see Figure 10) due to a successful cost reduction plan, strong equity market performance (which is 54% of STT's AUC and AUA, vs 17% for BK and 45% for NTRS) and the beginning of the “taper-tantrum,” which prompted a rally in asset sensitive names. More recently, STT has lagged as the cost reduction story has played out, weaker equity markets have ensued, and higher regulatory expenses.

Figure 9. The Trust Banks have underperformed the market post-crisis

June '09 - Current					
Correlation	BK	STT	NTRS	Stock Returns	CAGR
BK	1.00			35%	6%
STT	0.77	1.00		59%	10%
NTRS	0.79	0.79	1.00	30%	5%
SPX	0.76	0.75	0.76	119%	17%

Source: Citi Research, Bloomberg price as of 9/19/14

Figure 10. STT outperformed in 2013, but has given some back in 2014



Source: Citi Research, Bloomberg

■ **...Which we think reflects the regular downward estimate revisions** – We looked at how estimates changed over an 18 month period starting at the beginning of the prior year to see how estimates have generally trended (see Figure 11). What we see is that the estimate trajectory for the trust banks has been negative across the board, as the effects of continued low rates, regulatory and litigation headwinds and lower activity levels continues. STT looks the best on this metric with forward earnings today only 8% lower than expectations in 2009 bs down 25% for BK and NTRS (see Figure 11).

- **Expense growth was roughly in line for all three banks...** For all three companies, core expense trends have been roughly the same, rising ~20-25% since 2010, so revenue seems to be the reason estimates fell.
- **...So the primary driver was STT revenue held up better mostly on the net interest revenue, FX and fee waivers** –STT's FX revenues were hit harder than BK and NTRS, which were down 20-40% since 2010. STT NII has also experienced better NII growth, up ~20% in 2013 vs BK and NTRS flattish. Finally, BK and NTRS were hit harder by Fee waivers in their asset mgmt business (4-5% EPS impact) vs minimal impact to STT..

Figure 11. Going back to 2010, we found trust banks estimates have been consistently revised down; STT has fared the best on this metric

BK											
2010		2011		2012		2013		2014		2014 vs 2010 fwd Estimates	
Jan-09	3.17	Jan-10	2.80	Jan-11	2.98	Jan-12	2.55	Jan-13	2.65	Jan-09	3.17
Jun-10	2.35	Jun-11	2.30	Jun-12	2.17	Jun-13	2.25	Jun-14	2.35	Jun-14	2.35
% Change	(26%)	% Change	(18%)	% Change	(27%)	% Change	(12%)	% Change	(11%)	% Change	(26%)
STT											
2010		2011		2012		2013		2014		2014 vs 2010 fwd Estimates	
Jan-09	5.23	Jan-10	5.05	Jan-11	4.35	Jan-12	4.55	Jan-13	4.85	Jan-09	5.23
Jun-10	3.11	Jun-11	3.75	Jun-12	3.85	Jun-13	4.52	Jun-14	4.80	Jun-14	4.80
% Change	(40%)	% Change	(26%)	% Change	(11%)	% Change	(1%)	% Change	(1%)	% Change	(8%)
NTRS											
2010		2011		2012		2013		2014		2014 vs 2010 fwd Estimates	
Jan-09	4.40	Jan-10	4.25	Jan-11	3.90	Jan-12	3.38	Jan-13	3.73	Jan-09	4.40
Jun-10	2.90	Jun-11	2.75	Jun-12	2.95	Jun-13	3.17	Jun-14	3.30	Jun-14	3.30
% Change	(34%)	% Change	(35%)	% Change	(24%)	% Change	(6%)	% Change	(11%)	% Change	(25%)

at a median multiple of ~15x, typically trading at a modest discount to traditional asset managers and a ~20% markup to large cap banks, as their higher profitability and lack of major credit exposure warrant a higher valuation than banks.

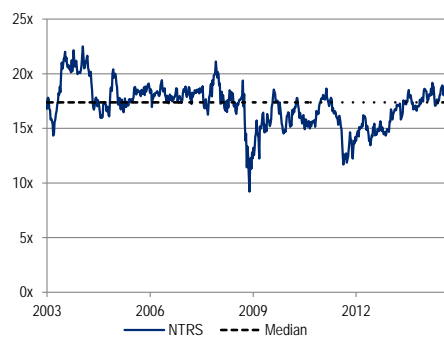
- **...Which is in line with our DDM-derived normalized PE Estimate** – Based on our normalized estimates for the trust banks, we see normalized one year forward P/E ratios in the 14.5-15x range, roughly in line with current and historical valuations. Current P/Es on normalized earnings are about 10-10.5x for STT and BK and 12x for NTRS, which (ex NTRS) we believe is reasonable. If you believe these banks can achieve normalized earnings in about 3-4 years, then this is roughly in-line with our normalized one year P/Es, assuming an 11% cost of equity.

Figure 12. BK's P/E has averaged ~13.5x



Source: Citi Research, Factset
Note: All figures are NTM P/Es as of 9/19/14

Figure 13. NTRS's P/E has averaged ~17.5x



Source: Citi Research, Factset

Figure 14. STT's P/E has averaged ~14x

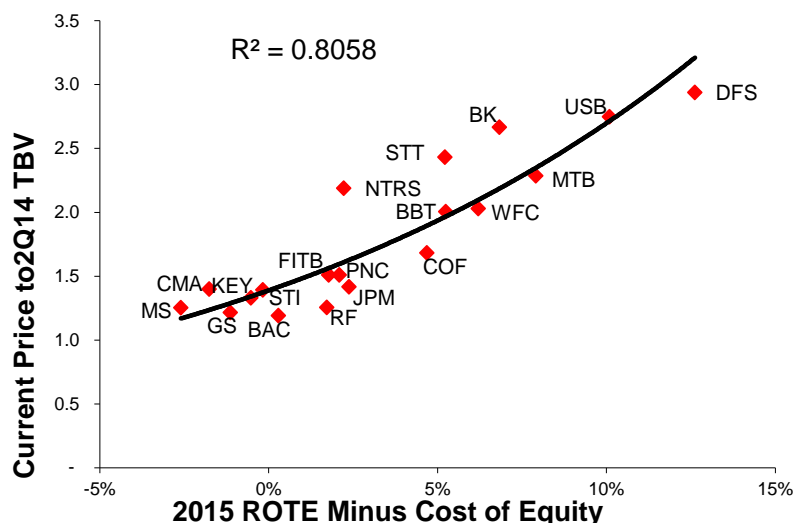


Source: Citi Research, Factset

Method 2: Excess ROTE vs P/TBV

We like to look at excess returns and compare a company's returns to its risk profile. Trust banks screen expensive on this metric, but we think this reflects a better growth profile than the banks. However, one of the main downsides to our excess returns analysis is that it only looks at one year's worth of returns, and misses the longer term outlook.

Figure 15. Trust banks look rich when looking at ROTE vs price to TBV, but we believe this is due to market pricing in better growth outlook



Source: Citi Research, priced as of 9/19/2014

Figure 16. Trust bank implied betas are mostly in line with historical averages

	Market Implied		Historical
	Cost of Equity	Beta	
STT	11.3%	1.25	1.18
BK	10.5%	1.14	1.20
NTRS	9.5%	1.02	1.23
Average	10.5%	1.14	1.20

Source: Citi Research, Bloomberg. Priced as of 9/19/2014

Method 3: Implied cost of equity

Our favored measure for the long term value of a company comes from using our discounted residual income model to back out the cost of equity implied by current market prices. From COE, we calculate the market implied Beta, which we can compare to historical betas to measure whether a company is overvalued or undervalued. Through this lens, STT shows as best value and room to improve on the multiple if investors gain confidence on ability to drive positive operating leverage. While many investors point to an extended valuation for BK, we found that BK is in line. NTRS looks to be the richest on this measure.

Method 4: Sum-of-the-Parts analysis

With no pure-play asset servicing companies, we backed into an estimate of the valuation using our estimated valuation of each of the banks' asset management businesses (see section "Asset Management Primer" starting pg. 60). This results in an implied valuation of ~3x P/TB for BK and STT vs ~2x for NTRS. In order to assess the valuations, we compare it against our estimated normalized ROTE for the asset servicing businesses. BK looks fairly valued, while STT looks attractively valued. NTRS looks full...but we believe this valuation is also reflecting the market assigning a takeover premium for this business.

Figure 17. We estimate the market values BK and STT's Asset Servicing at ~3.0x P/TB, while NTRS is closer to ~1.5x due to lower return profile

	Current Market Cap	Est Value of Asset Mgmt	Implied Value of Asset Svcing	P/TB (Asset Svcing)	Est Normal ROTE (Asset Svcing)
BK	44,902	11,278	33,624	3.0	23%
STT	31,696	5,548	26,148	2.9	25%
NTRS	16,404	9,336	7,068	1.6	11%

Source: Citi Research, FactSet priced as of 9/19/14

Note: we assume that tangible common equity is allocated by segment assets and include TCE for the Other segment with Asset Servicing. This results in: BK – 90% Asset Servicing/10% Asset Management; STT – 99%/1%; and NTRS 80%/20%)

Asset Servicing Primer

Asset servicing is intended to offer end-to-end solutions for all steps in the investment lifecycle. The Trust Banks offer solutions and services to achieve a streamlined front, middle and back office. Below we discuss the sub sections within asset servicing and how clients use these services.

'Asset Servicing' is central to the Trust Bank business model. In order to better compare the different business models, we use the umbrella term 'Asset Servicing' in order to group any relevant businesses that primarily deal with back-to-middle office functions. We begin this section by explaining the client mix which is a key differentiator among a highly commoditized business.

We then breakout Asset Servicing into three different sub-sections to provide a framework for the overall business and to better understand how they integrate: 1) Back office – includes basic custody, fund accounting/administration, foreign exchange, and cash management, 2) middle office outsourcing – portfolio accounting, risk management, performance analytics & valuation techniques and 3) securities lending.

How the clients use the asset servicing business is often a key determinant in pricing. Different clients interact with the Trust Banks in various ways. For example, the needs of a pension fund client will be different and less complex than the needs of a hedge fund client and complexity commands a premium. Below we discuss how these clients interact with the asset servicing businesses which is a key determinant in pricing and ultimately revenue. We also breakdown clients into five buckets in order of lowest to highest margin: 1) pension funds, 2) sovereigns, 3) insurance, 4) mutual funds/asset managers 5) alternative funds.

- **Pension funds are the oldest user of custody and the lowest margin client –** Due to ERISA regulation in the 1970s (see below for more detail) pension funds began actively using custodial services to safeguard their assets. The pension business is extremely competitive among the Trust Banks; due to this aggressive pricing, the margins tend to be the lowest among all clients. Pension clients are relatively easy to onboard vs the other client buckets due to their minimum requirements.
 - **Northern Trust is the leader in the pension fund business –** While all of the Trust Banks overlap in this customer segment, we believe NTRS has the biggest slice of market share among the pension fund community, both public & private.
- **Sovereign clients are slightly higher margin than pension funds –** The sovereign client bucket is also highly competitive like pension funds. Sovereigns typically require a robust global custody solution to facilitate international investing. They also are accountable for prudently managing the nation's wealth and so require the middle office risk and performance analytics provided by custody banks. The lack of financial infrastructure and back office also presents an opportunity for custody banks to do various back and middle office functions.
- **Broker dealer clients require more clearing/settlement related services –** Traditionally, Smaller broker-Dealers and RIAs have outsourced their clearance, settlement, custody, and back office functions like trade reporting. Broker dealers also require administrative services related to segregating client balances and secured / margin financing.
 - **BNY Mellon has a very strong Broker-dealer client base –** BK excels in the broker dealer business because its strong clearing business offers broker dealers and RIAs a one-stop-shop for broker dealers looking for clearing, settlement and custody.

- **Mutual funds and asset managers rely on additional middle office services**
 - The mutual fund space is also very competitive although offers slightly higher margins than the pension fund customers. Mutual funds and asset managers will require a more complex set of services such as portfolio analytics, real-time reporting, and risk management. Asset managers and mutual funds continue to use middle office outsourcing in order to save on costs, which are increasing due to compliance and regulatory requirements.
 - **State Street has leading market share due to their strong middle office suite** – According to the Investment Company Institute, STT has the most market share (~47%) in this client segment, although all the trust banks overlap in this segment.
- **Insurance clients need a lot of the same services as the mutual funds** – Insurance clients are around the same price points as mutual funds. Insurance companies require a lot of the same reporting requirements as the mutual funds such as custody and fund accounting. Insurance companies tend to big securities lenders and continue to rely on outsourcing services offered by the Trust Banks. More recently, insurance companies have demanded more global collateral services given their active use of derivatives.
 - **JPM has been a leader in the insurance space** – JPM has significant market share with insurance clients which they have been serving since the early 1900s. JPM has more than 300 insurance custody clients, representing \$2.6 trillion in assets.
- **Alternative fund services offer the highest margin** – Alternative funds such as hedge funds, private equity, and real estate offer the highest margin business due to the complexity in the products used. On top of custody, these clients also use middle office outsourcing, which is an additional source of revenue for the Trust Banks. This customer segment has become increasingly competitive, but still remains largely underpenetrated. Due to the increased costs of compliance and operational risk for the alternative funds segment, we expect middle office outsourcing to be a continued growth area for the Trust Banks.
 - **Alternative fund platforms have been the target of recent acquisitions** – The trust banks have been focused on building out their product suite for the higher margin alternative fund clients (ie hedge funds, private equity). For example, NTRS bought Omnium from Citadel in 2011; this hedge fund servicing platform enabled NTRS to build a leading hedge fund administration platform. Also, in 2012, STT bought GS's hedge fund administration unit for ~\$550 mil.

Custody

Back Office (Custody, Fund Accounting/Administration)

We break down the back office functions into 4 key sections: 1) custody, 2) fund accounting & fund administration, 3) foreign exchange and 4) cash management.

1) Custody

Full service custody began in the 1970s – The Employee Retirement Income Security Act of 1974 (ERISA) is often credited with spurring growth in custody by mandating the segregation of the management and custody of retirement funds. At the same time, growth in demand for international investments in the '70s and '80s resulted in increased need for dedicated professional administration and settlement of financial assets. As trading volumes increased, manual process of settlement and administration became overly burdensome and a need arose for a global custody product to provide international settlement to investors in cross-border assets.

■ **Custody services have expanded beyond vanilla custody and pension clients** – The plain vanilla custody services have been expanded to include middle office activities, including risk and performance analytics, as well as bundled products such as FX conversion and hedging and securities lending.

Direct Custody vs Global Custody. In plain terms, custody is the safekeeping of assets. The trust banks provide the custody and settlement services for their clients.

Figure 18. Global custody is dominated by Money Center banks and dedicated asset servicers

Large Custodians	AUC (\$tn)
Bank of New York	26.2
JP Morgan	26.7
State Street	25.7
Citi	13.4
BNP Paribas Securities Svcs	9.0
HSBC Securities Svcs	8.5
NorthernTrust	6.5

Source: Citi Research, Scrips report as of 2013

*There is some double counting due to the fact that assets in a global custody service, where a third party custodian is used, are counted both as global AUC for the global custodian and directly managed AUC for the sub-custodian

■ **Direct custody provides safekeeping of assets in a single market** – The core of the Custody business is Direct/Local Custody. Direct custody involves setting up depository accounts in a market for safekeeping of assets and charging fees based on AUC, as well as charging fees on transactions when the assets under custody change hands.

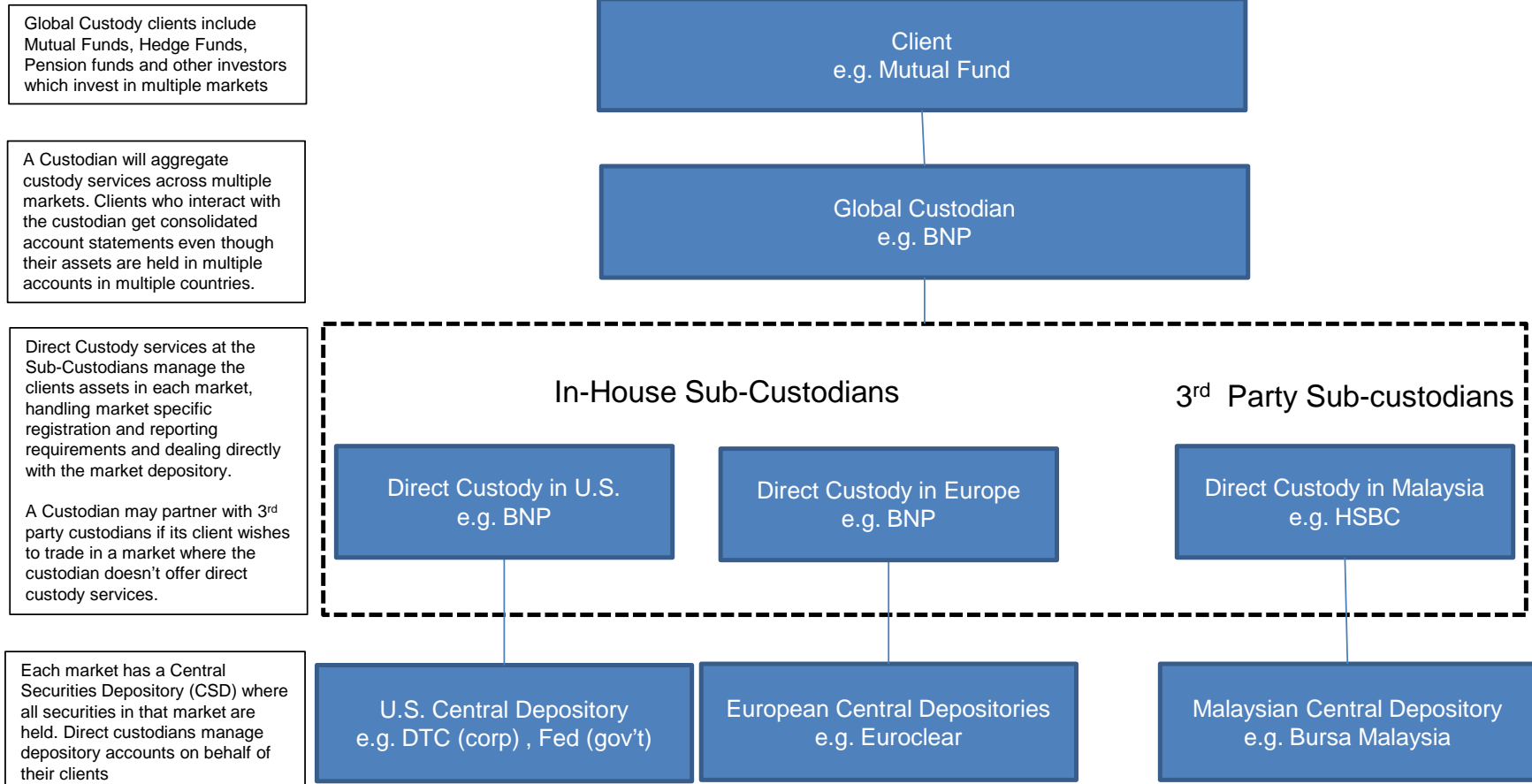
– **Custodians don't usually have physical possession of securities** – In most developed markets, securities are stored (physically or electronically) in fungible mass at a central securities depository (CSD). Ownership is tracked at the depository via book entry and securities transactions are settled through debits and credits to depository accounts. Custodians are intermediaries that manage the depository accounts on behalf of securities' beneficial owners.

– **Direct custody clients typically operate in fewer or a single market** – Client's suitable for direct custody need only to transact in a local market such as domestic public entities (municipalities, FHLBs) and also include broker dealers and high frequency traders looking to get the least-cost execution.

■ **Global Custody consolidates multiple direct custody offerings into a single service** – Global Custody aggregates direct custody offerings into a consolidated package, offering a single point of contact for clients operating in multiple markets (see Figure 19) and a premium is charged for the convenience of a single client-facing relationship.

– **Global Custody is necessary due to market fragmentation** – In order to reduce transaction costs, most countries with developed capital markets centralize the storage of securities in central securities depositories (CSD), such as the Depository Trust Company (DTC) in US for corporate securities. This market structure provides an opportunity for the trust banks to consolidate access to local markets, making it easy to transact in multiple countries.

Figure 19. Global Custody aggregates custody offerings in multiple markets so clients have a single point of contact to monitor their entire portfolio



Source: Citi Research

Figure 20. In this sample custody agreement, JPM charges .1 bps on AUC + fees on transactions

Client	Federal Reserve
Assets	
Mortgage Back Securities	\$500 B
Asset Charges	
All U.S. assets	0.10 bps
Transaction Charges (\$)	
Book Entry	1.25
Wire Transfers	5.00
Principle Paydowns	1.25
Manual Instruction Surcharge	25.00
Bundled products	
Daily Accounting	
Quarterly Valuation	
Auditing Documentaion (SAS 70)	
General ledger	

Source: Citi Research, Federal Reserve

Custody revenues are derived from 3 sources: 1) fees based on assets, 2) spread revenue from low cost deposit franchise and 3) activity levels

■ **Fees are highly dependent on asset mix** – Trust banks charge straight fees on assets under custody. The level of these fees generally ranges from upper single-digit basis points to fractional basis points. On the left we provide a sample fee schedule. This contract between JPM and the Federal Reserve Bank of NY details the fees for providing custody. Custody pricing is often bundled together with a number of other ancillary services and dependent on the type of client, asset location, and the asset type. In the past this has led to pricing pressure as some businesses were not being adequately priced, but we believe that pricing is starting to firm and that management is increasingly looking at the products independently to make sure these services are being adequately priced. We also note the bundled ancillary services (ie daily accounting, quarterly valuation, general ledger, etc) which JPM provides as well.¹

– **Clients are charged a basic fee over AUC** – Fee agreements are based on a point-in-time rate. Meaning “X” bps is charged over AUC despite whether that value grows or shrinks. Clients come under review frequently, but contract negotiations usually occur at the end of the contract. There is also a ‘tiered’ pricing model, where thresholds are established and the pricing will change accordingly, but we believe this is not the industry norm.

– **Client risk taking and asset mix are key drivers of AUC fees** – Client risk taking can alter the mix of AUC, which can heavily influence fees generated. As risk appetites firm, mix shifts into higher margin equity products tend to drive high fee rates, while risk-averse sentiment typically drives clients into lower margin cash. While custody remains a highly commoditized business, pricing is also based on a number of other factors, including the type of client (e.g. hedge funds and alternatives generally higher margin than pension), geography (e.g. foreign assets generally higher margin than domestic).

■ **Spread revenue driven by low cost deposit funding is another key revenue driver, which is currently depressed in low rate environment** – Trust banks will often make arrangements with clients to maintain a certain level of deposits with them for settlement and collateral activities. Deposits take the form of non-interest bearing deposits and below-market yielding interest bearing deposits (generally priced at a spread below fed funds, of which some are also contractually required and some are excess). These deposits are often deployed into relatively short duration assets and the trust banks will take some credit spread over treasuries via asset backed paper, MBS, etc...but still very highly rated securities. Because trust banks take very little duration or credit risk, their NIMs are typically in the mid-to-high 1% range vs banks in the mid-3s.

■ **Fees are sensitive to market activity levels** – Trust banks charge fees on each transaction ranging from \$1.50 to \$10 a trade, so overall activity levels are a key driver to the transaction fee outlook and foreign transactions drive higher fees. Another key driver is revenues from other ancillary business such as securities lending and foreign exchange (FX), which are both market sensitive.

2) Fund Accounting & Fund Administration

Core custody is often bundled together with other low margin services. Fund accounting, fund administration, and transfer agency are all low margin, commoditized back office functions that are often used by custody clients. They are

¹ Please see http://www.ny.frb.org/aboutthefed/JPMC_MBS.pdf for additional information.

offered bundled along with custody and sold at one price. After speaking with industry participants, our sense is that these services are sometimes loss-leaders in order to capture higher margin businesses such as securities lending.

- **Fund accounting and fund administration are complementary services** – Fund accounting and fund administration services are usually offered together given the services overlap and complement one another; both services have products that support the actual running of an investment fund and offer the technology and services to aid in the compliance with the appropriate regulatory, financial and tax reporting requirements. Most funds outsource these operations to their custody provider and pricing is bundled together to include custody. The Trust Banks offer various fund accounting for a range of investment products, from mutual funds to more complex hedge funds. Striking the net asset value (NAV) is an example of a service that falls into the fund accounting category; this service consists of computing the end-of-day value of a fund by reflecting all of the day's accounting changes that took place (ie trade activity, corporate actions, expense accruals).
- **Transfer Agency** – The Trust Banks offer services to support global asset managers distribute their products to institutional and retail investors. These services include maintaining records of investors and transactions, canceling and issuing certificates, processing mailings, etc.

3) Treasury Services & Cash Management

Basic treasury services include cash management, lock box, corporate checking accounts and payment services. Treasury management fees are generated from cash and treasury management products and services provided to clients and are primarily based on transaction volume. Because of BK and STT's more capital markets intensive businesses, they tend to be able to offer more comprehensive services. For instance, BK offers USD clearing, cross-border payments/remittances, and letters of credit to facilitate global trade.

- **Cash management is important to maintain liquidity and enhance yield** – Like in the custody business, the technology is a key differentiator for the trust banks. Cash management also offers clients products to enhance yield on otherwise dormant cash. Client can choose from a variety of products such as short-term investment funds, repurchase agreements, and time deposits.

4) Foreign Exchange

The custody banks have a large amount of global assets under custody and thus facilitate a large amount of cross-border investing. This provides an opportunity for the custody banks to streamline currency conversions in cross-border trading, generating FX revenues in the process. In contrast, a typical FX trading operation at an investment bank sources trading volumes from clients who wish to directly trade FX or hedge currency risk. As clients conduct cross border trades and receive income on foreign securities, they pay the trust banks for the ease and convenience of seamlessly converting their currencies.

FX revenue is dependent on 3 factors – Institutional clients may need to buy securities in other currencies or repatriate dividend or interest payments back to their home currency. The trust banks often act as a principal, taking risk on balance sheet in order to facilitate client needs. Trust bank FX revenue is influenced by three principal factors: the volume and type of client FX transactions, currency volatility, and the management of market risk associated with currencies and interest rates.

Figure 21. Trust Bank FX VaRs are significantly lower than the broker-dealers due to lower risk

(\$ mil)	1Q13	2Q13	3Q13	4Q13	1Q14	2Q14
BK	0.7	0.8	0.8	0.7	0.8	0.7
STT	1.6	1.6	1.5	1.4	1.4	1.5
NTRS				0.1		
GS	14.0	23.0	17.0	15.0	18.0	16.0
MS	11.0	13.0	13.0	17.0	14.0	9.0
JPM	7.0	7.0	7.0	7.0	7.0	8.0
BAC	17.0	14.1	12.7	14.1	12.7	12.0

Source: Citi Research, Company reports

Note: Presented on a 1 day 95% confidence basis

STT converted from 10 day, 99% YTD VaR

BK, BAC, NTRS converted from 1 day 99% confidence VaR

NTRS only discloses annual FX VaR

- **Volume and the type of FX transaction influence the revenue stream** – The amount of cross-border assets held in custody for clients and the nature of the underlying cross-border investments often determines how much trading activity will be driven towards the trust bank's FX desk. Assets priced in less liquid or hard to value currencies will drive more revenue for the FX desks.
- **Currency volatility widens the realized spread resulting in more revenue opportunities** – Currency volatility widens the bid/ask spread which can improve the profitability of the trade.
- **How effective the Trust Banks manage their FX risk can move revenues** – Given that the trust banks often take principal risk, their ability to manage the risk associated with the currency transactions executed will influence revenues. The FX market is very liquid and the tenor of FX trades tends to be short. In Figure 21, we show risk is much lower than those of the large-cap broker dealers.

Clients can execute FX trades directly, indirectly or electronically – The trust banks offer their custody clients and their investment managers the option to route foreign exchange transactions through the trust banks' foreign exchange desk. Clients will trade with their custody bank usually for convenience sake.

- **Clients can directly negotiate...** – Clients that have the capability can negotiate trades directly with the foreign exchange trading desk. A client controls all decisions related to that transaction and because trades are executed at negotiated rates, pricing is usually cheaper when done this way.
- **...Or can allow the Bank to handle through indirect trading** – Indirect trading, or standing instruction trading, is when a client allows the custodial bank to execute the transaction for them. This type of trade execution is beneficial for the client because it offers an end-to-end solution, shifting the cost, management and execution risk to the bank. Often smaller size trades, transaction in restricted or difficult to trade currencies and clients without the support functions to execute foreign exchange trades will use this service. While convenient for the client, these trades generally charge a higher rate than a directly negotiated trade.
 - **Trades are priced off of a defined currency spread...** – The Trust Banks will offer a defined bid/ask spread over the "interbank range". The interbank range is the price executed between global institutions and often helps set the price for retail and other institutional investors.
 - **...And executed by the Custodian on behalf of the client** – Many agreements include a pledge of "best execution", under which the custodian pledges to obtain the best pricing and most timely execution possible.
- **Clients can also execute FX trades via an electronic platform** – Clients can bypass both direct and indirect trading and execute directly on an electronic platform offered by any of the Trust Banks. For example, BK provides an electronic platform that clients can use to execute trades but does not act as agent or principal. These transactions are usually conducted in the most liquid currencies (ie G7) and usually generate a "click" fee rather than a spread.

Middle Office

Middle office outsourcing offers clients operating cost flexibility. The Trust Banks view this as an upstream business that builds on their core custody offering. For a variety of clients, middle office outsourcing is more efficient than having their own, internal middle office and can reduce fixed costs by creating operating cost

Figure 22. Middle office encompasses a wide product offering

Middle Office
Investment Operations
• Transaction Management
• OTC Derivatives Processing
• Data Management
• Cash Administration
• Performance & Analytics
• Corporate Actions & Processing
• Portfolio Recordkeeping & Accounting
• Reconciliation Processing
• Client Reporting
• Fee Billing
• Client Data Warehouse

Source: Citi Research, State Street

flexibility. As shown in Figure 22, where STT defines the ‘middle office’ as post-trade / pre –settlement functions. Middle office activities can include performance analytics, recordkeeping, trade reconciliation and data management.

■ **Middle-office outsourcing is a natural extension to back office & custody –**

Custody was a service that was originally outsourced by the banks and financial institutions. Next, fund accounting and fund administration was then outsourced to save on costs. Then middle office outsourcing became more popular as managers look to offload the requirements of trade settlement to pricing, bill payment and investment manager reconciliations.

– **Assets being serviced by the middle office are recorded as AUA** – It is important to distinguish between assets under custody (AUC) and assets under administration (AUA). Assets under custody are assets held at the trust bank; assets under administration include assets that are being serviced, but the trust bank may or may not be the sole custodian or the custodian at all. For example, if a trust bank is hired to provide middle office services for an asset manager and they are not the custodian of those assets, then it would not count towards AUC, but would be included in AUA.

■ **With increasing compliance costs, outsourcing has been gaining momentum**

– With the increased regulatory & reporting burdens placed on many assets managers, clients would prefer to outsource these functions rather than take on the burden of building these systems out.

– **Clients can outsource in three ways: lift-outs, conversions, and component-based solutions**

–In a lift-out, the asset manager's entire back office operation, including personnel and systems are “lifted out” and onboarded at the trust bank. Conversions are when the platform is transferred over to the platform run by the outsource provider. Lastly, a component-based solution involves only taking on pieces of the provider's platform.

• **Lift-outs are becoming less common in order to cut costs** – We believe that doing lift-outs are not efficient due to the fact that onboarding the entire middle office operations involves upfront costs and is harder to achieve economies of scale. As such, lift-outs are becoming less common, as Trust banks look for ways to realize returns to scale by investing in flexible platforms capable of addressing multiple clients.

■ **Middle office outsourcing can generate revenue, but limited profitability**

Middle office outsourcing is thought of as separate from custody, although it is bundled together and priced with the total relationship. After speaking with industry experts, we believe this business can generate significant revenue, but the profitability is limited due to the labor intensity and high touch service required. The technology build and customization features needed for each client's unique needs can be costly and limit the profitability.

■ **Middle-office outsourcing is labor intensive and requires scale...**

– Given the required technology investment to onboard new clients and the high touch service required once the clients are brought onto the system, middle office outsourcing requires a lot of scale to be profitable. After speaking with industry participants, we believe that middle-office outsourcing is very labor intensive, requiring customizable solutions for different clients, so scale is not easily attainable.

- **STT is the leader in middle office services...** – STT is a market leader in middle office outsourcing, servicing ~\$10 tril in assets. According to a Scrip Issue Global Report in December 2013 STT had 56% of the middle office market share. Within the assets STT is servicing, ~\$1.3 tril are for alternative asset managers. STT has put significant resources into growing this business unit; in 2012 they acquired GS's Hedge Fund Administration business for ~\$550 mil and in 2002 they acquired International Fund Services (IFS).
- **...Which gives them some competitive advantage during the competitive RFP process** – We believe STT has been able to leverage their leading position in middle office outsourcing to gain market share among the higher margin, alternative fund space such as hedge funds and private equity funds.

- **...But if done right, can lead to profitable, long lasting partnerships** – Due to the labor intensity and upfront cost of onboarding a new client, the middle office outsourcing contracts tend to be longer term, creating a sticky relationship that we believe is more like a partnership. According to industry sources, contracts for middle-office outsourcing can last anywhere from 7 – 10 years in duration.

We believe middle-office outsourcing is a growth area for the scale players – With the right scale, we believe middle-office servicing can be a growth area given the required regulatory reporting requirements and continued focus by fund managers in cutting costs. Middle-office outsourcing can attract a new set of clientele that are looking for a servicer to provide more than just the back office functions like custody, fund administration and fund accounting.

- **Increased reporting/regulatory requirements will drive growth** – Post crisis, investors have demanded more transparency and regulators have demanded more reporting which creates an increasingly important role for the middle office. Without the ability to outsource, clients would face a huge technological investment burden for the necessary and ever-changing reporting requirements. At STT's 2014 Analyst Day Martine Bond, EVP of Trading & Clearing gave an example of how a public pension fund needed greater risk analytics. STT was able to provide a single data framework across multi-asset classes, which enabled the client to retire costly and operationally intensive infrastructure.
- **Outsourcing is another way for clients to diversify risk** – Middle office outsourcing is another way for clients to control their risk. After a series of fraud post-crisis, increasingly funds looked for ways to mitigate operational risk. This could be achieved by diversifying some or all of the fund's operational functions to a designated 3rd party.
- **The need for collateral management / transformation should also boost middle office demand** – As more securities are required to be cleared, like OTC derivatives, the demands for collateral to place at clearinghouses increases. Clients continue to focus on using less cash and shifting to non-cash collateral. This shift requires a technology platform and service to help optimize the use of securities and collateral in an efficient way.
- **Collateral management provides efficiency solutions for 'trapped' capital** – New regulations require margin for both cleared and uncleared transactions, fueling demand for collateral services. Often this collateral gets siloed at the different clearinghouses, making it more expensive and less efficient to continue to trade. The collateral management platform can help manage this process efficiently (ie by netting) and in a cost effective way; for clients, the platform helps them understand where and why collateral is being held. Collateral management services also provide risk solutions to help limit counterparty risk and help clients optimize their current collateral set.

- **Collateral transformation exchanges riskier assets into eligible assets** – Collateral transformation is a tool that allows clients to pledge illiquid, non-eligible clearinghouse collateral in exchange for more liquid, safer and eligible collateral used to back transactions like derivatives trades. Clients continue to demand more high-quality collateral to comply with new rules regarding derivatives trades and we expect this trend to continue, but while this service may be an opportunity for some clients, balance sheet constraints (ie SLR, LCR) will likely limit the ability for the Trust Banks to offer this service.

Front Office

One potential area of growth for Trust banks is to harvest and package all the data they have into business intelligence tools for asset managers, also referred to as Front Office. Pressure on returns and a heightened regulatory and compliance environment have created a need for applications that allow asset managers to look across asset classes in evaluating risk exposures, costs, and performance in greater detail. This is a developing business where the end product and market is still being defined, (STT is currently the only player in this space), however the Trust banks are well-positioned given their unique access to transaction data across markets for various asset classes and geographies.

- **Front office includes services such as analytics, data management, and clearing** – Front office includes a wide range of services to help asset managers with daily management activity, compliance, and reporting. There are tools for evaluating portfolio risk exposures and performing research, applications for pre-trade and post-trade compliance monitoring, data for analytics and reporting, and utilities to manage cash and collateral. Front office functions also include clearing services for foreign exchange and derivatives.
- **Trust bank's access to data across markets leaves them well-positioned to provides these services** – Being able to provide clients with both reporting on their own portfolios and insights into markets across asset classes and geographies requires unique access to a number of datasets. As global custodians transacting daily across the globe, the Trust banks have access to market data, that when combined with portfolio data, can create a tools to help asset managers with their front office functions.
- **The key to success is combining content into platforms for delivery** – What will determine the success or failure of this business is the ability to combine the various datasets into usable delivery platforms for customers. STT recently underwent a global Information Technology and Operations Transformation program that will assist them in meeting these goals. This has allowed STT to be the first-mover in this space among the custodian banks.

Figure 23. STT has the biggest securities lending book due to heavier mix of mutual fund clients

Securities on Loan (bil)	
STT	320
BK	235
NTRS	102

Source: Company disclosures as of YE 2013

STT represents indemnified securities

BK represents market value of securities on loan

NTRS represents securities lending collateral

Securities Lending

In short, securities lending utilizes long-term security holdings that would otherwise be sitting idle by briefly lending them out on a cash-collateralized basis and investing that cash received into a safe, short-term investment for a modest return. Looking at Figure 23, STT is the biggest securities lender with approximately \$320 bil in securities lending commitments. Below we discuss how the securities lending business works, what has changed for the businesses post-crisis, and where are the areas for opportunities within securities lending.

- 1) **Trust banks facilitate securities lending to allow their custody clients to generate additional income on their holdings** – Securities lending is an ancillary, volumes-based revenue stream supporting the general custody businesses. On the borrowing side, clients such as Hedge Funds and Broker Dealers need to borrow assets to sell into the market to create short exposure. On the lending side, clients like Pension Funds and Asset Managers are willing to lend from their portfolio of

existing securities in order to earn additional income. Securities lending is a form of secured financing, which means that this process incurs limited risk as the borrower pledges cash or securities as collateral to the lender. This collateral is marked-to-market daily and receives haircuts based on the type of security, the currency, and the credit quality of the borrower. These safeguards ensure that the lender is adequately compensated if the borrower fails to return the securities.

■ **Trust Banks stand in the middle as the custodial agent lender...** – In a securities lending transaction, the trust banks act as lending agents for their custody clients which can include endowments, pension funds, and insurance companies, serving as the intermediary between their client and a financial counterparty (ie broker-dealers). When a financial counterparty needs to borrow securities to cover their own or a client's short positions, they will contact one of the trust bank custodial agents that have access to and can source these securities from their large inventory of assets under custody to be loaned out.

■ **...Making money on an upfront fee and the reinvested cash collateral –**

- **The upfront borrowing fee is supply and demand driven** – Overall short interest levels influence the amount of volume that the securities lending business will see (see Figure 24). Borrowers needing the security will pay an upfront fee determined by the supply and demand of that particular security. Some securities are highly liquid and amply available which may cost less than 15 bps to borrow. Other securities, known as 'specials', or hard-to-borrow securities, are usually securities with a high short interest and will receive a premium to be loaned out.
- **The reinvestment of collateral is dependent on the risk tolerance and interest rate level** – The second component of income is generated from the reinvestment of the cash collateral lenders in short-term, liquid products, and is largely dependent on the spread between 3 Month Libor and Fed Funds. This is a way for clients to earn incremental yield on the lendable securities and the trust banks take a slice of this (usually ~10%). The collateral is usually invested in highly liquid, short term investments like repo.

Figure 24. Short interest is a measure of demand for securities lending, and it remains at cyclical lows



Source: Citi Research, Bloomberg; Short Interest as a % of total market value; As of 9/19/2014

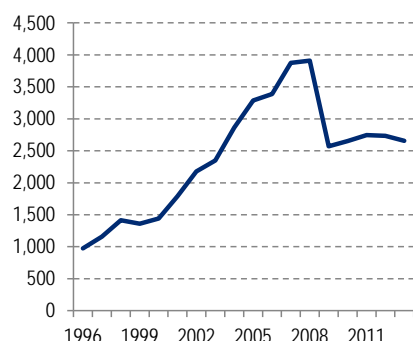
2) **The economics of securities lending have been secularly impaired ...** – The economics of the securities lending business have changed post-crisis due to the level of client risk tolerance on the reinvestment of collateral and higher regulatory capital requirements.

■ **The financial crisis proved that Sec Lending was not as risk-free as clients believed...** – Pension funds, insurance companies, and to a lesser extent mutual funds & ETFs were eager to lend out of their large portfolios of securities in order to earn extra income. The securities being borrowed were collateralized primarily by cash & treasuries at 105% to 102% over the principal amount.

■ **...As problems occurred with the reinvested cash collateral** – Pre-crisis, the cash collateral received was often invested in less liquid, higher yielding products such as Asset Back Commercial Paper (ABCP) to generate higher returns. As clients tried to reduce market exposure during the crisis, trust banks were forced to unwind these less liquid positions at a loss incurred by their clients. Collateral reinvestment strategies have since changed due to client risk tolerance and the collateral is now required by the clients to be placed in highly liquid, risk-free, short term investments that have a lower yield. Furthermore, custodial agent lenders are now taking a lower percentage of the collateral reinvested (~10% today).

■ **Plus higher capital requirements for the industry have weighed on volumes** – Demand from prime brokers has been limited by the SLR and total industry volumes are limited by restrictions on counterparty exposure.

Figure 25. Deleveraging has driven a 32% decline in repo from '07 highs



Source: Citi Research, Federal Reserve; As of YE 2013

- **Prime Brokerage demand for Sec Lending is restricted by the SLR** – Broker Dealers, such as GS & MS are some of the largest clients of the sec lending desks and as bank balance sheets have become constrained from SLR, demand to borrow securities has suffered. The same pressures that have forced repo markets to decline have also weighed on the securities lending business as Securities lending and repo are similar economic transactions (see [Deep Dive on Repo – Buy Side to Feel Impact More than Sell Side](#) for more analysis).
- **SLR also poses challenges for the trust banks** – We don't believe the traditional agency business will come under significant pressure from new regulatory requirements like the SLR, but anything principal based is likely to face limitations due to balance sheet constraints. The current exposure method (see our report titled [Potential New Capital Constraint Emerges](#)) adds the netted securities (notional amount minus collateral received) to the denominator of the supplementary leverage ratio, however most securities lending transactions are over collateralized, meaning that the impact from the current exposure method is small or none at all. Principal based lending and financing transactions can inflate the balance sheet which may weigh on growth prospects for the enhanced custody business.
- **Plus, limits on counterparty exposure have put a cap on overall volumes** – Under Dodd-Frank 165, the borrower default indemnification protection provided by the lending agents is treated as a credit exposure to the borrower of the securities. Indemnification is an industry wide practice that protects the borrower from losing money from lending out their securities. The Risk Management Association released a comment letter representing the major custody banks saying that the rule could significantly reduce sec lending activity based on industry exposure levels and a reduction of securities lending from clients who require indemnification².
 - Dodd-Frank 165 sets a single-counterparty credit exposure limit, limiting the amount the Trust Banks can lend to any one institution. The biggest borrowers from the Trust Banks are the big Wall Street broker dealers (like GS & MS). According to industry estimates, 80-85% of sec lending volumes are provided to top 10 Prime brokerage firms. We note that the trust banks will need to be compliant with these rules by January 1, 2015.

3) ...And now we are seeing the trust banks starting to disintermediate the prime brokers by offering an enhanced custody product. The Trust Banks are offering 'prime brokerage lite' services as an attempt to supplement falling sec lending revenues. Regulations have put pressure on the traditional prime brokers which has led to fund managers (ie hedge funds) looking for alternative sources of funding. BK, STT and NTRS see this as an opportunity to boost falling revenue from being an agent securities lender by offering a prime brokerage type service to alternative fund clients. Traditionally, prime brokers have been the biggest borrowers of the trust banks which we believe has kept the trust banks on the sidelines and reluctant to cannibalize their own revenues, but with sec lending revenues down significantly, the trust banks have decided to go directly to the alternative fund clients, sidestepping the prime brokers.

²See RMA comment letter: http://www.federalreserve.gov/SECRES/2012/September/20120917/R-1438/R-1438_043012_107254_526456590448_1.pdf

- **The custodial 'prime brokerage lite' model differs from the traditional prime brokers** – Both models provide financing and securities lending direct to the end users. This differs from the agent securities lending program already in place, where the Trust Banks lend to intermediaries, usually the broker-dealer prime brokers, which are acting on behalf of the end user. The financing product is largely the same between the two models, but instead of margin account, the securities are all kept in a custodial account meaning the assets are ring-fenced and are not re-hypothecated by the custodial prime broker.
- **Traditionally, the custody banks have not been involved in the 'prime brokerage' business...** – We view Prime Brokerage as a suite of products primarily focused on securities lending and financing. In the past, the custody banks have acted as agent lenders for their clients, offering just securities lending and staying away from the broker-dealer prime brokerage model.
- **...But as more hedge funds began using custody, the demand was there to offer financing services as well** – Post-crisis, it became more common for hedge funds to use custody in order to safeguard their assets. Hedge funds were also looking for ways to diversify their funding sources away from just their Primer Broker. As the Trust Banks began to accumulate more of these alternative assets, the demand for a prime brokerage type service picked up. For example, STT offers an 'enhanced custody' product. On the 2Q14 earnings call, STT noted that enhanced custody represented 25% of securities finance revenue and grew 100% y/y. BK also offers a service called 'Prime Custody'.
- **The Trust Banks have a slight cost competitive advantage...** – By cutting out the intermediary (ie the broker-dealer prime broker) the trust banks can cut the cost of borrowing for hedge funds looking to cover hard-to-borrow, or high demand, securities. The trust banks do not have to go out into the market to source the borrowed securities; they are sitting on trillions of dollars of loanable assets. Internalization can lead to greater efficiencies which can reduce the costs for a hedge fund looking cover their short exposure. Funds using these 'prime brokerage lite' services also benefit from a reduction in counterparty risk due to the lack of re-hypothecation.
- **Traditional prime brokers still offer a wider variety of products** – Traditional prime brokers at a broker dealer still offer a broader range of services that the Trust Banks do not have. Prime Brokerage often directs trading activity towards the broker-dealers' trading desks and therefore the fund is using the prime broker not just for securities lending but to trade and execute all asset classes. Prime Brokers also have services such as capital introduction, which is not a service the custody banks provide, but seems to us is a service they could be well positioned to provide in the future.

Clearing

In this section we walk through two examples of clearing in which BK is a player. We also note that STT also has a smaller clearing business focused on derivatives clearing. BK is a much larger player with 8-10% of revenues coming from Pershing. We believe synergies between custody and clearing provide BK an opportunity to obtain custody assets from broker dealers and RIAs for whom it provides clearing.

Clearing

Clearing began in the 1970s and 80s as a way of streamlining the securities industry's back office as trading volumes accelerated. Clearing is essentially the process comparing trade reports from each counterparty to ensure both parties agree on the terms and ensuring that trades settle. Trades that are cleared through a clearinghouse go through a process called novation, through which the clearinghouse becomes the counterparty to every trade so that everyone settles their trades with the clearinghouse rather than each other. Because the clearinghouse ultimately becomes the counterparty to every trade, offsetting trades with different counterparties end up cancelling out when the clearinghouse steps in, reducing the amount of transfers between counterparties during the settlement process. The National Securities Clearing Corporation, the U.S. clearinghouse for equities estimates that by netting offsetting trades across multiple counterparties, up to 98% of trades can be netted out, thus reducing the amount of transfers in the settlement process. BK (under its Pershing Subsidiary) is the only name among the trust banks with a major clearing business, and is by far the largest player as measured by number of broker-dealer clients with nearly 3x the next largest competitor³. National Financial Services (Fidelity), Broadcort (Merrill Lynch), and JP Morgan rank #2-4 and are roughly the same size.

- **BK bought Pershing in 2003** – BK purchased Pershing from Credit Suisse in order to expand its back office solutions for financial institutions. In addition to offering clearing services in both the U.S. and Europe, Pershing also offers front-end web based solutions for broker dealers, allowing clients leverage Pershing's services for portfolio performance analytics, trade placement, and order confirmations as a white label product in their own offerings.

A well-capitalized clearinghouse reduces systemic risk by stepping between trading counterparties and ensuring that both counterparties post enough collateral to support their obligations. Once trades are cleared through the clearing house, the clearinghouse stands as the seller to every buyer and the buyer to every seller. By taking each side of the trade and guaranteeing the trade will settle, clearinghouse removes credit risk between counterparties. To manage the counterparty risk the clearinghouse assumes from these guarantees, it requires that clearing agents maintain balances in a clearing fund to cover the costs of a counterparty failure as well as marked-to-market collateral pools to cover their own positions.

- **Clearing takes place through a clearinghouse, with clearing agents providing access to the clearinghouse's services** – While clearing houses are ultimately the centerpiece of a clearing system, clearinghouses use a network of clearing agents from which it aggregates broker dealer trades. The clearinghouse collects the details of broker-to-broker trades and ensures both parties agree on the terms of a trade. The clearinghouse then becomes the central counterparty so that each counterparty can settle directly with the clearinghouse instead of individually settling with counterparties. In the United States, the main clearinghouses are the National Securities Clearing Corporation (NSCC) and Fixed Income Clearing Corporation (FICC), both owned by the Depository Trust

³ per InvestmentNews

and Clearing Corporation (DTCC). There are also a number of specialized clearinghouses for derivatives, such as the Options Clearing Corporation (OCC) and the Intercontinental Exchange (ICE).

■ **Clearing agents aggregate trades from broker dealers and clear their trades**

– Clearing agents provide clearing services to smaller broker dealers as a white label product. Clearing agents perform the back office work necessary to execute trades and act on broker dealers' behalf with the clearing house. Clearing agents handle reporting requirements, provide margin financing, front end market data, and performance analytics to smaller broker dealers and registered investment advisors (RIAs), and issues trade confirmations. The clearing agent then interacts with the clearing house on the broker dealer's behalf to clear the trade.

– **Some larger broker dealers are self-clearing** – For the vast majority of smaller broker dealers and RIAs, the clearinghouse membership, the balance sheet required to support margin lending, and back office requirements associated with interacting with clearinghouses would be too costly to undertake. Broker Dealers who self-clear are typically larger firms with the scale and balance sheet needed for these services.

■ **Some clearing firms go beyond simple trade comparison** – Clearing firms can also provide front-end platforms for broker dealers to use to place trades and monitor accounts. Many broker dealers without the necessary back office capacity will use white label products to save on expenses. While the end user sees the broker dealer's branded platform, many of the interfaces are actually white label plugins provided by third party clearing firms.

Tri-Party Repo

The tri-party repo system is a way for broker-dealers to use repo to fund their securities portfolios while outsourcing the administrative costs of collateral management, clearing, and settlement to a third party, (i.e. BK or JPM, the only tri-party clearing agents in the U.S.). At a high level, BK and JPM manage the administrative and back-office functions associated with the clearing and settlement of repo transaction. Tri-party repo involves ~\$1.7tn in financing each day and composes as much as 70% of the repo market, according to estimates from the Fed. For a deeper dive into the repo market, we would also highlight our 2013 report: [Deep Dive on Repo: Buy Side to Feel Impact More than Sell Side](#).

■ **U.S. tri-party repo is a \$1.7tn market** – According to data provided by the Fed, the tri-party repo market is about \$1.7tn, of which about 75% is collateralized by Agency MBS, Agency Debt and Treasuries. BK and JPM are the two Tri-party agents in the United States, and BK clears about 85% of the total market.

■ **Tri-party is preferable due to the streamlined back office** – Because of the standardized back office functions that BK and JPM provide, executing on the tri-party platform is preferable to bilateral repo, as it streamlines the settlement, clearing, and collateral management process. Because Tri-party is primarily "General Collateral" (Treasuries, Agency MBS and Agency Debt), firms tend to use bilateral repo to trade "special" i.e. non-GC securities, such as off-the-run treasuries, corporate and municipal bonds, and equity securities.

■ **Market participants are cash lenders and cash borrowers** – In a repo transaction, two parties exchange cash for securities and agree to return them. On one side of the transaction, lenders typically include investment companies (particularly money market funds) holding cash to be invested in a short term (often overnight) secured investment. On the other side of the transaction are typically broker dealers and banks seeking to finance securities portfolios.

■ **The market has undergone significant reforms post-crisis** – The dislocations in the repo market during the crisis brought to light the systemic risks in repo, both in the repo market as a whole (i.e. fire sales) and in the structure of the tri-party market itself (intraday credits). A joint “task force” of regulators and the clearing banks issued several recommendations for improving the functions of the repo market. The majority of these reforms have been or are expected to be adopted by year end 2014 and take significant steps to reduce the amount of intraday credit risk taken by the clearing banks. In contrast, regulators have not yet tackled the risk of fire sales in the market, which may occur as a result of forced liquidation of a large portion of collateral due to the default of significant counterparty. Regulators, especially Fed Governor Tarullo, have spoken extensively about discouraging extensive use of repo through minimum haircut on repo and GSIB surcharges on banks with substantial repo funding.

– **Clearing banks have historically taken intra-day credit risk due to the daily “unwind”** – Historically, the convention in the tri-party repo market was for all repo trades (including overnight trades that are rolling over or term repo not due to expire) to be “unwound” every morning. In this process, securities collateral is returned to the cash borrower to allow for the substitution of collateral based on its own needs for securities inventory. The clearing bank would also reverse the cash leg of the repo, but instead of collecting that cash from the cash borrower, it would instead would pay back the cash lender via credit extended to the borrower. At the end of the day, the new repo would be put back on, the securities collateral returned to the cash lender, and cash received would extinguish the intraday credit from the clearing bank.

• **In a crisis, worries about the clearing bank’s counterparty exposure could cause cash providers to pull back** – During the crisis, clearing agents had concerns over the solvency of certain cash borrowers such as Lehman, and threatened to refuse to provide intraday credit.

– **Post-crisis reforms aim to substantially reduce intraday credit** – Regulators have sought to curtail the intraday credit to 10% of outstanding repo by the end of 2014. Reform has occurred in stages. First, BK and JPM eliminated the unwind for rolling over repos. This cuts down on the amount of transactions which require credit in the unwind process. They also moved the time of the unwind from the morning to 3:30pm thus reducing the duration of any intraday credit a clearing bank needs to extend, as well as allowing the clearing bank more time during the day to assess the creditworthiness of a distressed institution before extending credit. The next step will be a rolling settlement process involving the simultaneous exchange of cash and collateral, which will substantially eliminate the need for intraday credit. JPM has said that it has moved clients over to a rolling settlement system while BK plans to have implemented this system by the end of the year.

■ **We estimate total BK revenue of ~\$200 mil a year** – Tri-party agents typically charge a fee based on the value of the collateral posted in a repo trade. Neither BK nor JPM discloses tri-party revenues, but based on the data from the Fed on tri-party repo and assuming a 1 bps annualized fee rate, we think the BK’s revenue share is around \$200 mil per year. Included in our \$200 mil estimate is an additional ~\$60 mil due to BK’s international Tri-Party clearing business (~\$600 bil volume). These revenues run through Asset Servicing (component of broker dealer services) for BK.

Figure 26. BK has an ~80-85% market share in the US Tri-party Repo market

U.S. Tri-Party Repo	
2011	1,645
2012	1,804
2013	1,716

Source: Citi Research SIFMA.

Note: (\$ bil) Represents value of collateral posted

Issuer Services

At a high level, issuer services are divided into corporate trust and depository receipts. Among the Trust Banks, only BK participates in Issuer Services. BK acquired the Corporate Trust business from JPM in 2006 for \$2.8 bil. Under the terms of the deal, JPM agreed to swap its corporate trust business for nearly all of BK's branches in the tri-state area.

Depository receipts are a way giving issuers access to foreign markets –

Depository receipts are issued by publicly traded companies in order to have access to a foreign capital markets. In order to issue a depository receipt, an investment bank purchases the publically traded shares of a company in the home market. Once purchased, the investment bank will issue DRs in the foreign market which are backed by the shares held in custody.

■ There are 3 main drivers to depository receipt revenues:

- **Issuance and cancellation fees** – When shares are issued or cancelled in a market the custodian will typically collect fees on a per security basis.
- **Corporate Actions** – Custodians receive fees when they facilitate corporate actions such as shareholder votes and proxies, and rights/warrant issues.
- **Dividend processing** – Custodians charge fees when they facilitate the payment of dividends to DR holders. In addition to administrative fees deducted straight from dividends, this can also include FX conversion fees.
- **BK's DR business has strong 3Q seasonality due to dividend processing** – BK's Issuer services revenues are about 25-30% higher in 3Q as many annual dividends are paid in the third quarter.

Corporate Trust helps distribute principal and interest to bondholders – The Corporate Trust business helps corporations process debt payments, acting as intermediary between issuer and investor. This business unit also handles record keeping for corporate debt issues. Overall, based on discussions with the companies, we see this as a relatively attractive business, with relatively low capital intensity and attractive margins. However, we believe that declining issuance in structured finance may be a headwind for this business.

■ **The fundamentals of the business are good . . .** – The corporate trust business is relatively concentrated with the top 5 trustees commanding the majority of the market in the U.S. In addition most players say the margins in the business are attractive and the business is not capital intensive. Based on the attractive economics, concentrated market shares, and the relatively high technology investments required to start a corporate trust business, we see this as an historically attractive business with high barriers to entry.

- **BK attempted to sell issuer services segment** – BK was reportedly soliciting bids to sell its issuer services segment in 2014 but was unable to find a buyer due to a wide bid-ask on the selling price. BK also noted that regulatory scrutiny may also make selling such a large complex business line difficult at this point. In addition, we believe that there is significant value in the deposits generated by the business which was likely under-appreciated in the current rate environment and could have contributed to the lack of buyers.

■ **...But there are near term headwinds ...** – Despite the solid fundamentals, we see the outlook for the business as somewhat weak driven by a decline in structured finance issuance (see Figure 27). The most profitable segment of corporate trust businesses is in structured finance and securitizations. USB

Figure 27. The top five trustees account for 90% of Structured products, which tend to generate the highest revenues/margins

Trustee market share for Structured Products

U.S. Bank	27%
Deutsche Bank	23%
BNY Mellon	20%
Wells Fargo	11%
Citi	9%
Subtotal	90%

Source: Citi Research, Asset Backed Alert as of 2013.
Note: Structured products includes MBS, ABS, CDOs, and CLOs

disclosed at a May 2014 conference they make 50% of their corporate trust revenues from structured product business. However, the supply of new issuance of these products has declined post-crisis, which is resulting in near term revenue headwinds. BK has noted that they expect pressures of \$50-75 mil per year to continue over the next 15-21 months. In addition, as discussed below, heightened litigation risks surrounding the trustee's duty to investors could potentially make the structured finance segment less profitable if regulation or court rulings place additional responsibilities on trustees.

- **...As well as cyclical pressures from low rates** – Trustees generally require banks to maintain deposits with them in exchange for trustee services. As rates rise, these deposits will be more valuable, but are currently very low spread.

Competitive Analysis

In this section, we provide an overview of the competitive landscape of the global custodians. We analyze the individual custody business models, including their strengths and weaknesses, and have created a scorecard for which custodial banks have been gaining or losing share.

We group the custodians into 3 categories: 1) Global, 2) Direct, and 3)

Boutique – We divide custody banks into three groups based on the roles they play. The large global firms specialize in global custody and do not typically have significant major direct custody relationships. Large direct custodians specialize in being sub-custodians to the global custodians. They specialize in local market relationships, but don't necessarily have the infrastructure to aggregate across markets and provide a single point of contact for clients. The boutique category is largely composed of smaller/subscale players, either with a differentiated global custody offering, or more commonly, a specific or limited set of markets in which they provide local custody.

- **The global custodians control the majority of the market share** – We consider BK, STT & JPM to be the major global custodians and think they have the necessary scale to obtain operating efficiencies, helping them earn greater returns than the sub-scale / boutiques custodians, and they lack significant direct custody operations (such as BNP and HSBC). Together, BK STT and JPM control ~50+% of the total market share.
 - **BK's product breadth is greater than peers, but unclear how much of a competitive advantage it is** – Of the three trust banks we are initiating coverage on, BK has broadest product suite and client base, but one of the least integrated technology platforms. Most industry experts we have spoken to have said that the lack of integrations from BK's acquisition history (notably Mellon) has left it with an amalgamation of systems which still aren't integrated which may present challenges. This is one possible explanation on BK's market share losses over the last 3 years (evidence through loss of AUC market share and revenue growth of ~0-1% vs ~3-4% peer median). Another possible explanation is modest client churn resulting from the company's renewed focus on repricing thinly-priced clients. We note that BK has strong market share with broker-dealer clients and offers Clearing and Issuer Services, which the other banks do not offer. BK is also in has the unique positions as only one of two tri-party repo clearing banks (JPM is the other).
 - **STT drives their business with their superior fund accounting platform** – STT drives their business strategy by leading with their best in class global multi-currency fund accounting platform. As such their custody clients are concentrated in mutual funds and collective funds. STT has built out their middle office outsourcing platform from this business as well, thus has a competitive advantage in the high margin alternative fund space, and we believe this has generated momentum leading to market share gains over the last 3 years.
 - **STT is widely regarded to have superior technology and the most integrated** – While we have seen no way of objectively or externally evaluating the technology offerings of the various custodians, we have heard anecdotally from multiple sources that a more competitive technology offering can be a deciding factor when clients solicit bids from various custodians. For example, when a customer comes to a custodian with a new type of structured product or security, a custodian with modular and adaptable technology will have an advantage in accommodating the client's needs at the lowest cost. STT has a competitive advantage because they are able to offer the scale and breadth of a true global custodian tied into a single integrated custody platform.

- **JPM rounds out the top 3** – JPM strategically moved their custody business (which sits inside investor services) into their corporate and investment bank, now residing next to their markets business. Having a global markets division is somewhat of a competitive advantage due to the fact that JPM is already in their client's front offices, while the other Trust Banks are trying to figure out ways to get in. Over the last 3 years, JPM appears to have maintained market share from both an AUC and revenue growth perspective.
- **Direct custodians tend to focus on local relationships** – The direct custodian act as sub-custodians for the large global custodians. For example, if a mutual fund uses STT as their global custodian but they need to custody assets in a country where STT does not have a physical presence, STT will sub-custody from a direct custodian that has a local market presence. The large EU custody banks (BNP, SocGen, HSBC) are examples of direct custodians.
- **BNP looks to be the most aggressive in entering the global custody space** – BNP remains a large player in direct custody, but lacks a strong global custody footprint. We have heard from various industry experts that they have been the most aggressive in looking for acquisitions to use as a springboard into a competitive global custody offering. BNP also lacks any significant US presence which may narrow their acquisitional focus.
 - **BNP has grown quickly off a small base** – On both an AUC and revenue growth basis, BNP has been a significant share gainer over the last few years, growing off a small base. Management has focused on expanding its asset servicing business across geographies, products, and sectors.
- **HSBC excels in Asian direct custody** – HSBC has the reach across Asia to offer direct custody. However, HSBC is considered less strong in the US and Europe, which hampers their ability to provide a robust global custody platform. HSBC also has a global custody offering which comprises 45% of its ~\$6.2tn in AUC as of year-end 2013.
 - **HSBC continues to retrench from business restructuring** – We believe HSBC's share losses over the last few years can be attributed to the continued restructuring of its securities servicing business. The company has pruned its client list and has been winding down fund servicing operations in the US.
- **Boutique Custodians are sub-scale players focused on a unique niche** – NTRS and BBH are smaller participants but offer a more tailored approach to custody. NTRS and BBH have a more focused approach in order to compete with the top players. Each specializes in certain client segments, product /services and or networks. Lacking the scale to compete with the top players, their more focus approach has allowed them to find better efficiencies. The boutique players cannot compete on price with the bigger custodial banks, but they can offer a more high-touch, service oriented product.
- **NTRS specializes in pension funds and has a top hedge fund platform** – While NTRS's global custody AUC of ~\$5.7 trillion may be subscale relative to its large cap competitors, it is widely regarded as a leader in the pension accounting business. Given that the defined benefit business is shrinking and will continue to do so, NTRS has focused their attention on their fund businesses by building on their platforms purchased from Baring Asset Management's Financial Services Group in 2005 and Omnium purchased from Citadel in 2011. Middle-office outsourcing also complements their hedge fund servicing platform which continues to be an area of growth for them including winning a large Bridgewater mandate in early 2013. We believe that despite being sub-scale, their systems are very well integrated.

Figure 28. We adjusted the trust banks' asset servicing revenues to improve comparability

	Sec Lending	Cash FX	Mgmt Clearing	Issuer Svcs
JPM	x	x	x	x
BK	x	x	x	x
STT	x	x	x	
BNP	x	x	x	
HSBC	x	x		x
NTRS	x	x	x	

Source: Citi Research, company filings and press releases

- **BBH is another small, high touch global custodian** – Brown Brothers Harriman, a private company, offers a premium service at a premium price. They specialize in a 'high-touch' service offering, whose clients demand (and are willing to pay for) constant attention and focus. Given their respected reputation and custody platform, we believe BBH is a potential acquisition candidate.

Figure 29. STT, BNP, and NTRS have been notable share gainers

	AUC Market Share			Revenues		
	AUC (\$ tril)	2013	2011	LTM Revs	1-Yr CAGR	3-Yr CAGR
BNY-Mellon	26.2	26%	28%	5,102	0.2%	0.5%
JP Morgan	26.7	26%	26%	4,169	3.7%	3.1%
State Street	25.7	25%	24%	5,901	6.3%	4.1%
Top 3 subtotal	78.6	77%	78%	15,172	3.7%	3.1%
BNP	9.0	9%	7%	2,005	11.7%	4.6%
HSBC	8.5	8%	9%	1,661	-0.7%	0.3%
Northern Trust	6.5	6%	6%	1,386	8.6%	4.0%
Top 6 total	102.6	100%	100%	20,224	5.0%	3.5%

Source: Citi Research, Sprints Report, company filings and press releases

BNY-Mellon revenues include: asset servicing, securities lending, clearing services, treasury services, and FX

JP Morgan revenues include: securities services revenue from Corp & I-Bank segment

State Street revenues include: servicing fees, FX, and securities finance

BNP revenues include securities services fees in Investment Solutions segment

HSBC revenues include: securities services fees in Global Banking and Markets segment

Northern Trust revenues include: C&IS custody and fund administration fees, securities lending, FX, and treasury management fees

The major custody banks do not disclosure revenues on an apples-to-apples, but we have adjusted where we can to make them more comparable – see Figure 28

Why We Like Custody

We came away more positive on the outlook for asset servicing than consensus. In our view, asset servicing offers superior returns for the scale players, above average growth and a lower risk profile – all of which we go into detail below. Afterwards, we address key investor concerns including: 1) continued pricing pressure, 2) structurally higher capital and liquidity requirements, 3) elevated expenses due to high investment in technology and regulatory expense, and 4) lower margins in the higher return FX and securities lending businesses.

1) Attractive returns for scale players...

As we show in Figure 30, we believe that a >20% normalized ROTE in the Asset Servicing business is still attainable for the scale players (BK & STT), while NTRS' returns lag due to lack of scale. In Figure 31, pretax margins for scale players like BK and STT are nearly 30%. NTRS and BNP are both sub-scale players; NTRS' average pretax margin in 2010-2013 was ~25% in this business, while BNP is the smallest of the four banks in this analysis and generated a 16% margin.

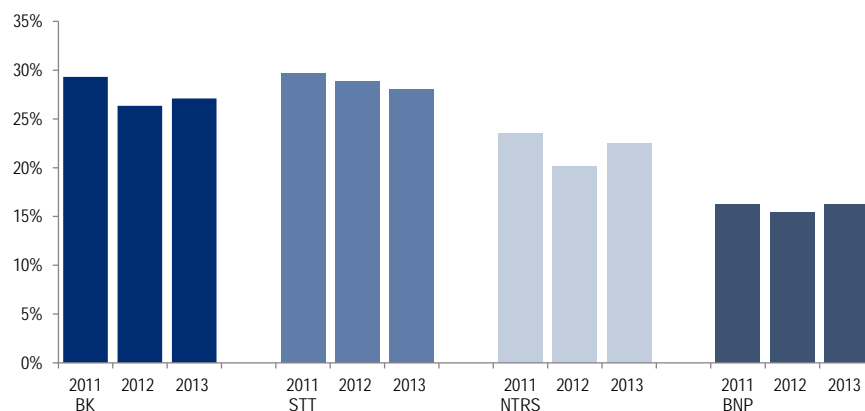
Figure 30. We estimate normalized Asset Servicing ROTEs >20% & Asset Management >40%

	Firmwide ROTE	Asset Svcing ROTE	Asset Mgmt ROTE	TCE ratio	TCE Allocation (%)	
					Asset Svcing	Asset Mgmt
BK	26%	23%	52%	6.4%	90%	10%
STT	29%	25%	>100%	6.8%	99%	1%
NTRS	18%	11%	43%	7.2%	80%	20%

Source: Citi Research

Note: we assume that tangible common equity is allocated by segment assets and include TCE for the Other segment with Asset Servicing. This results in: BK – 90% Asset Servicing/10% Asset Management; STT – 99%/1%; and NTRS 80%/20%

Figure 31. Pretax asset servicing margins show scale players have an advantage



Source: Citi Research, company disclosures, based on reported pre-tax margin. BK: Investment Services pretax margin, STT: Investment Services pretax margin, NTRS: Corporate and Institutional Services pretax margin, BNP: Securities Services pretax margin. Note that STT & BK group their services by product vs NTRS by client

Below we walk through a waterfall exhibit to illustrate our estimate of what pre-crisis, current, and normalized ROTEs for the asset servicing business may look like, including the following key secular and cyclical factors that have affected returns on the business: impact from higher capital, securities lending/FX revenues, and interest rates.

Figure 32. Asset servicing ROTE waterfall chart shows drivers of decline, and expected cyclical uplift to get normalized returns back to 20-25% range



Source: Citi Research

Although these numbers are based on STT & BK, they do not represent any one company and are supposed to be more conceptual to illustrate our estimate of what pre-crisis, current and post-crisis ROTEs for the asset servicing business may look like. For instance, the impact of higher rates will be much more impactful for BK than STT

1) Capital levels have increased due to regulatory requirements... –The trust banks are holding higher capital post-crisis, partially due to regulation and partially due to cyclical factors such as higher excess deposits which inflate balance sheets. Using STT as a proxy, we estimate that higher capital requirements today are weighing on returns by ~700 bps, of which ~250 bps is due to the excess deposits (a cyclical factor). Note that since STT is already near compliance with SLR requirements, outflows of excess deposits will free up capital. BK is below the SLR requirement, so outflows will help them meet requirements faster.

2) Regulatory reform has impaired the economics of securities lending ... – We estimate that ROTEs of the asset servicing businesses have suffered ~120 bps due to secular pressures in the sec lending business. The primary drivers are reduced collateral reinvestment yields, as client risk taking has fallen post-crisis and lower overall demand to borrow securities due to SLR constraints. While Fed Funds vs 3 month libor spreads are thinner than normal, we do not see a meaningful uplift as we explain later in the note.

3) FX has faced secular and cyclical pressure recently – The foreign exchange business has been under secular pressure from increased price transparency and electronification of FX markets, while historically low vol has added some cyclical pressure. Pricing transparency, which led to spread compression, stems from the litigation of alleged overpricing on ‘indirect trades.’ We estimate that ROTEs have been affected by ~165 bps due to these secular changes pressures. Volatility also remains at historical lows but we estimate that if volatility climbs back to its historical average (back to ~9-10% vs ~5-6% in 3Q14 to date) in a normalized environment, this would provide a ~95 bps boost to ROTEs.

4) We estimate the cyclical impact from rates based on our ALCO model – We have built an ALCO model to determine the benefit to NII over a 300 bps move, which takes into account the run-off of excess deposits, changing deposit betas over the cycle, and a shift in some non-interest bearing into interest bearing

deposits. BK is best positioned to benefit from higher rates (900 bps benefit to ROTE vs 210 bps for STT) due to higher asset sensitivity helped by recoveries of money market fee waivers. Please see the Asset Sensitivity section for a more detailed walk-through of our model and assumptions.

2)Above average growth outlook...

The Trust Banks have an above-average growth profile driven by secular growth in global financial assets and new products to help clients with new compliance burdens plus they have an embedded call option on higher markets activity levels.

■ **Strong underlying secular growth trends...** – Despite a cyclical down period, we estimate (see Figure 29) revenues have grown at ~3% over the last 3 years, which has been mostly organic given the limited acquisition activity.

– **Trust Banks should benefit from the continued need to outsource** – Post crisis, investor clients have demanded more transparency in the wake of Madoff and other cases of investor fraud, plus regulators demand additional reporting and tighter risk management and controls (eg AIFMD). This has created an increasingly important role for trust banks to serve as independent and trusted 3rd parties to handle a fund's operational functions.

• **AIMFD may accelerate alternative asset growth** – The alternative investment fund manager directive (AIFMD) regulation in Europe requires alternative investment funds to appoint an independent custodian. It also mandates a number of controls, many of which are back-office functions that the custody banks specialize in, such as NAV calculation, and cash flow monitoring. The custody banks have pointed to AIFMD as one of the few post-crisis regulatory developments that may be revenue generating.

■ **....Plus potential for new products**–The Trust Banks are focusing on harvesting the immense amount of data they have access to, and then providing value added services via front office services such as risk management analytics that are less commodity like vs the back office and middle office products.

– **STT is a leader in the data analytics space with its SSGX platform** – State Street Global Exchange (SSGX) is their data analytics platform that allows the client to better manage their data flow through the investment cycle and from one platform. While this trend is still in the very early innings, we believe STT is a leader in this area as they attempt to create new products capitalizing on the immense amount of data and information flow they have access too.

■ **Room for smaller acquisitions, but not likely to be a big driver** – We believe the Trust Banks are likely to pursue a smaller acquisition strategy to fill small holes, but unlikely to pursue any major purchases. The focus is now on building operating leverage within the existing model. STT recently said at a conference that acquisition strategy is not logical in the near to midterm as capital is being deployed internally to grow and leverage various organic businesses.

■ **And potential lift from FX** – If volatility levels pick-up from historically low levels, there is an embedded call option in FX revenue which may pick-up. Given there is not a lot of incremental cost here, this should mostly fall to the bottom line.

“What is being required [by AIFMD] is very similar to services that we’ve provided for clients for a long-time period... So this is really an expansion of that... But overall, we think that that’s actually something that will be a positive because it’s more that we can do for our clients and also a service that they’ll value and will also pay for.”

– Mike O’Grady, NTRS’ CFO on 1Q14 earnings call

Figure 33. Currency volatility is at historical lows, but has recently rebounded



Source: Citi Research, JPM G7 FX Volatility Index
Data as of Sept 19, 2014

- **Currency volatility has already started to pick up off historical lows** – Given the current geopolitical risks (Ukraine, Scotland, etc), currency volatility has spiked off the historical lows. As measured by the JPM Global FX Volatility Index is up ~42% vs its recent cyclical low in July (see Figure 33).

3)And relatively low risk profile

The trust banks business model is built on safety and soundness, a necessary set of traits given they are safeguarding assets. The trust banks take very little credit risk and their balance sheets are fairly liquid.

- **Credit and liquidity risk seems very low** – The Trust banks maintain a high quality/ low credit risk and liquid balance sheet. Within the asset servicing business, very little credit risk is taken; most lending is done via secured financing transactions which are fully collateralized. The trust banks invest in a very high quality securities book that consists of short-term, liquid, investments.
- **We believe litigation is manageable** –Our sense is the litigation risk is manageable for the three trust banks as their estimates of maximum losses in excess of reserves is a low single-digit % of TCE. Of the three, we believe NTRS has the lowest outstanding litigation risk.
 - **FX litigation remains a risk...** – In the day-to-day business of FX, trust banks will provide a range of FX conversion rates that they will provide. Starting in 2009-2010, numerous lawsuits were filed against BK and STT essentially alleging that they were overcharging clients for FX trades. The complaints claimed breach of contract and fraud, with fraud being the more serious of the allegations as it would allow for treble damages if successfully proven.
 - **STT has not resolved its case with the California AG case from Oct 2009** and has not accrued any legal reserves for these cases according to management. The plaintiffs are seeking \$300 mil in damages. STT also has received subpoenas and requests for information for other parties including the US Attorney, the Department of Labor, and the SEC.
 - **BK has settled smaller FX litigation cases, but State of New York remains open. The NY AG is seeking \$2 bil in damages.**
 - To our knowledge, NTRS was never named in any significant FX litigation.
 - **....And sec lending litigation seems mostly resolved** –Post-crisis, the trust banks faced a number of lawsuits alleging some combination of negligence, breach of fiduciary duty, imprudent investment of sec lending collateral, and/or excessive fees. STT took a \$414 mil litigation charge in 2Q10 and BK took a \$350 mil charge in 2Q12 related to these matters. NTRS took a minor \$19 mil charge in 4Q13, and also took a separate \$168 mil charge in 3Q08 to provide support to sec lending clients that were invested in constant dollar NAV funds. We believe the banks have substantially resolved their sec lending cases.
- **We believe risk of new entrants is low** – Given the high fixed costs due to required technology spend and the scale needed to reach efficiencies, we believe the risk of new entrants taking significant market share is relatively low.
- **Regulatory risks remain given STT & BK are G-SIFI banks** – Both STT and BK face regulatory risks being labeled a 'global systemically important financial institution' (G-SIFI). BK is unique given its position within the financial system as one of two banks that are able to clear for the tri-party repo system.

Figure 34. Litigation tail risk appears manageable for the trust banks

	Possible losses in excess of reserves	% of TCE
BK	850	3%
NTRS	130	1%
STT	n/a	

Source: Citi Research

Note: We estimate a 35% tax rate

Incrementally Positive on Pricing

“To be critical of our industry, I don’t think we charge enough for what we do...We ought to be charging reasonable rates for our services for the investment that we need to make and should capitalize on regulatory change and look at it as opportunities to add value to clients beyond what we do today – and again, charge for those services.” – Tim Keaney, Former Vice Chairman & CEO of Investment Services at BNY Mellon, 4/9/2014

“...our goal is to ensure that every client meets our minimum profit thresholds. And where applicable, we’re going to be raising prices on selected larger clients that don’t meet these margin requirements. To be clear we are going to undertake this in a deliberate, thoughtful and measured way, which may result in a small level of client attrition and perhaps a modest decline in assets under custody.” –Tim Keaney, Former VC & CEO of Investment Services at BNY Mellon, at 2011 Analyst Day on 11/14/2011

“I think we worked hard to gain some pricing advantage, particularly in the small and midsize accounts. I think the large accounts are still very competitive...” – Michael Rogers, EVP & Head of Global Markets & Global Services, Americas at STT at 2014 Investor & Analyst Forum

Investors continually cite pricing pressure as a reason to be cautious on the asset servicing businesses. Based on conversations with numerous industry experts, we believe the trust banks are shifting away from the ‘asset accumulation’ model of the past where custody services were essentially given away to get the more lucrative sec lending/FX revenues. Due to secular pressures to these ancillary services, our sense is that the trust banks have become more rational on pricing and are now more focused on improving profitability. Consistent with this, we are seeing pricing pressure has started to stabilize, especially for the small-to-mid sized clients.

■ **Prior focus was asset gathering to obtain higher margin FX & sec lending...**

– The trust banks were very focused on growing assets under custody (often run as a breakeven business) in order to get to the higher margin ancillary businesses, which led to significant pricing pressure. Pricing pressure began to intensify in late 2008/early 2009, as post-crisis pent up demand fueled intense competition to grow assets. After speaking with industry participants, we believe that prior to 2008, core custody pricing declined ~10% per year, but post-crisis this decline jumped to ~15% per year. The competition to grow assets was to obtain the higher margin, bigger profit driving businesses of FX and sec lending. FX represented ~11% on average of total fee revenues for the trust banks in 2007 and sec lending represented ~7% on average of total fee revenues.

■ **...But these key drivers of profitability also came under pressure forcing management to manage the business differently**

– As FX and securities lending revenues have come under pressure, the Trust Banks realized that they were not charging adequate prices for their core custody business. After speaking with industry experts, we believe the businesses are better managed with a much more disciplined approach on profitability. We believe that the recent trend towards unbundling pricing for the different products and setting price floors for clients only using single products will continue to pick up momentum.

Pricing pressure likely to continue for large clients, but some latitude with small-to-mid sized clients. We believe BNY Mellon was a leader in this trend by establishing minimum profit thresholds and were willing to allow contracts of unprofitable clients to expire. The large clients still have pricing power and we believe this trend is likely to continue in the near term. Any industry re-pricing is in the early innings and will lag due to contract maturities. Since the majority of contracts are within 3–5 years, industry re-pricing will take time to work through.

■ **Pricing pressure likely to continue for large clients given low incremental cost to onboard...** – Custody is characterized by very high fixed costs with low variable costs, meaning that onboarding clients is relatively inexpensive and incremental revenue tends to fall to the bottom line. Low cost to onboard also leads to low switching costs, and thus the ability to easily switch custodians also contributes to pricing pressure. We believe that this gives the clients a slight upper-hand in negotiating, and has contributed to historical pricing pressure.

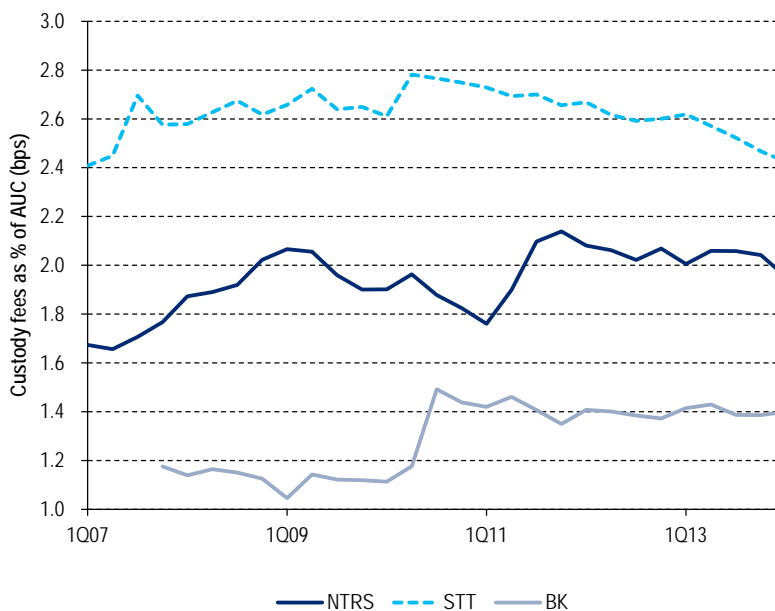
■ **...But more services have created a deeper, more engrained relationship**

– New product offerings and more services have engrained the clients deeper into the Trust Bank product network making it harder for clients to leave at the end of their contract thus taking away some of the negotiating power. For example, clients will rely on the Trust Banks for products in addition to just custody, like middle-office outsourcing and customized data and performance reporting & analytics, which makes it increasingly harder for a client to drop all systems and move to another competitor. By offering more products, the Trust Banks have created a more dependent relationship with the clients thus creating some longevity outside of contractual terms.

Looking at pricing metrics it appears that fee capture rates are stabilizing...

— Custody fees as a percentage of AUC&A or AUC is the industry standard for measuring pricing pressure (see Figure 35). While the recent trends support our view that pricing may be stabilizing, we would also like to caution the reliability of this analysis given the inconsistent disclosure around assets under custody (AUC) vs assets under administration (AUA). Another reason to look at this metric with caution is due to that fact that part of the revenue picked up in the Asset Servicing / Custody fee line of business is asset-based, but there is also a large transactional component. Fees are collected on a per transaction basis, so a decline in trading volumes which the current environment is experiencing will have a negative impact on the ratio. Pricing trends look stable for NTRS & BK, while STT seems to be re-pricing lower (although coming from a higher base) which we believe is largely attributable to their sensitivity to client transactions.

Figure 35. Custody fees as % of AUC shows some stabilization of pricing, but it's not the best measure



Source: Citi Research

BK: Asset Servicing / AUC&A

STT: Servicing Fees / AUC

NTRS: Custody & Fund Admin fees / AUC

Higher Capital And Liquidity Requirements

The Trust banks are facing higher capital requirements from the Supplementary Leverage Ratio (SLR) and the Liquidity Coverage Ratio (LCR.) While investors are concerned about the impact SLR will have on the business model and returns, we do not believe capital requirements have risen as much for the Trust banks as the money center and regional banks. Banks will also see some relief on capital when rates move higher and excess deposits leave. In addition, we see only a modest impact from the LCR. In this section we discuss how much capital levels have risen for the Trust banks relative to other banks, the impact of excess deposits on SLR and LCR, and how much LCR impacts the Trust banks.

Capital

Trust bank capital levels have increased less than money centers and regionals – Capital requirements have increased for all banks post-crisis, however Trust banks have been less impacted than regional and money center banks. After adjusting for deposits held at central banks, we estimate tangible equity ratios are only up 30% for the Trust banks vs 75-90% for regional and money center banks. Although Trust banks face multiple capital requirements, SLR has become the binding constraint on capital due to their low-risk asset mix. SLRs are currently under pressure due to high levels of excess deposits, but we estimate as rates move higher outflows of excess deposits will improve SLRs by 105-120 bps, freeing up trapped capital.

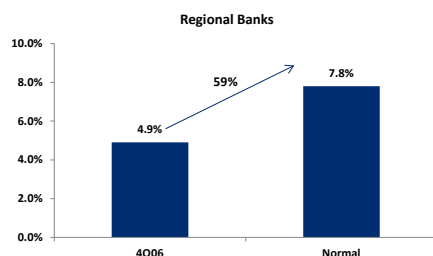
Figure 36. Using STT as a proxy and adjusting for excess deposits, we believe capital requirements have increased ~25% for trust banks

STT	
Reported 2Q14 TCE/TA	7.0%
Tangible Common Equity	13,081
Less: Capital due to excess deposit (\$42 bil @ 5%)	2,100
Adjusted Tangible Common Equity	10,981
Tangible Assets	187,857
Adjusted TCE/TA	5.8%
4Q06 TCE/TA	4.6%
% Capital Increase	27%

Source: Company filings, Citi Research

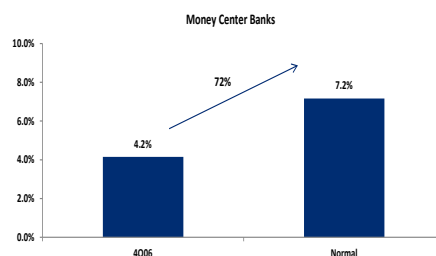
■ **Capital levels for the Trust banks have increased ~25% vs 60-70% for regionals and money centers** – While capital requirements have increased for the Trust banks post-crisis, they have been less impacted than the regionals and the money centers. In Figure 36, we use the example of STT as they are compliant with SLR at the HoldCo level and close to compliance at the bank level. While STT's reported TCE/TA ratio of 7.0% is up ~50% from our 4Q06 estimated TCE/TA of 4.6%, this ratio is currently being pressured by \$42 bil of excess deposits on the balance sheet. As rates move higher, resulting in deposit outflows, we estimate it will free up ~\$2.1 bil in trapped capital, lowering the TCE/TA ratio to 5.8%, which is a 27% increase over 2006 levels vs a 60-70% increase in TCE/TA ratios on average for the regional and money center banks (see Figure 37 to Figure 40).

Figure 37. On a normalized basis, we believe capital requirements have increased ~60% for regional banks...



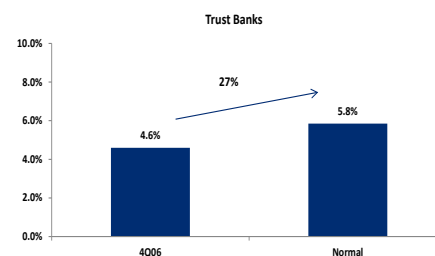
Source: Company filings, Citi Research

Figure 38. ...And ~70% for Money Center banks...



Source: Company filings, Citi Research

Figure 39. ...But only ~25% for Trust banks



Source: Company filings, Citi Research

Figure 40. BK lags peers on meeting SLR requirements

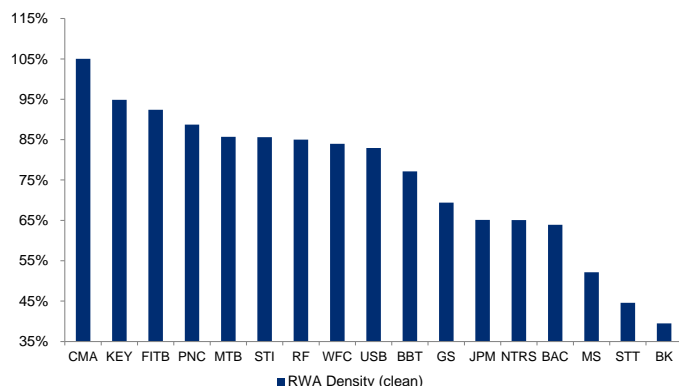
	2Q14 SLR	Minimum
BK - HoldCo	4.7%	5.0%
BK - Bank Sub	N/A	6.0%
STT - HoldCo	6.1%	5.0%
STT - Bank Sub	5.8%	6.0%
NTRS - HoldCo	>5%	3.0%
NTRS - Bank sub	>5%	3.0%

Source: Earnings calls, Company filings, Citi Research

The SLR will be the binding constraint on Trust bank capital going forward –

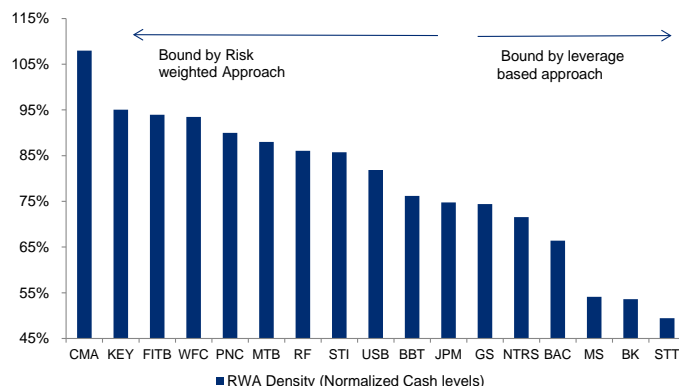
While trust banks face multiple capital requirements (Tier 1 Common, CCAR, and SLR), SLR will be the binding constraint on Trust banks. Tier 1 Common is less of a constraint due to a lower risk asset mix. As shown in Figure 41 and Figure 42, the RWA density of the Trust banks (RWA divided by total assets) is very low compared to other banks, even after backing out low risk excess deposits on the balance sheet. CCAR is also unlikely to be a binding constraint on capital, as the Trust banks have performed better on the stress test than regionals, money centers, and brokers on both Tier 1 Common metrics, while trailing only the regionals on the leverage ratio (see Figure 43). On the SLR, BK still has some work left to do, STT is close to compliance and NTRS is well above their required ratios (see Figure 40).

Figure 41. SLR is key capital constraint for trust banks due low RWA density



Source: Citi Research

Figure 42. . . . Even after adjusting for excess cash



Source: Citi Research

Note: Normalized cash balances computed from pre-crisis cash levels

Figure 43. Unlike banks and brokers, CCAR has not been a constraining factor for the trust banks

	Min Basel 1 T1C Ratio	Min Basel 3 CET1 Ratio	Leverage Ratio
Trust Bank Avg	12.6%	11.8%	6.2%
BK	13.1%	13.8%	5.3%
NTRS	11.4%	10.3%	6.9%
STT	13.3%	11.4%	6.3%
Regional Bk Avg	8.4%	8.1%	8.1%
Money Center Avg	7.3%	7.0%	5.8%
Broker Avg	6.5%	6.9%	4.7%

Source: Citi Research

- **Excess deposits are weighing on SLRs, and outflows when rates rise will improve ratios, freeing trapped capital** – A lack of opportunities to earn better yields due to low rates has resulted in customers leaving excess deposits at the Trust banks. These deposits inflate leveraged assets, forcing the Trust banks to hold more capital. As rates move higher, presenting customers with opportunities to earn higher yields elsewhere, trust banks will see outflows of excess deposits, leading to smaller balance sheets. We estimate this will improve SLRs by 100 bps (see Figure 44). Trust banks only earn 25 bps or less on these wholesale deposits, so the revenue impact will be limited.

Figure 44. We estimate outflows of excess deposits would improve SLRs by 100 bps

(in \$billions)	2Q14 Tier 1 Capital	Adj Leveraged Assets ¹	2Q14 SLR ex excess deposits	2Q14 SLR	Difference
BK	18	380	5.7%	4.7%	97
STT	16	258	7.3%	6.1%	119

¹ We assume \$42 bil in excess deposits for STT as disclosed on the 2Q14 call and \$65 bil for BK given their estimate of \$50-80 bil in excess deposits given on the 4Q12 call

Source: Company disclosure, company filings, Citi Research

Liquidity

Higher liquidity requirements will have a modest impact – While the final LCR rule included a favorable change in the treatment of custody deposits⁴, we believe the Trust banks will still need to adjust their balance sheets to raise HQLA in order to meet LCR requirements. Although this will result in some give up in credit spread as Trust banks sell excess agency MBS, ABS, or Munis for duration-equivalent Treasuries or GNMMAs, we see only a modest impact (5-10 bps impact to NIMs and a 3-5% impact to earnings).

NSFR should not be an issue, as trust banks have liquid balance sheets and require less stable funding. While they are not likely to be directly impacted by NSFR, revenues could be indirectly impacted by lower demand for securities lending due to higher capital requirements for margin loans. Banks are likely to raise the cost of margin loans for prime brokerage clients to offset the higher funding needs. The higher costs could reduce demand to borrow securities to short in the market.

- **We see only a 5-10 bps impact to NIMs and 3% impact to EPS for the Trust banks after accounting for changes in the final LCR rule** – Using STT as a proxy, we estimate that actions to comply with LCR would impact NIM by 5-10 bps and or 3% of earnings. STT disclosed their LCR was “north of 80%” on their 2Q14 earnings call, including an assumption about changes to the treatment of operational deposits largely in-line with the final rule. Given this disclosure, and relatively similar balance sheet construction, we believe BK also still has some work to do to meet LCR requirements. We believe NTRS is in compliance with the new rules. We estimate the amount of HQLA STT would need to raise using our own estimate of STT’s HQLA and assuming an 80% LCR, allowing us to back into net outflows. We assume STT meets the LCR requirement by adding to Treasuries with proceeds from selling: 1) student loans and credit card ABS securities, which costs them 40 bps of credit spread, and 2) selling non-US MBS and ABS, giving up 65 bps of credit spread (see Figure 45).
- **STT’s disclosure is the best proxy for Trust bank LCRs as the ratio is difficult to calculate using publicly available data** – It is very hard to accurately calculate LCR ratios using publicly available data, particularly the calculation of net outflows. It requires granular data on maturities of secured funding agreements and commitments, as well as derivatives counterparties and collateral types by contract.
- **If LCRs move above 100%, outflows of excess deposits will benefit LCRs as well** – Another concern is the impact on LCRs as excess deposits leave the

⁴ The original US LCR proposal treated custody deposits as non-operational deposits, and custody customers are generally financial firms (such as asset managers), which would have resulted in most custody deposits receiving the highest outflow rate of 100%. Under the final rules, custody deposits will now be considered operational. Most custody deposits will now receive outflow rates of 25%.

Trust banks. Excess deposit outflows should not present an issue – as long as the banks are over 100%. Excess deposits receive 100% outflow rates, so they lower HQLA just as much as they impact net outflows. As shown in Figure 46, if a bank's LCR is > 100% excess deposit outflows have a positive impact. If a bank's LCR is < 100%, excess deposit outflows will have a negative impact.

Figure 45. Assuming STT is at 80% LCR currently, we see getting to 100% would impact NIM by ~5 bps

Potential impact of LCR on STT

2Q14 disclosed LCR	> 80%
Citi HQLA estimate	119,762
Estimated net outflows assumes (80% LCR)	149,703
HQLA needed to get to 100% LCR	29,941
Potential sale of credit card and student loan ABS	20,528
Swap Foreign MBS for Treasuries/GNMAs	9,413
2Q14 Annualized NII	2,300
Impact from	
Selling ABS and Buying Treasuries (40 bps less spread)	(82)
Selling Foreign ABS/MBS and Buying Treasuries (65 bps less spread)	(61)
2Q14 NII including LCR impact (annualized)	2,157
2Q14 Average Earning Assets	206,323
2Q14 NIM including LCR impact	1.05%
2Q14 NIM - reported	1.12%
Difference	(0.07%)
Impact on EPS	\$ (0.21)
Percent impact on 2014 consensus EPS	-4%

Source: Citi Research

Figure 46. If a banks has over 100% LCR, then excess deposit outflows can improve the LCR ratio

Beginning LCR		After \$20 excess deposit run-off	
110%	=	$\frac{\$110 \text{ HQLA}}{\$100 \text{ Net Outflows}}$	= 113%
		$\frac{\$90 \text{ HQLA}}{\$80 \text{ Net outflows}}$	
80%	=	$\frac{\$80 \text{ HQLA}}{\$100 \text{ Net Outflows}}$	= 75%
		$\frac{\$60 \text{ HQLA}}{\$80 \text{ Net outflows}}$	

Source: Citi Research

Expense Outlook Remains Uncertain

“...on the regulatory side, the rate of increase is slowing down as we’re getting greater clarity around the rules and the regulations and what we need to do to be in compliance with them...we do, in fact, see the rate of growth moderating.”

- Gerald Hassell, BK’s CEO, on 2Q14 earnings call

“Pretty clear to me that regulatory expectations are a moving target. I think that whether it’s capital, liquidity, different levels of reporting that are required; the bar gets raised all the time. And so, I think for somebody today to say that regulatory expense is topped out or peaked, that seems inconsistent to me with what I’m hearing from regulators.”

- Joseph L. Hooley, STT’s CEO, on 2Q14 earnings call

Since the financial crisis, the trust banks have seen considerable expense growth from new regulations.... We estimate that the core expense CAGR for the trust banks from '09-'13 has been ~6% (vs ~3% core revenue CAGR); technology & software expenses have grown at a >9% CAGR and outside services/consultant costs have grown at a 5-7% CAGR.

...And the key question is the expense outlook, which is unclear given BNY Mellon and State Street seem to have different stances on this topic (see side comments) – During their 2Q14 earnings calls, investors asked BK and STT about their outlook for regulatory compliance expenses (see side commentary above). The companies seemed to respond with opposing stances. BK’s comments suggest that management feels more comfortable with the regulatory environment today and accordingly, they see the rate of expense growth slowing, whereas STT’s comments suggest that it sees further expense growth ahead. We see how in the current environment they could both be correct. We think BK’s comments reflect that for a number of the larger regulatory initiatives such as Basel 3 rules, SLR, etc. the rules are finalized or moving towards finalized. As a result, the banks know what they need to do to get into compliance and are seeing spending on these initiatives coming to an end soon. STT’s comments reflect not the larger initiatives but the continued evolution of regulatory rules, which does not stop with Basel 3, etc. Regulators are constantly creating, amending, and implementing new rules that require banks to fund additional projects to get into compliance.

We believe most of the significant regulations affecting trust banks post-crisis are largely in the rearview mirror – To aid the discussion, we use Figure 47 to list out the major regulations that have impacted trust banks post-crisis and use progress circles to indicate our estimate of how far along the banks are in complying with each regulation. We believe that the trust banks are done investing in AIFMD, MiFID II, FACTA (Foreign Account Tax Compliance Act) and also mostly done with Basel 3 capital and stress testing. We believe AIFMD, MiFID II, and FACTA were essentially regulations that required investments in IT infrastructure to handle the new reporting and compliance requirements, and these investments are largely done. For example, a key element of FACTA compliance was simply systematizing the ability to track the cost basis of securities purchased. As for Basel 3 capital, the Fed has approved a number of banks’ advanced approaches models, including BK, NTRS and STT⁵. We also believe the trust banks are in the final innings of investing for stress testing, as BK and STT have been perennial participants since the 2009 SCAP and have historically passed with no objections and always rank toward the top in terms of stressed capital levels.

In the bullets below, we briefly review some of the larger regulations that have impacted the trust bank industry:

- **AIFMD mandates greater transparency and investor protection for alternative investment funds** – The European Alternative Investment Fund Managers Directive (AIFMD) went into effect in mid-2013 with the primary goal of improving investor protection after the financial crisis and Madoff scandal. The directive establishes a liability framework whereby custodians are held legally liable if client securities are lost due to negligence or intentional failure to perform their duties. The net result of this initiative is that the custodian banks need to build out their IT infrastructure to handle all of new reporting and data collection requirements to satisfy their responsibilities under the directive.

⁵ See Fed press release: <http://www.federalreserve.gov/newsevents/press/bcreg/20140221a.htm>

■ **MiFID II is primarily focused on improving transparency in OTC derivatives trading** – The Markets in Financial Instruments Directive II (MiFID II) went into effect in July 2014. Similar to AIFMD, this directive is focused on improving investor protection, but its primary attention is on creating more organized and transparent pricing, trading, and reporting for the OTC derivatives market. MiFID II has more of an impact on the investment banks and trading firms that are involved with derivatives and commodities trading, but there are implications for the custodians in terms of building out their IT infrastructure to handle the new reporting and compliance requirements.

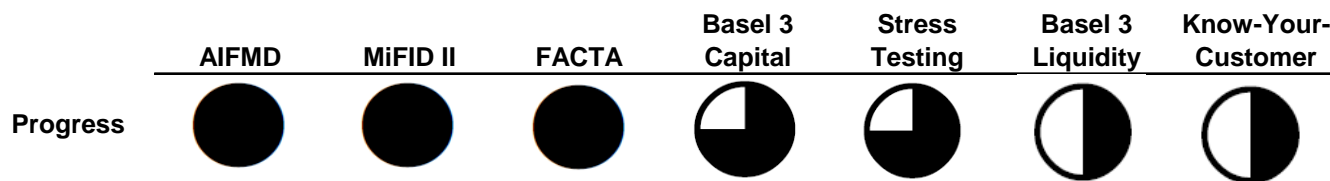
■ **Initiatives like TARGET2 are attempts to consolidate market fragmentation** – T2S is a program aimed at unifying the settlement process in Europe to reduce the difficulty of cross-border settlement in the market. Despite the common currency and central banking regime in Europe, significant fragmentation still exists between the various settlement and clearing processes. T2S aims at streamlining the communication and settlement between the various markets in Europe, the ultimate goal being to remove costs from the settlement processes. While we believe there is a large upfront cost due to the required technology investment, once these programs have been assimilated this could help streamline the back office services they provide and lower costs in the future.

■ **There will likely be some additional expense as companies get in compliance with Basel III liquidity rules** – Our conversations with industry participants suggest that many banks held off on fully systematizing and optimizing for the day-to-day implementation of the LCR rule before the final version was released and thus there will be a period of digestion and investment as banks implement the rule.

...which could impact each bank differently depending on product and customer mix – As the regulatory rules evolve, it could have different impacts for each bank. For example, Know-Your-Customer (KYC) rules do not typically show up on the list of larger regulatory initiatives that the banks need to work through. However, this rule could result in additional expense, particularly for STT given their leading fund administration business which produces the required reporting documents. Based on the way the rules are currently written, the Trust banks are required in some cases to not only verify the identity of customers at the fund level, but also at the share class level. This requires more work for STT to become compliant given that a large percentage on their AUC is mutual funds.

■ **Regulatory MRAs/MRIAs can lead to additional regulatory expenses** – Regulators such as the Fed and the OCC issue consent orders called Matters Requiring Attention (MRAs) or Matters Requiring Immediate Attention (MRIAs) to alert banks when they need to address issues that pose safety and soundness risk or if they become non-compliant with banking laws and regulations.

Figure 47. We believe that B3 liquidity (LCR/NSFR) and Know-Your-Customer are key outstanding regulations to work through



Source: Citi Research We believe exhibit is directionally accurate based on conversations we have had with industry experts

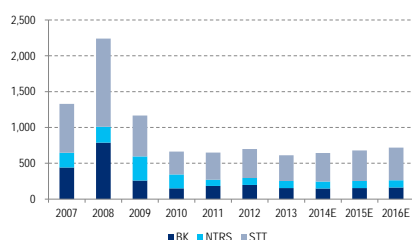
Figure 48. Sec lending and FX as a % of fee revenues

Sec Lending	2007	2013	Norm
BK	3.8%	1.3%	1.2%
NTRS	7.8%	3.1%	2.5%
STT	10.3%	4.6%	4.8%

FX	2007	2013	Norm
BK	7.0%	5.2%	4.8%
NTRS	13.2%	7.8%	7.0%
STT	12.1%	7.6%	7.6%

Source: Citi Research

Figure 49. We expect sec lending to grow at a ~5% CAGR off the 2013 base



Source: Citi Research

Figure 50. Sec lending spreads have room to improve



*Average is 15 year average of 3Month LIBOR - FF spread, excluding 4Q08

Source: Citi Research, 3M Libor- FF spread, FT, Fed As of 9/19/2014

Sec Lending Limited, But FX Can Rebound

Both FX and securities lending have gone through significant secular changes post-crisis that have weighed on revenues. Traditional securities lending has faced secular pressures from a permanent change in collateral investment rates and increasing capital requirements, while FX has been impacted by more pricing transparency due to litigation issues and general industry pressures such as electronification. Although we expect some cyclical upside from a pickup in FX volatility, we don't see a significant lift from traditional securities lending, although there may be an opportunity to replace some business with higher margin products such as enhanced custody to supplant lost revenues.

Securities Lending

Sec Lending revenues are a function of spread and volume, and we see secular pressures from changing client attitudes and higher capital restricting both sides of the equation. We believe collateral reinvestment spreads have permanently declined from 50-60% of sec lending revenues to ~15% today, and we do not see meaningful upside in a higher rate environment. However, we see some offset as the trust banks build out "enhanced custody offerings" by going straight to hedge funds and disintermediating prime brokers. We discuss how higher capital is affecting the volume side of the market on pg 24 in our primer on sec lending.

■ **We think reinvestment rates are permanently impaired while borrow rates are roughly at historical averages...** – We don't see major upside on the spread side of the equation. The components of spread are the reinvestment rate and the borrow rate. Post-crisis, the proceeds from collateral reinvestment has fallen as the mix has shifted from roughly 50-60% of revenues to closer to 15% due to secular changes in client risk appetite. On the remaining 85% of the revenue pool, we believe borrow rates are near historical averages and we don't see a major catalyst to drive this rate higher.

– **Losses on reinvested collateral during the crisis have reduced the risk tolerance of sec lending clients** – Pre-crisis, collateral reinvestment yielded outsized returns, as lenders took increased duration risk in the collateral pools. These collateral reinvestment strategies yielded anywhere between ~50 bps to >100 bps depending on the tolerated risk level, split 80/20% between client/trust bank. During the financial crisis when these positions needed to be unwound, the collateral had lost significant value. Post-crisis, clients usually require collateral to be placed into highly liquid, safe, short term investments (ie repo, ST bonds, etc) which has limited the revenue opportunities for agent lenders. In addition, as a result of lower income from sec lending, clients have gained a larger share of the proceeds from sec lending and the revenue split between the owner of the security and the trust banks is now closer to 90/10%.

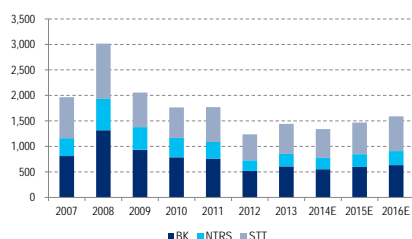
• **Upside to LIBOR – Fed funds spread is limited** – The LIBOR – Fed Funds spread is at ~15bps vs 25bps historically. Because the Trust banks only receive 10% of the total proceeds, we see the limited upside from this spread normalizing as rates increase. We estimate that an additional ~10 bps in collateral spread yields less than 1% of upside to our 2016 EPS estimates. For example, on STT's collateral pool of \$321 bil, an extra 1 bps (10% of 10bps) is only \$32 mil, or 5c to our '16 estimates (< 1% upside).

– **We believe borrow rates are near historical averages** – According to Markit, which produces a global equity volume weighted average fee, which we use as our proxy for borrow rates, the average rate going back to 2006 ~70-80 bps, in-line with today's rate. Because this rate is set based on supply and demand characteristics for a security, we see limited potential for this rate to increase due to a decline in overall demand for sec lending.

- **...But there could be a slight offset from the enhanced custody product** – Traditionally the trust banks were 'agent securities lenders', acting as intermediaries between custody clients (securities lenders) and the prime brokers like GS (the borrowers) and just taking a fee for their services. In an effort to supplement falling sec lending revenues and meet demand for their alternative fund clients, the trust banks have started offering what we call 'prime-brokerage lite' (ie STT's Enhanced Custody) which disintermediates the prime broker and involves lending securities directly to a hedge fund. We believe the trust banks are focused on the higher margin, hard-to-borrow securities business, not the general collateral (GC) or lower margin business. See the Securities Lending section in our Asset Servicing Primer for more detail.

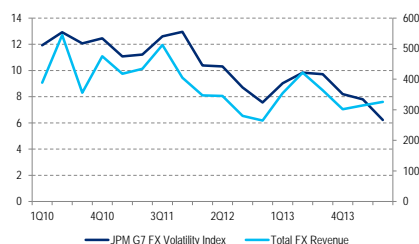
Foreign Exchange

Figure 51. Expect FX revenues to grow at a 8-10% per annum off a 2013 base, below custody fees



Source: Citi Research

Figure 52. FX revenues are highly correlated with volatility...



Source: Citi Research, JPM G7 FX Volatility Index; As of 2Q14

In prior periods, FX was a significant driver of ancillary revenues for the trust banks, but more recently, the business has gone under a significant transformation given the secular and cyclical pressures. FX revenues should conceptually track AUC growth, which we assume will grow at a ~8% CAGR from a '13 base to '16, and as such we believe FX revenues will grow from ~8-10% per annum in '15 & '16 (off a cyclically depressed '14 base), with continued secular pressures on the business from increased pricing transparency, electronification, and FX reform.

- **We believe FX will grow at a ~8-10% per annum in '15 & '16 plus there is a call option on higher volatility** – We believe FX will rebound off of a cyclically low 2014 and grow between 8-10% per annum in 2015 and 2016 (see Figure 51). Our estimates takes into consideration that the secular pressures of pricing transparency, competition, and electronification will continue to limit growth. We also assume modest uptick from a cyclically low volatility level, but to the extent that volatility reverts back to its historical mean, there is upside to our '16 EPS estimates.
- **If volatility rebounded to historical norms, '16 EPS estimates could see ~7-9% upside** – Using data back to 2010, we found an 80% (see Figure 52) correlation between aggregate FX revenues of the three trust banks vs currency volatility (as measured by JPM G7 FX Volatility Index), which has been at historical lows in YTD '14. If we assume that the current low volatility normalizes to historical levels there is ~7-9% upside to our EPS estimates. See our sensitivity analysis in Figure 53 for upside to our estimates.

Figure 53. A rebound in volatility would provide 6-9% upside to our '15 estimates

	BK	NTRS	STT
Base Case '15 EPS	2.65	3.85	5.45
Bull Case - Return to Normal Vol in '15	2.84	4.19	5.96
% upside	7%	9%	9%
Bull Case - Half-way to Normal Vol in '15	2.74	3.99	5.66
% upside	3%	4%	4%

Source: Citi Research

Secular pressures have impacted the revenues of the business – Below we go through the more permanent changes that have impacted the foreign exchange business, which is why we believe FX is likely to grow slightly slower than custody fees.

- **FX lawsuits have increased price transparency & pressured spreads** – Various lawsuits have been filed against BK & STT alleging that for the larger spread, standing instruction FX trades, or trades where the custody bank determines the timing and pricing of the trade, clients were being overcharged. As a result of these lawsuits, clients became much more cost aware and started demanding greater price transparency and hiring independent consultants to provide transaction analysis to make sure they were receiving the best execution which also pressured pricing.
- **The Trust Banks have modified their FX business models...** – The Trust Banks had to change their business models to allow for more price transparency when transacting standing instruction trades. Given this particular execution style was higher margin and more revenue generating, this has hurt FX revenues. For example, in late 2009, STT had to overhaul their program and began providing daily information to clients regarding execution rates, interbank FX market rates, etc. BK also had a similar overhaul by introducing a “defined spread” FX product that offers more transparent pricing offerings and some protection against currency fluctuations. NTRS was not directly affected by FX litigation, but we believe that their business model was still indirectly affected by increased pricing transparency.
- **...Which caused pricing to be cut by an estimated 50%** – These lawsuits caused an overhaul to the Trust Banks FX services by creating new products and improving disclosure and transparency. According to a *Pensions & Investments* article from November 2013⁶, it is estimated that these changes reduced pricing by 50%. The article points to the fact that prior to these lawsuits the average cost was 9-10 bps per trade and this has been shrunk to mid-single digits.
- **Historically low volatility has also weighed on spreads** – Post-crisis, global central bank stimulus has kept volatility levels at record lows, narrowing currency spreads and weighing on revenues and profitability. Low volatility also dampened the need to hedge currencies which has further reduced trading volume.
- **Continued shift towards electronic trading may increase competition** – The general market evolution towards electronic trading has also weighed on FX spreads; greater electronification which also spurs higher competition has continued to tighten spreads in the FX business. We do not believe this phenomenon is going away and would expect it to worsen going forward as the market becomes more efficient.
- **FX reform has yet to influence the system but will likely pressure the overall industry** – After speaking with industry participants, we believe further automation of the largely electronic foreign exchange market is in order to reduce the risk of human manipulation and further cut costs. More volume is likely to move electronic which will continue to pressure already decreasing spreads.

⁶ Baert, Rick. “Suits Cause FX Trading Costs to Plummet.” *Pensions & Investments*. Crain Communications Inc, 25 Nov. 2013. Web. <www.pionline.com>.

Trust Banks – A Better Rate Play

One of the key investment themes is exposure to higher short term rates, and we believe the Trust banks are better plays on increasing rates vs the regional banks.

1) Most asset sensitivity benefits will come in the first 50 bps move due to a floor on deposit costs...— Trust banks typically pay custody customers Fed Funds minus 25 to 50 bps on their deposits, which creates a “floor” on deposit costs. For example, with Fed Funds currently around 10 bps, a bank that pays Fed Funds minus 50 bps pays nothing on deposits. (When the spread goes negative the bank does not charge to keep deposits at the bank, the banks just do not pay interest.) In this example, until the Fed Funds rate moves past 50 bps the bank will not see higher deposit costs.

■ **Lower deposit betas on the initial 50 bp move...** With the typical spread for Trust bank deposits at 25-50 bps, deposit betas will be very low over the first 50 bps move. After 50 bps the banks will pass on most of the benefits of higher rates to customers (~80-90% deposit betas). Regional bank deposit betas are often lower at the start of cycles as the initial move in rates is not enough to get their customers to begin to look for better yield opportunities, but we expect they will still be higher relative to Trust banks (30% vs 0-20%) over the first 50 bps move.

■ **....plus recoveries of money market fee waivers** — Sponsors of money market funds will waive fees in order to prevent investors from earning a negative or zero yield. Sponsors will be able to recover these waived fees as rates move higher, and most of these recoveries should happen within the first 50 bps rate increase. BK noted recently at an industry conference that on a pre-tax basis ~70% of their fee waivers would be recovered during the first 50 bps move in rates.

2) ...and Trust banks are more levered to the short-end of the curve, which the Fed controls — Trust banks have shorter duration balance sheets vs regional banks as we estimate 59% of assets re-price in 0-3 months vs 44% for regional banks. While the Fed's actions will also have some impact on long rates, they have less control over the long-end of the curve, which the regional banks derive a larger percentage of their asset sensitivity benefit from.

3) Less variability in Trust bank asset sensitivity estimates — There is a lot of subjectivity with respect to deposit behavior when analyzing the banks, but we see a narrower range of outcomes in Trust bank asset sensitivity analysis vs regional banks. For the regional banks these are driven by customer behavior, which is very unpredictable. Trust bank deposit betas can be more anchored to contractual deposit spreads. Excess deposits are likely to leave for better yield opportunities, but operational deposits need to stay at the bank to meet daily transaction activity. In addition, competition among regional banks for floating rate C&I loans will result in spread compression, which can be difficult to estimate.

4) ...and no credit cost offset — If credit quality deteriorates, higher provision expense could offset some of the regional banks asset sensitivity. Trust banks do not have this problem, as loans make up only 18% of the balance sheet on average vs 74% for regional banks, so provision expenses are much lower.

5) Outflows of excess deposits will free up capital — Under the SLR, Trust banks are forced to hold 5% capital against excess deposits, which increase balance sheet size, but only earn 25 bps at the Fed. As rates rise and these deposits leave, it will free up trapped capital, with limited revenue impact.

Drivers of Trust Bank Asset Sensitivity

Relative to regional banks, Trust banks have a larger percentage of the balance sheet in shorter duration assets. On the liability side, deposit costs for the Trust banks are based on a spread to overnight rates, while regional banks deposit costs are influenced more by customer behavior and competition between the banks themselves.

- **Trust bank assets are mostly short duration assets** – Using call report data on loans and securities, and assuming that other assets such as interest-bearing deposits, fed funds, and trading assets are short duration assets, we estimate 59% of assets on trust bank balance sheets would re-price in 0-3 months, vs 44% on average for regional banks. The shorter duration of the assets reflects the more liquid nature of their deposits, which are used to cover daily activity in customer portfolios, or are left overnight as short-term investments.
- **Interest-bearing custody deposits are priced off of overnight rates** – As we discussed previously, the banks pay Fed Funds minus a spread (typically 25-50 bps) for custody deposits. The spread varies over the cycle, as banks can contractually raise or lower this spread on short notice depending on the direction and level of interest rates. Interest-bearing custody deposits for the Trust banks consist of both operational deposits as well as excess deposits. Operational deposits are the frictional cash deposits to cover the trading, foreign exchange, and other daily activity in their accounts. Excess deposits are deposits left at the Trust banks outside of operational deposits. Knowing the exact level of excess deposits can be somewhat difficult because they have to be estimated on a customer-by-customer basis and take into account customer activity trends.
 - **We estimate total deposits consist of 68% operational and 24% excess on average**– In Figure 54, we breakdown the deposits. We assume that money market and savings deposits are from retail customers. We assume the remaining deposits are custody deposits and separate them into operational vs excess. We use \$42 bil in excess deposits for STT based on comments made during its 2Q14 earnings call, and assume BK has ~\$50 bil based on comments from the 4Q13 call that \$50-80 bil in deposits were excess (we take the low end of this range.)
 - **Non-interest bearing DDAs consist of operational deposits, which are relatively stable**- Noninterest-bearing DDAs consist of operational deposits left by customers. Because customers must leave operational deposits at the bank to cover daily activity, the banks are unlikely to see large outflows of non-interest bearing deposits as rates increase, providing a stable source of free funding. Non-interest bearing DDAs are ~25% of trust bank deposits on average. The non-interest bearing DDAs are added to the operational interest-bearing deposits to get the total amount of operational deposits.
 - **Excess deposits will leave, but the revenue impact will be small** – Banks have high levels of excess deposits because the low rate environment has left customers unwilling to invest cash at lower yields. Because the deposits are likely to leave as higher rates create better yield opportunities, they are considered “hot money”. As a result, they are just left overnight at the Fed, so the bank only earns a small spread, which means the outflows will only have a small revenue impact. STT noted at their 2014 analyst day, that the elimination of excess deposits would benefit NIM by 10-15 bps in 2018 assuming a static interest rate scenario.

Figure 54. We estimate operational deposits represent ~70% of deposits

(\$ billions)	BK		NTRS		STT		Average
	Balance	%	Balance	%	Balance	%	
Total Deposits	240	100%	85	100%	172	100%	100%
Custody Deposits	232	96%	68	80%	172	100%	92%
Operational	167	69%	51	60%	130	76%	68%
Non-Interest Bea	78	32%	19	22%	42	24%	26%
Interest-bearing	89	37%	32	38%	88	51%	42%
Excess (Interest-be	65	27%	17	20%	42	24%	24%
Retail Deposits	9	4%	17	20%			12%
Money Market	8	3%	-	0%			2%
Savings	1	0%	15	18%			9%
CDs	-	0%	2	2%			1%

Source: Company filings, Citi Research

Figure 55. Recovery of money market fee waivers will benefit BK and NTRS, while STT will see less benefit

Fee Waivers (mils)	2Q14	Annualized
BK*	114	456
NTRS	31	123
STT	10	40

*BK's fee waivers based on mgmt. disclosure of 6-7c EPS impact from waivers in 4Q13. We assume a 35% tax rate.

Source: Company filings, Citi Research

■ **Trust banks also benefit from recoveries of money market fee waivers as short rates move higher** –As we discussed on the first section, recoveries of money market fee waivers also help Trust bank asset sensitivity. We estimate BK waived \$114 mil of fees in 2Q14, while NTRS waived \$31 mil and STT waived \$10 mil.

- **...Although there is some risk to recoveries on retail fee waivers** - Increased regulation on investment maturity and credit quality vs pre-crisis will limit returns to money market funds as rates move higher (i.e. restricting weighted average life to 120 days and weighted average maturity to 60 days, minimum 10% of assets in cash, US Treasuries, or securities that convert to cash in a day). Institutional fee waivers will be recovered as the fee hurdle fund providers need to overcome to recover the waivers is fairly low (~10 bps). However, retail fee waivers are less likely to be recovered due to higher fee hurdles (~30-50 bps) coupled with pressure on returns.

■ **After an initial benefit, Trust banks are liability sensitive for a short period** – Trust bank balance sheets consist of a high percentage of floating rate securities (STT disclosed 54% of their portfolio was in floating rate securities as of 2Q14), which only reset monthly or every three months. However, deposits are indexed to overnight rates and re-price daily. The difference in timing of re-pricing makes the Trust banks liability sensitivity for a short period after the initial benefit from fee waivers and the floor on deposit costs, but then becomes asset sensitivity as asset repricing catches up.

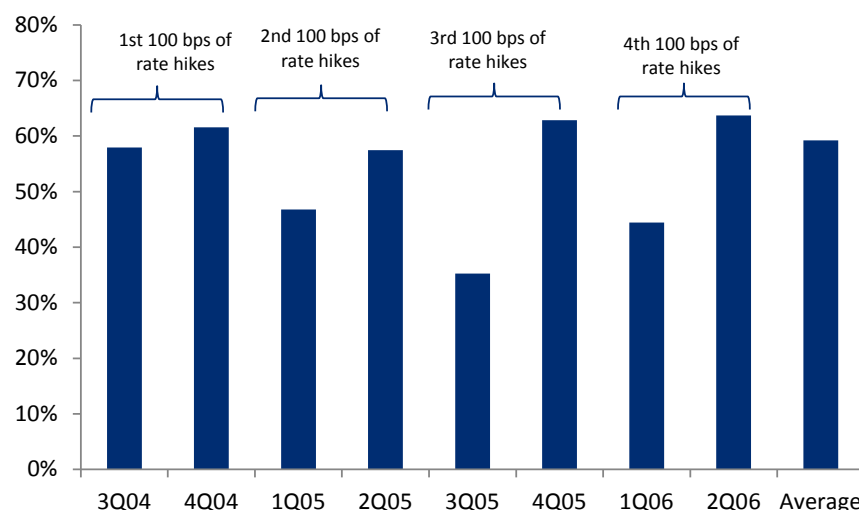
■ **Longer-term, asset sensitivity comes from non-interest bearing DDAs and wider spreads on deposits** – Asset sensitivity benefits over the remainder of the cycle come from driven by funding assets with non-interest bearing DDAs, which currently make up ~25% of total deposits, and as discussed above consist of relatively stable operational deposits. In addition, banks will exercise their contractual right to widen the spread they earn on deposits, allowing them to keep additional benefits from higher rates.

Analysis of 100 bps Rate Move

Based on our ALCO model, we see the Trust banks receiving 2/3 of the benefit from a normalization of rates (Fed Funds at 300 bps) in the first 100 bp move. Our model allows us to look at the asset sensitivity across the banks by standardizing key assumptions in the balance sheet. The four key assumptions are deposit betas, excess deposit run-off, non-interest bearing deposit run-off, and recovery of money market fee waivers, which we review below. We found NTRS as having the most upside relative to their disclosure followed by BK, while STT is in line.

- **We assume deposit betas are 0%-20% for the first 50 bps move, but increase to 80-90% after 50 bps, which seem conservative vs history** – Due to the effective floor created by the spread on deposits in the current low rate environment, betas should be relatively low for the first 50 bps, before increasing to higher levels. We assume a 0% beta for the first 25 bps increase in rates, but increase to a 20% beta as rates increase from 25-50 bps as we assume some of the benefit from higher rates starts to be passed to larger clients who receive a more favorable spread relative to smaller clients. As rates increase from 50-100 bps, we assume a sharp increase in deposit betas to 80%, and to 90% above 100 bps as a much larger percentage of the customer base begins to receive a rate benefit. Our estimates seem fairly conservative vs the average deposit betas during the last cycle from 3Q04 to 3Q06, which were ~60% (see Figure 56.)

Figure 56. Trust bank deposit betas averaged 60% over the last rate cycle



Includes BK, NTRS, and STT

Source: Citi Research

- **We assume all excess deposits leave the Trust banks as rates move higher...** – We assume 25% of excess deposits leave in the first 25 bps move, while the remaining 75% leave over the next 25 bps move.
- **... and assume modest run-off in non-interest bearing deposits as clients operate with lower levels of frictional cash...** – While non-interest bearing deposits consist primarily of operational, or frictional, cash used to fund daily activity there is likely to be some run-off in these deposits as clients more closely manage cash balances with more attractive yield opportunities available elsewhere. We assume a 0% run-off for the first 25 bps move, 5% for a move from 25-50 bps, and 10% run-off from 50-100 bps.

Figure 57. NTRS has the highest percentage of retail fee waivers

	Retail	Institutional
NTRS	54%	46%
BK	31%	69%
STT	0%	100%

Source: Citi Research

■ **We also assume recovery of fee waivers on money market mutual funds...**

In order to recover fee waivers, fund returns have to increase enough to generate positive returns for investors after fees. Returns have to increase more to recover fees on retail vs institutional funds, as retail funds have higher fees (~30-50 bps vs ~10 bps for institutional). In addition, post-crisis regulations have placed limits on credit quality, average maturity, etc. of money market funds that will weigh on returns. As a result, banks may experience difficulty recovering fees on retail funds. We account for this in our model by haircutting recoveries of retail fee waivers by 20%. We estimate NTRS has the highest percentage of retail fee waivers (54%), BK has (31%), while STT has institutional only (see Figure 57).

We see NTRS as having the most upside relative to their asset sensitivity disclosure

– In Figure 58 we show the results of our ALCO analysis vs the 10-Q disclosure on asset sensitivity for a 100 bps rate move. We see NTRS as having the most potential upside relative to their disclosure, which is 15% upside to their consensus 2014 EPS estimate. We also see upside for BK (8%) relative to their disclosure. We believe that both NTRS and BK are being very conservative in their deposit beta and run-off assumptions. We are in line with STT's estimate.

■ **For a 100 bp move in US rates only, we estimate Trust banks would see ~10-25% upside to NTM earnings vs 8% for regional banks in our coverage**

– In Figure 59, we estimate the upside if US rates move 100 bps, but other central banks hold rates flat. We haircut our global rate estimate by 25% based on the percentage of non-US securities on the bank balance sheets.

Figure 58. We believe NTRS has the most asset sensitivity upside of the trust banks relative to the 10-Q disclosures

	Citi Estimate			Company Disclosure			Difference	EPS	% upside
	Benefit from NII	Money Market Fee Waivers	Total	Benefit from NII	Money Market Fee Waivers	Total			
NTRS	255	110	365	35	123	158	208	0.57	15%
BK	732	428	1,160	324	456	780	380	0.22	8%
STT	366	40	406	387	40	427	(21)	(0.03)	(1%)

Source: Citi Research

Figure 59. For a 100 bp move in US rates, we estimate BK and NTRS see a low 20% lift in earnings, while STT should be closer to 10%

	NII*	Money Market Fee Waivers	Total	EPS	Upside to NTM Earnings
NTRS	192	110	302	82%	23%
BK	549	428	977	56%	22%
STT	274	40	314	47%	9%
Regional Bank Average					8%

*We haircut our estimate of the NII benefit from a 100 bps move in global rates to get the benefit from a US only 100 bps rate move based on the average percentage of securities in non-US assets in the securities portfolio

Source: Citi Research

Normal NIM Analysis

We estimate normal NIMs of 1.65-1.75% for the Trust banks – In Figure 62, we show the estimates of normal NIMs for the Trust banks based on a bottoms up analysis from our company models. Similar to our ALCO model, our company models assume all excess deposits leave as rates move higher.

- **NTRS has the highest NIM due to benefit from low cost retail deposits** – We estimate a normal NIM for NTRS of ~1.75%, inline with their historical average. NTRS benefits from receiving more funding from lower cost deposits due to wealth mgmt franchise. This is partly offset by a slightly lower earning asset yield as NTRS's securities portfolio has historically been more conservative from a risk perspective. NTRS has not given guidance on normal NIM.
- **We are more conservative than STT on normal NIM** – We estimate normal NIM of 1.70% for STT, slightly below the guidance from their 2014 Investor day of 1.75%-1.85%. However, this guidance is based off of their 12/31 balance sheet, while our model is based off of 2Q14, and there has been some build- up of Treasuries since year-end for LCR. STT is impacted by higher deposit costs, due to the larger percentage of custody deposits vs peers, but this is offset by holding less short-term assets. Repo and trading assets, which are typically funded with short-term borrowings, are only ~5% of STT's balance sheet vs 12% for BK due to a different in customer mix (BK's customer mix includes wall street and central banks while STT is focused mainly on mutual, pension, and hedge funds).
- **BK's normal NIM is slightly lower than STT due to higher cost short-term borrowings needed to finance customer activity** – We estimate a normal NIM for BK of ~1.65%. BK has a higher percentage of their balance sheet in lower yielding short-term investments such as repo and trading assets due to the different customer mix, funded with higher cost short-term borrowings, which weighs on normal NIM. This is towards the lower end of BK's most recent guidance of 1.60%-1.80%, which was given pre-LCR.

Figure 61. Our normal NIM estimates vs company guidance and pre-crisis experience

	Citi	Company estimate	Range 3Q04-4Q08
NTRS	1.77%	N/A	1.58%-2.00%
STT	1.71%	1.75-1.85%*	1.04%-2.31%
BK	1.64%	1.60-1.80%	1.11%-2.42%

*Assumes 3% Fed Funds rate and 5% year Treasury rate and no excess deposits

Source: Citi Research, Company disclosure

Figure 60. We see ~5% and ~10% downside to 2015 and 2016 estimates respectively if rates are flat, with the biggest impact to BK and NTRS

	2015	2016
BK - Citi estimate	2.65	3.25
BK - flat rate	2.55	2.90
% downside	(4%)	(11%)
NTRS - Citi estimate	3.85	4.50
NTRS - flat rate	3.65	4.05
% downside	(5%)	(10%)
STT - Citi estimate	5.45	6.35
STT - flat rate	5.20	5.50
% downside	(5%)	(13%)
Average	(5%)	(11%)

Source: Citi Research

Key Interest Rate Risks

One risk is that rates do not follow forward expectations - Our net interest income and earnings estimate estimates in our models assume rates follow the forward curve. As such, if rates were to stay flat, or track below the forward curve, it could result in downward revisions to our estimates.

- **Estimating downside EPS risks if rates do not follow the forward curve** – We looked at the potential downside to our current EPS estimates by assuming rates stay flat at 2Q14 levels through 2016 in our company models. As shown in Figure 60, we estimate up to 5% downside to our 2015 estimates and 11% downside to our 2016 estimate if rates do not follow current forward curve expectations, including continued fee waivers on money market funds.

Figure 62. We estimate normal NIMs of 1.65-1.75% for the Trust banks

	NTRS		BK		STT		Regional Bank Avg	
	Rate	Mix	Rate	Mix	Rate	Mix	Rate	Mix
Loans	4.00%	38%	4.08%	26%	4.00%	10%	5.58%	77%
Securities	3.75%	38%	4.00%	48%	4.00%	71%	4.10%	20%
Trading Assets					0.00%	1%	3.90%	1%
Short-term Investments	3.00%	24%	3.00%	26%	3.00%	19%	3.00%	3%
Earning Assets	3.66%	100%	3.76%	100%	3.81%	100%	5.17%	100%
Deposits	2.06%	56%	2.30%	41%	2.25%	50%	1.80%	58%
Transaction Deposits	1.50%	16%	2.13%	22%			1.50%	47%
CDs	2.75%	2%					2.75%	10%
Foreign/Custody deposits	2.25%	39%	2.50%	19%	2.25%	50%	3.00%	0%
Short-term borrowings	3.01%	19%	3.00%	24%	3.00%	22%	3.00%	11%
Long-term debt	4.50%	4%	4.25%	8%	4.15%	6%	4.59%	7%
IB Liabilities	2.40%	79%	2.75%	73%	2.60%	77%	2.21%	79%
Net Interest Spread	1.26%		1.01%		1.21%		2.98%	
Free Funding/Swaps	0.51%		0.62%		0.50%		0.48%	
Net Interest Margin	1.77%		1.64%		1.71%		3.50%	

Source: Citi Research, FR Y-9C and company filings

“If markets rates actually went negative, we could charge for deposits, and that’s not unprecedented. We’ve done that in two European markets over the course of the last couple years... We did it in Switzerland and... Denmark...”

- Joseph L. Hooley, STT’s CEO, 2Q14 Earnings Call

“... We’re starting to see some signs of more charging for deposits around Europe. We’re giving some hard consideration of either charging or deflecting some of those deposits that would otherwise cost us money.”

- Thomas Gibbons, BK CFO, 3Q14 Barclays conference

A second risk is continued negative ECB rates - At its September 2014 monetary policy meeting, the ECB reduced the rate on overnight deposits from -0.10% to -0.20%, after lowering the rate from 0% to -0.10% at its June meeting. The negative rates effectively mean that banks are being charged for parking deposits with the ECB, which could pose some earnings headwinds.

■ **We believe this could be a 2-3% hit to EPS** - STT discloses 25% of their custody assets are non-US. Using this as a proxy for the percentage of ECB deposits, we estimate the -20 bps rate would impact NII by \$86 mil per year, or 13c per share, which would be ~2.5% hit to 2014 consensus EPS.

■ **...although Trust banks could offset some of the impact** – Trust banks could offset some of the impact from negative rates by charging for deposits. STT recently noted in their 2Q call that they would work with customers to find alternatives to the ECB. However, if the clients continue to request that their deposits with STT be invested at the ECB, STT could charge them for the deposits, which they have done before. BK has also said they are giving “hard consideration” to charging for ECB deposits (see side comments).

Asset Management Primer

All three of the trust banks have asset and/or wealth management businesses, and these revenues account for ~25% of total for BK, 10-15% for STT, and ~50% for NTRS. Each of the trust banks pursues a very different strategy and business model in this business. In this section, we review each of the banks' asset management businesses and make a best-efforts attempt to value each business using peer comps.

Figure 63. BK and STT rank within the top 10 global asset managers

Rank	Manager	Total AUM (\$ bil)
1	BlackRock	4,324
2	Vanguard	2,753
3	State Street	2,345
4	Fidelity	2,160
5	JP Morgan	1,598
6	BNY-Mellon	1,583
7	PIMCO	1,535
8	Capital Group	1,339
9	Deutsche Bank	1,289
10	Prudential	1,107

Source: Citi Research, Northern Trust

We believe BK is in a structurally less attractive active institutional business, but its inflows and profitability metrics suggest solid execution. STT is primarily a passive/ETF manager, which is structurally attractive due to high margins and secular tailwinds, but its business mix has resulted in inflows and profitability that appear mediocre vs peers. We believe NTRS has the most valuable franchise of the three. Its strategy is focused on higher margin financial advisory and tailored wealth solutions, which should be stickier and carry higher profit margins, and furthermore, NTRS has demonstrated superior AUM growth vs its closest peers over the last few years.

Bank of New York Mellon

BNY Mellon's asset management execution has been solid – BK is the sixth largest money manager in the world with ~\$1.6 tril in AUM at year-end 2013. It is predominantly an active institutional asset manager with ~70% of AUM institutional and 30% retail/private client. We believe BK has performed relatively strongly in this business over the last few years.

- **BNY Mellon's L/T in-flows have outperformed comparable peers...** – Relative to peers that have a similar asset mix (BEN, BLK, IVZ, JPM, and LM), BK's long-term organic inflows have been slightly stronger over the last 3-4 years (see Figure 64). This has primarily been fueled by strong in-flows into BK's fixed income AUM, particularly in liability-driven investments (LDI) which focuses on investment strategies that generate cash flows to fund future liabilities. BK acquired its LDI capabilities through its 2009 acquisition of Insight Investment Management.

Figure 64. In 12 of the last 15 quarters, BK's long-term inflows have trended better vs peers

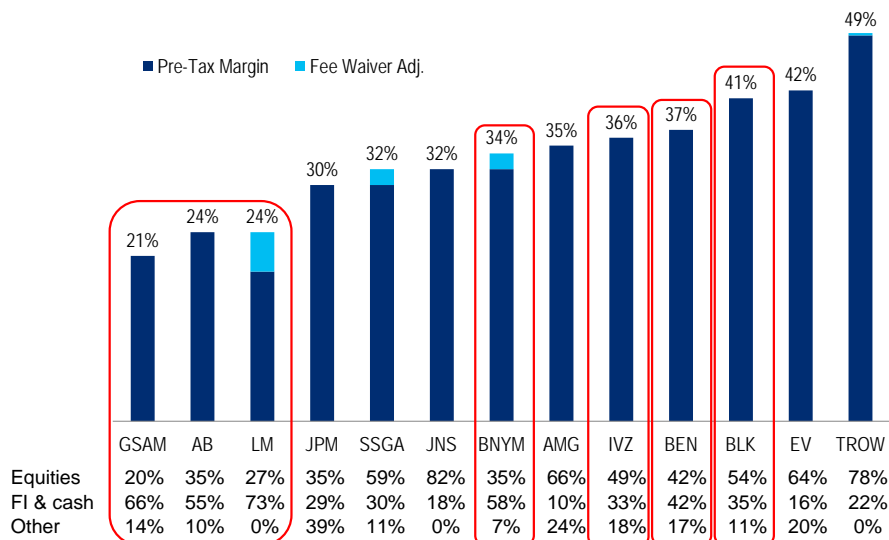
	4Q10	1Q11	2Q11	3Q11	4Q11	1Q12	2Q12	3Q12	4Q12	1Q13	2Q13	3Q13	4Q13	1Q14	2Q14
BEN	2%	5%	12%	1%	-9%	4%	3%	1%	1%	9%	3%	-2%	-1%	-4%	1%
BLK	-1%	2%	1%	-1%	3%	-1%	0%	-5%	6%	5%	1%	3%	4%	3%	4%
IVZ	-13%	5%	3%	2%	4%	6%	-3%	7%	1%	10%	1%	3%	1%	4%	-4%
LM	-12%	-6%	-4%	-11%	-10%	-6%	-3%	-7%	-12%	-2%	0%	-3%	0%	0%	1%
JPM	7%	8%	6%	1%	2%	5%	4%	6%	3%	8%	7%	5%	4%	5%	8%
BK	4%	14%	14%	2%	7%	3%	10%	3%	5%	14%	7%	10%	1%	6%	-4%
Median	0%	5%	4%	1%	2%	3%	2%	2%	2%	9%	2%	3%	1%	3%	1%

Source: Citi Research, company disclosures

Note: includes only equity, fixed-income, and alternative inflows

- **...and margins seem appropriate given its AUM mix** – We believe BK's margins are appropriate given its AUM mix. In Figure 65 below, we show an exhibit from a Sept 2014 BK analyst presentation comparing its operating margins vs a number of peers and BK appears to rank in the middle of the pack and more importantly, its margins seem appropriate given its heavy mix of fixed income/cash.

Figure 65. BK's pretax margins seem appropriate given its AUM mix



Source: BK's slide deck from Sept 2014 Barclays Conference, company disclosures as of 4Q13

Figure 66. We assign a ~13-14x P/E multiple to BK's business based on peer comps on '15 EPS

	P/E
AB	12.9
BEN	13.3
BLK	15.4
IVZ	13.2
LM	14.7
Median	13.3

Source: Citi Research, FactSet data as of 9/16/14.
Note we compute P/E multiples using Citi Research's 2015 operating EPS estimates.

– On a standalone basis, we believe BNY Mellon's Investment Management business could be worth ~\$12 bil – Using our 2015 revenue estimate for BK's Investment Management business (including our estimated fee waiver recoveries), we can approximate net income contribution by applying a ~30% pretax margin (in-line with 1H14 results) and a 35% tax rate. Then based on the valuation of comparable traditional asset managers (see Figure 66), we estimate that BK's business would trade at a 13-14x price to earnings multiple on '15 earnings. This implies a standalone valuation of ~\$11.3 bil, or ~25% of BK's market cap.

Figure 67. We estimate BNY Mellon's Investment Management division is worth ~\$11 billion

	Low-end	High-end
Est 2015 revenues	4,284	4,284
x Pretax margin of 30%	1,285	1,285
Est 2015 net income (35% tax rate)	835	835
x Est P/E multiple	13	14
Market cap	10,860	11,695

Source: Citi Research

State Street

“There is no question, on ETF and index products our margins are huge. It’s the highest margin business for us, or it’s one of the highest margin businesses for us.”

- Larry Fink, BlackRock’s CEO, on 4Q10 earnings call

State Street Global Advisors is almost an entirely institutional passive asset manager (~80% of AUM are passive), which should have structurally higher margins than active largely driven by the different comp structures. ETFs are a subset of the passive management universe and State Street is the second largest player in the market (see Figure 68). They were first introduced in 1993 and have been an immensely disruptive innovation to the asset management industry – in the decade between 2000-2010, global ETF AUM have grown at a 30%+ CAGR vs 5-6% for US mutual funds, and global exchange-traded product AUM are expected to grow another ~50% by 2015 from ~\$2.6 tril today⁷. The popularity of ETFs is attributable to a number of well-documented traits, including: enhanced access to asset classes, transparency, trading flexibility, diversification, relatively low costs, and tax benefits.

Figure 68. BLK, STT, and Vanguard control ~70% market share in ETFs

	AUM (\$ bil)	% Share
BlackRock	991	38%
State Street	424	16%
Vanguard	395	15%
Invesco	106	4%
Deutsche Bank	57	2%
Lyxor/SocGen	51	2%
Nomura	42	2%
WisdomTree	35	1%
UBS	28	1%
Others	502	19%
Total	2,632	100%

Source: Citi Research, BLK ETP Landscape (6/14)

■ **State Street has lost share in recent years due to lack of penetration in retail ETFs...** – As our colleague Bill Katz has highlighted, AUM in the US retail asset management industry has been structurally shifting toward passive investments given product efficacy, distribution, and performance advantages (see [Passive Wave Going Global; Up Next = UK + Australia](#)). Vanguard is the low-cost leader in this segment and has been gaining share, whereas STT and BLK both have more of an institutional focus and have lost share (see Figure 69). In recent months, both BLK and STT have been vocal about focusing on the retail space – BLK through lower-priced core ETFs and STT through differentiated products. STT also has more exposure to Gold ETFs than peers, which is an asset class that has experienced significant outflows.

Figure 69. Among the top players, Vanguard has gained share at the expense of Blackrock and State Street...

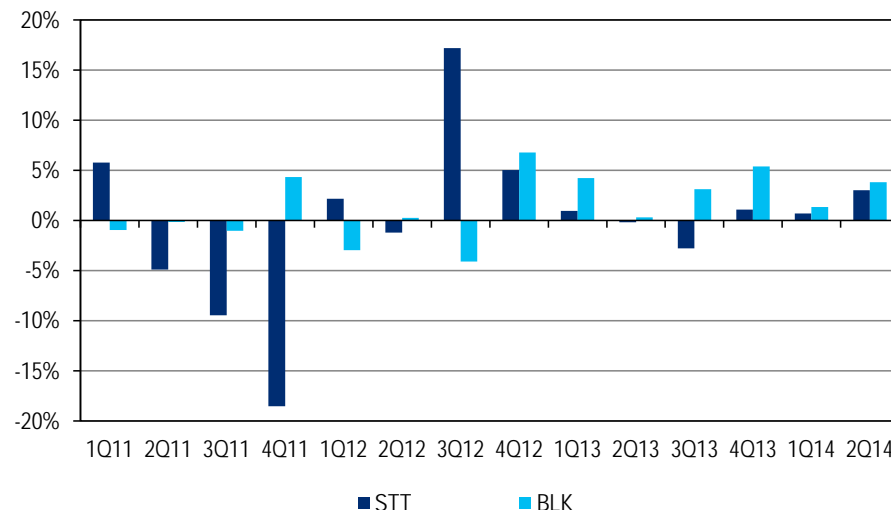
Global			Global		
May 2012	AUM (\$B)	% Share	May 2014	AUM (\$B)	% Share
iShares (BLK)	677.2	39%	iShares (BLK)	977.4	38%
State Street (STT)	304.9	18%	State Street (STT)	409.9	16%
Vanguard	205.5	12%	Vanguard	381.0	15%
Invesco PowerShares (IVZ)	74.4	4%	Invesco PowerShares (IVZ)	103.4	4%
db ETC	49.1	3%	Deutsche Asset	55.3	2%
Lyxor / Soc Gen	41.9	2%	Lyxor / Soc Gen	50.6	2%
ETF Securities	26.9	2%	Nomura Group	40.4	2%
Van Eck	25.0	1%	WisdomTree (WETF)	34.3	1%
ProShares	23.6	1%	ProShares	27.3	1%
Nomura	20.3	1%	UBS	27.3	1%
Others	278.6	16%	Others	446.4	17%
Total	1,727.4	100%	Total	2,553.3	100%
Top 10	1,448.8	84%	Top 10	2,106.9	83%

Source: Citi Research, BlackRock ETP Landscape

■ **...and STT also appears to have lost share vs BLK, which we believe is its most comparable peer** – In Figure 70 below, we show that STT’s annualized organic inflows have lagged rival BLK’s. BLK’s AUM mix is roughly ~60% passive/ 30% active/10% cash and other, while STT’s is ~80% passive/5% active/15% cash and other.

⁷ Per McKinsey & Company’s report titled “The Second Act Begins for ETFs”

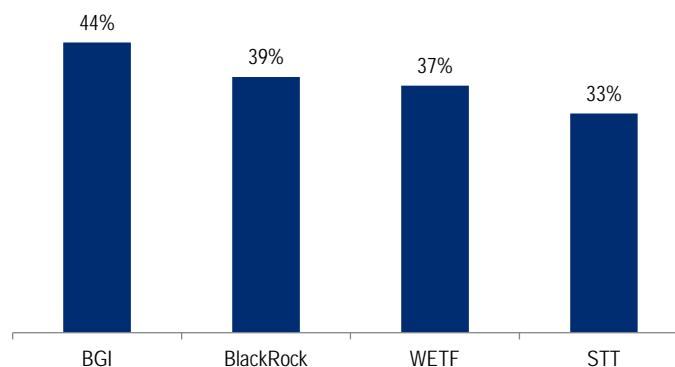
Figure 70. ...and State Street's annualized inflows also compare unfavorably vs Blackrock's



Source: Citi Research, company filings

■ **State Street's margins are lower vs comparable peers despite a higher mix of passive** – STT's operating margins in its Investment Management segment have hovered in the 30-35% range over the last 2-3 years. This compares to the ~40% range of comparable peers. WETF is the only pure-play ETF manager that we are aware of and it has steadily increased its operating margin to 40%+ in 1H14 as its AUM has scaled. Note that WETF operates under a heavily outsourced model where management essentially crafts ETFs and then hands off the back-office mechanics to STT. Barclays Global Investors (including iShares, the dominant ETF provider) was acquired by BlackRock in 2009 – it generated operating margins in the 40-45% range in the years pre-acquisition. Even though STT has a higher % of passive AUM, it lags behind BLK in terms of profitability, which we believe is partially due to STT's heavier mix toward lower margin S&P and Gold ETFs.

Figure 71. State Street's margins screen below comparable players...



Source: Citi Research, company filings

BGI: average operating margin from 2006-3Q09; see BlackRock's form 8-K dated Dec 3, 2009

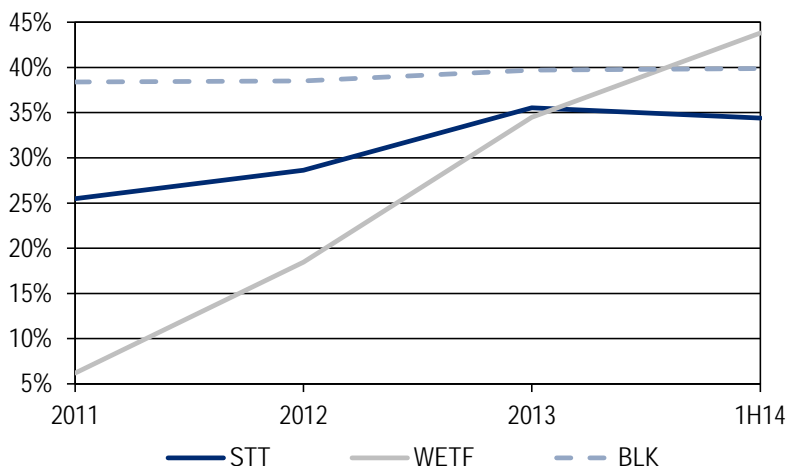
BlackRock: average operating margin from 1Q13-2Q14

WETF: average operating margin ex acquisition costs from 1Q13-2Q14

STT: average operating margin from 1Q13-2Q14

- **...but we are encouraged to see that STT's margins have exhibited an upward trend over the last three years** – Similar to its major passive asset manager peers, STT's margins have trended upward since 2011. See Figure 72 below.

Figure 72. ...But its pretax margins have been trending upward since 2011



Source: Citi Research, company filings

- **On a standalone basis, we believe STT's Investment Management business could be worth \$5.5 bil** – Using our 2015 revenue estimates for STT's Investment Management business, we approximate net income contribution by applying a ~35% pretax margin (in-line with 1H14 results) and a 35% tax rate. In our view, the best public comparable is BLK, which our colleague Bill Katz believes should trade at a 16-17x multiple (see [Still Searching For The 5% Organic Growth Solution – Valuation Keeps Us On The Sidelines](#)), but we discount STT's multiple to 14-15x given weaker passive franchise based on organic flows and lower profitability. Using this multiple, we value STT's Investment Management business on a standalone basis at ~\$5.5-6 bil in the open market, or ~15-20% of its market cap. Other datapoints for comparison include BLK's purchase price of BGI (~19x forward earnings) and WETF (~29x), which is not necessarily a good comp due to its small size and high growth trajectory.

Figure 73. We estimate State Street's Investment Management business is worth ~\$5.5 bil

	Low-end	High-end
Est 2015 revenues	1,682	1,682
x Pretax margin of 35%	589	589
Est 2015 net income (35% tax rate)	383	383
x Est P/E multiple	14	15
Market cap	5,357	5,740

Source: Citi Research

Northern Trust

We believe Northern Trust has the most attractive investment management business of the three – Northern Trust's investment management business is essentially a private bank for high net worth and institutional clients with solutions such as tax and estate planning, insurance, and retirement advisory. In our view, Northern Trust has the most valuable investment management franchise of the three due to its higher margin financial advisory business vs BK and STT's more vanilla business model of investing clients' assets. Though directly comparable peers are limited, we believe Julius Baer, City National, Boston Private, First Republic, and Bessemer Trust all serve a similar customer set and sell roughly comparable services. This contrasts with the sales-oriented brokerage models of the major investment banks which compensate financial advisors based on their ability to generate commissions and fees. We make the distinction because banks often group the two businesses under the "wealth management" moniker, but they are really separate business models.

- **Northern Trust' AUM have grown at a much faster clip than peers** – Based on Barron's annual ranking of the top 40 wealth management firms in America, NTRS' wealth management AUM has grown at an 18% CAGR over the last two years, which ranks only behind First Republic in its closest comparable peer set. See Figure 74.

Figure 74. Northern Trust's wealth management AUM growth has tracked toward the top of the industry

Firm	2013 AUM	2011 AUM	CAGR
Northern Trust	179.6	128.2	18%
First Republic	14.9	8.0	36%
Boston Private*	4.6	3.6	13%
City National	18.7	14.9	12%
US Trust*	376.5	324.0	8%
Bessemer Trust	60.2	56.8	3%

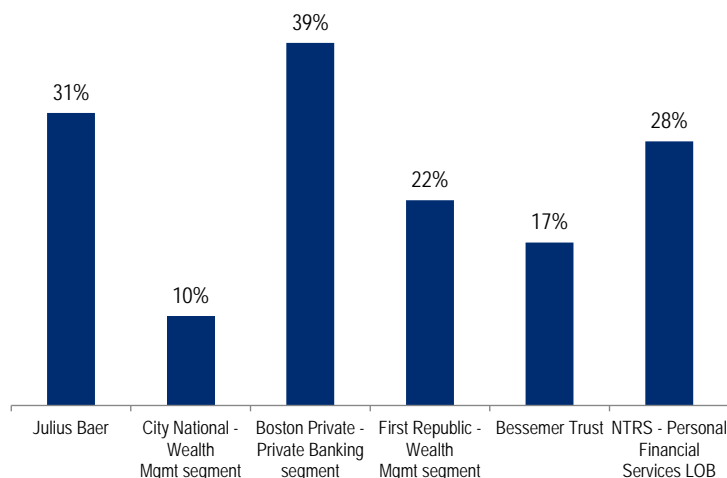
Source: Citi Research, Barron's Top 40 Wealth Management firms survey (based on AUM in accounts of >\$5 mil), company disclosures

*For Boston Private, we use the company's Private Banking segment AUM

*For US Trust, we use BAC's disclosures of total US Trust client balances as a proxy; this includes AUM, brokerage assets, AUC, deposits, and loans/leases

- **NTRS' margins appear in-line with peers** – Though directly comparable peers are limited, we believe Julius Baer, City National, Boston Private, First Republic, and Bessemer Trust all serve a similar customer set and sell roughly comparable services. In Figure 75 we show each competitor's average pretax margin post-crisis and observe that NTRS appears middle of the pack.

Figure 75. Northern Trust's Personal Financial Services margins appear in-line with peers



Source: Citi Research, company filings

Julius Baer: average pretax margin from 2010-1H13

City National: average Wealth Management segment pretax margin from 2010-1H13

Boston Private: average Private Banking segment pretax margin from 2010-1H13, adj for restructuring costs

First Republic: average Wealth Management segment pretax margin from 2011-1H13 (2010 affected by divestiture from BAC)

Bessemer Trust: average pretax margin from 2010-2013 per company's annual reports

■ **We believe NTRS's investment management business is worth ~\$9.3 bil –**

We approximate net income contribution by applying a ~35% pretax margin (roughly in-line with current performance) and a 35% tax rate. We apply a multiple of 16-17x based on the following logic: 1) NTRS has demonstrated superior AUM growth vs peers and margins are very healthy at ~30-35%, which are similar to BLK and thus deserves a multiple in the same ballpark; and 2) we estimate that BAC acquired US Trust at ~17-18x forward earnings in 2006⁸, and apply a slight discount given that the transaction was done during an M&A bubble period. Putting it all together, we estimate that NTRS' investment management business would be valued at ~\$9.3 bil in the open market, or ~55-60% of its market cap.

Figure 76. We estimate Northern Trust's investment management business is worth ~\$9.3 bil

	Low-end	High-end
Est 2015 revenues	2,487	2,487
x Pretax margin of 35%	870	870
Est 2015 net income (35% tax rate)	566	566
x Est P/E multiple	16	17
Market cap	9,053	9,618

Source: Citi Research

⁸ Per BAC's Nov 2006 acquisition slides, US Trust generated \$663 mil in revenues in YTD as of 3Q06 and assume ~10% growth y/y. We annualize this and apply a 30% pretax margin (assumes continued improvement toward 40% target) and 35% tax rate to ~\$190 mil in forward earnings.

Diversified Banks
North America | United States

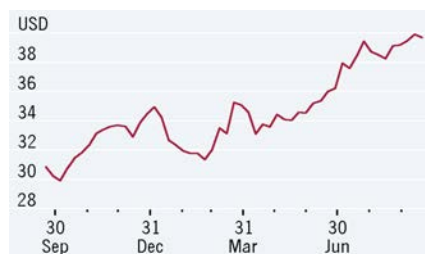
Company Focus

■ Initiation of Coverage

Keith Horowitz, CFA
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Neutral	2
Price (22 Sep 14)	US\$39.34
Target price	US\$42.00
Expected share price return	6.8%
Expected dividend yield	1.7%
Expected total return	8.5%
Market Cap	US\$44,517M

Price Performance
(RIC: BK.N, BB: BK US)



The Bank of New York Mellon Corporation (BK)

Initiating Coverage w/ Neutral and \$42 TP

■ **Initiating with a Neutral** – We are initiating coverage on BK with a Neutral and \$42 price target, which implies ~8-9% expected total return. While there are a number of attractive qualities about the company, including scale, very high asset sensitivity (>20% upside to NTM earnings from a 100 bps increase in rates), and solid execution in its Asset Management franchise, we remain on the sidelines on the stock as we see few catalysts for near-term outperformance. Furthermore, the shares are not cheap at this point, as BK is trading at nearly 15x our 2015 EPS estimate (vs closer to 13.5x historically) and we see superior value in STT. We don't believe the stock is a sell, as on a short-term basis investors will likely rotate into the group as a proxy for higher rates, and so we believe the upside earnings potential still outweighs what we see as limited downside risk. From a longer-term perspective, our deep dive on the trust bank industry also made us incrementally positive on the group as a whole.

■ **We also address a key investor question: expense outlook** – BK has generated negative operating leverage in each of the last four years ('10-'13), but we see the company hitting an inflection point in 2014 and generating modest positive operating leverage thru 2016, primarily driven by cost control on technology and comp & benefits. In this report we discuss our expense outlook in greater detail.

■ **Estimates in-line for 2014 and 2015; slightly ahead in 2016** – Our 2014 estimate of ~\$2.40 (vs \$2.39 consensus) and 2015 estimate of \$2.65 (vs \$2.69 consensus) are roughly in-line with the street. (Note: '14 estimates are adjusted for expected Wing Hang & One Wall gains St in 3Q). Our 2016 EPS of \$3.25 (vs \$3.16 cons) is ~3% ahead largely due to lower expenses.

EPS	Q1	Q2	Q3	Q4	FY	FC Cons
2013A	-0.23A	0.71A	0.82A	0.44A	1.73A	2.26A
2014E	0.57A	0.48A	1.11E	0.59E	2.75E	2.39E
Previous	na	na	na	na	na	na
2015E	na	na	na	na	2.65E	2.69E
Previous	na	na	na	na	na	na
2016E	na	na	na	na	3.25E	3.16E
Previous	na	na	na	na	na	na

Source: Company Reports and dataCentral, Citi Research. FC Cons: First Call Consensus.

Figure 77. BNY Mellon earnings model

	2Q13	3Q13	4Q13	1Q14	2Q14	3Q14E	4Q14E	2013	2014E	2015E	2016E	Year over year Change			
												2013	2014	2015	2016
Avg. Earning Assets	268,481	271,150	285,779	284,532	300,758	301,647	302,573	272,841	297,377	282,807	238,463	9%	9%	(5%)	(16%)
Avg. Loans	47,913	48,256	50,768	51,647	53,449	54,117	54,794	48,316	53,502	56,527	59,407	12%	11%	6%	5%
Net Interest Margin (Reported)	1.15%	1.16%	1.09%	1.05%	0.98%	0.97%	0.98%	1.13%	1.00%	1.07%	1.46%	-8 bp	-13 bp	8 bp	38 bp
Net Interest Income	771	787	781	744	736	740	744	3,072	2,965	3,034	3,474	1%	(3%)	2%	14%
Investment service fees	1,742	1,738	1,682	1,699	1,720	1,767	1,744	6,813	6,930	7,232	7,823	4%	2%	4%	8%
Investment management and performance fees	848	821	904	843	883	870	942	3,395	3,538	3,776	4,096	7%	4%	7%	8%
Foreign exchange	207	160	146	136	130	163	133	674	562	601	637	(3%)	(17%)	7%	6%
Other fees	190	238	218	153	229	178	179	824	739	730	752	4%	(10%)	(1%)	3%
Total fee revenue (operating)	2,987	2,957	2,950	2,831	2,962	2,978	2,999	11,706	11,769	12,339	13,309	4%	1%	5%	8%
Income of consolidated investment management funds	65	32	36	36	46	46	46	183	174	184	184				
Securities gains (losses)	32	22	39	22	18	-	-	141	40	-	-				
Other one time gains (losses)	184	-	(175)	30	-	840	-	9	870	-	-				
Total revenues	4,039	3,798	3,631	3,663	3,762	4,604	3,789	15,111	15,818	15,557	16,966	3%	5%	(2%)	9%
Loan loss provision	(19)	2	6	(18)	(12)	2	2	(35)	(25)	20	40				
Total staff expenses	1,509	1,516	1,522	1,511	1,439	1,444	1,476	6,019	5,870	5,963	6,201	4%	(2%)	2%	4%
Professional, legal and other purchased services	317	296	344	312	314	305	310	1,252	1,240	1,278	1,316	2%	(1%)	3%	3%
Software and equipment	238	226	241	237	236	224	239	933	936	946	981	9%	0%	1%	4%
Net occupancy	159	153	154	154	152	148	152	629	607	643	652	6%	(4%)	6%	1%
Other expenses	520	491	532	467	499	498	521	2,049	1,985	2,079	2,248	5%	(3%)	5%	8%
Total expenses (operating)	2,743	2,682	2,793	2,681	2,640	2,619	2,699	10,882	10,639	10,909	11,399	5%	(2%)	3%	4%
Amortization of intangibles	93	81	82	75	75	77	77	342	304	270	242	(11%)	(11%)	(11%)	(10%)
Other expense specials	(14)	16	2	(17)	231	-	-	82	214	-	-				
Total expenses (reported)	2,822	2,779	2,877	2,739	2,946	2,696	2,776	11,306	11,157	11,179	11,641	(0%)	(1%)	0%	4%
Taxable equivalent adj.	14	15	20	16	17	17	17	63	67	70	77				
Pretax Income (reported)	1,222	1,002	728	926	811	1,888	994	3,777	4,619	4,288	5,208	14%	22%	(7%)	21%
Income tax expense	339	19	172	232	217	589	275	1,592	1,313	1,210	1,522	104%	(18%)	(8%)	26%
Tax rate	28%	2%	24%	25%	27%	31%	28%	42%	28%	28%	29%				
Preferred dividends	12	13	26	13	23	13	23	64	72	72	72				
Discontinued ops, non-controlling interest, and other	55	26	27	33	27	27	27	127	114	108	108				
Net income to common	816	944	503	648	544	1,260	668	1,994	3,120	2,898	3,506	(17%)	56%	(7%)	21%
Average diluted shares	1,156	1,153	1,148	1,145	1,140	1,131	1,123	1,154	1,135	1,103	1,071	(2%)	(2%)	(3%)	(3%)
EPS	0.71	0.82	0.44	0.57	0.48	1.11	0.59	\$1.74	\$2.75	\$2.65	\$3.25	(14%)	58%	(4%)	23%
Book value per share	29.81	30.82	31.46	31.94	32.49	33.41	33.81	31.46	33.81	35.48	37.04	4%	7%	5%	4%
Tangible book value per share	12.40	13.36	13.95	14.48	14.88	15.74	16.08	13.95	16.08	17.49	18.81	9%	15%	9%	8%
ROE	9.5%	11.0%	5.6%	7.1%	6.0%	13.6%	7.1%	5.7%	8.5%	7.6%	9.2%				
ROTE	25.0%	28.3%	14.3%	17.6%	14.5%	30.4%	16.2%	15.4%	19.7%	16.7%	21.5%				

Source: Citi Research

We initiate on BK with a Neutral rating and \$42 target price, which equates to a ~16x price-to-earnings ratio vs our '15 estimates. We like BK's scale & breadth of product in asset servicing, strong execution in asset management, and superior sensitivity to rising rates relative to the other trust banks, but we remain Neutral on the stock due to lack of visible catalysts to drive stock outperformance over the next 12 months. However, from a longer-term perspective, we believe BK can deliver solid normalized earnings power with a mid-20% ROTE. Below we lay out our investment thesis for BK and why we remain Neutral on the stock.

1) There are a number of reasons to like BK... – We like BK as a business due to its scale, solid execution in its Asset Management franchise, and very high asset sensitivity even among the trust banks.

- **BK is a scale custody player with the most expansive business line-up in the industry** – BK is the world's largest custodian bank with the broadest product suite and client base. BK specializes in broker-dealer clients and also holds market leading positions in a number of businesses which the other trust banks do not participate in, including broker-dealer clearing, tri-party repo clearing, corporate trust, and depository receipts.

- **BK is deeply entrenched in the global broker-dealer client base** – BK has historically been a dominant player among the global broker-dealer client base because its strong clearing business offers broker dealers and RIAs a one-stop-shop for clients that need clearing, settlement, and custody services.

- **BK has executed well in its Asset Management business** – As we discuss in the Asset Management primer starting on pg. 60, BK is the sixth largest money manager in the world with ~\$1.6 tril in AUM at year-end 2013. It is predominantly an active institutional asset manager with ~70% of AUM institutional and 30% retail/private client. We believe BK has executed well in this business over the last few years based on inflows relative to comparable peers and margins that seem appropriate given its AUM mix.

- **We also believe BK is very asset sensitive** – We believe the Trust banks are a better asset sensitivity play than the regional banks, and BK and NTRS are neck-and-neck for most asset sensitive of the group. Based on our proprietary ALCO analysis, we estimate that BK could get a >20% benefit to NTM earnings from a 100 bps rate hike, which is ~8% higher than its 10-Q asset sensitivity disclosure. BK's asset sensitivity is helped by recoveries of fee waivers (>40% of the potential upside from a 100 bps move in rates).

2) ...but there are also some factors which keep us on the sidelines – The following factors prevent us from getting more constructive on BK: 1) BK appears to be losing share in asset servicing; 2) we do not see any material lift from infrastructure consolidation; and 3) it is difficult for us to see any "quick fix" from activist involvement.

- **BK appears to be losing share in Asset Servicing...** – In Figure 29, we look at AUC growth and asset servicing revenue growth for each of the major custodians over the last three years to get a rough idea on the competitive landscape. BK appears to have lost market share on both an AUC and revenue growth basis, which may be attributable to the company's renewed focus on either repricing low-margin clients or allowing them to roll off.

- **...and expense benefits from systems consolidations are unclear** – Most industry experts we have spoken to criticize BK for never properly integrating the technology systems from prior acquisitions. For example, when BNY merged with Mellon in 2007, there was limited client overlap so BK continued to operate Mellon's separate custody platform and built client interfaces on top to create a seamless customer experience. In April 2014, management commented that it

will aim to consolidate its 3 separate custody platforms by year-end '15, including one in 2014 which we believe is already ~90% complete. From our conversations with management and industry experts, it is our sense that BK may see some benefits from cutting redundant costs, but the extent to which systems can be consolidated may be limited given that BK participates in such a diverse array of businesses (ie issuer services, tri-party clearing, broker-dealer clearing). For example, some investors point to the fact that BK operates 3-4 separate fund accounting platforms as an opportunity to cut costs, but we believe this practice is industry standard; STT also operates multiple fund accounting platforms because the mechanics of servicing various client types (ie mutual funds vs alternatives) are very different.

■ **It is difficult for us to see a “quick fix” from activist involvement** – In June 2014, an activist investor purchased a 2.5% stake in BK and its founder has publicly commented about BK’s downward margin trajectory over the last four years vs STT’s upward trajectory in the same period. The investor has yet to release its white paper on BK, but based on its thesis for STT from Oct 2011 we believe the most likely demands of management would be: 1) setting an explicit long-term margin or ROE/ROTE target to add credibility to BK’s undefined expense initiatives, which we agree with; and 2) considering a separation of Investment Management and Investment Servicing to unlock value.

– **It is unclear how the sale of BK’s asset management business can unlock shareholder value** – At a Sept 2014 investor conference, poll results indicated that investors were very interested in getting BK to consider separating its asset servicing and asset management operations, and a later poll indicated that investors see only “modest” synergies between the two divisions. We tend to agree that the synergies between an asset servicer and an active institutional manager are not readily apparent. We believe a model like STT’s with passive asset management seems to make more sense. However, we also don’t see how BK separating the businesses could unlock shareholder value, as the stock is already trading at a ~15x multiple on '15 earnings, which is in-line or slightly above other traditional asset managers.

3) With BK trading at a premium to STT across a number of valuation metrics, we remain on the sidelines – Starting on pg. 9, we look at valuation across four methods: 1) current vs historical P/E; 2) ROTE vs P/TB; 3) current implied beta vs historical; and 4) sum of the parts. Across the four lenses, BK screens fairly valued across the board and STT appears more attractive.

Expense Outlook

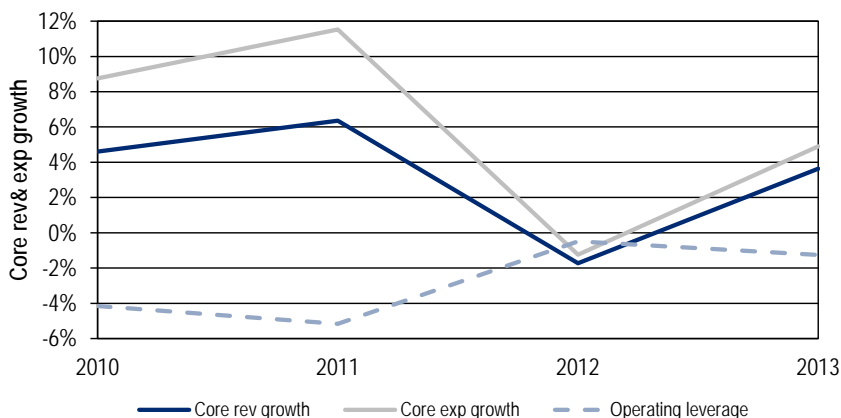
In this section we dive into BK’s expense performance post-crisis (2010-2013) and discuss our outlook through 2016. In short, we see BK hitting an operating leverage inflection point in 2014 and picking up modestly through 2016. There is also embedded optionality from activist involvement.

1) BK has generated negative operating leverage in each of the last four years... – Since the financial crisis, BK has generated negative operating leverage in each of the last four years (2010-2013) despite announcing an expense program at its 2011 Analyst Day (“Operational Excellence”). Over this period, we estimate that the core revenue CAGR has been ~3% vs core expense CAGR of 5%, with technology and comp & benefits expenses being primary drivers of the expense bloat.

“...on the regulatory side, the rate of increase is slowing down as we’re getting greater clarity around the rules and the regulations and what we need to do to be in compliance with them...we do, in fact, see the rate of growth moderating.”

- Gerald Hassell, BK’s CEO, on 2Q14 earnings call

Figure 78. BK has generated negative operating leverage in each of the last 4 years (2010-2013)



Source: Citi Research

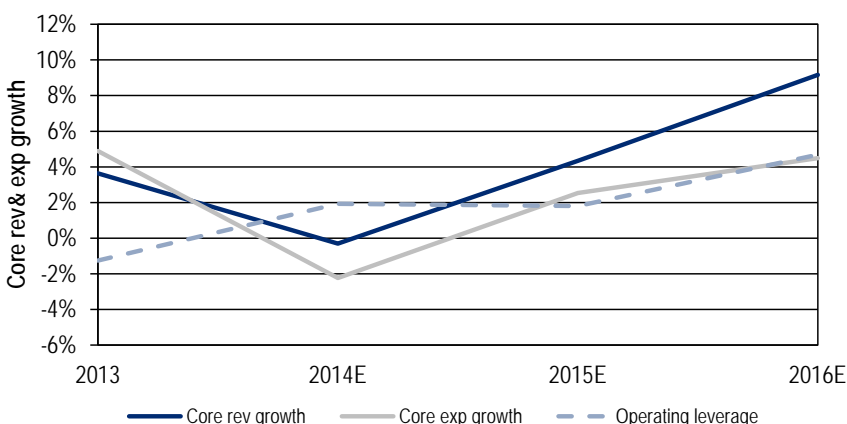
■ **BK’s 2011 expense program beat expectations, but savings were obscured by elevated regulatory costs and business reinvestment**— At BK’s Nov 2011 Analyst Day, management announced its \$650-700 mil Operational Excellence expense program, targeted to be completed by 2015. The bulk of the savings came from: 1) footprint and labor relocation to lower-cost geographies like India and Poland; 2) consolidating procurement; and 3) unifying employee computer systems. In 4Q13, management reported that it had surpassed its Operational Excellence target, achieving a savings rate of \$760 mil a full year ahead of schedule, and shifted to an ongoing internal improvement process called Transforming for Success without concrete targets. Despite calling Operational Excellence a success, investors were unable to see the benefits flow thru to earnings due to the impact of higher regulatory costs and business reinvestment. To illustrate using 4Q11 as a starting point (when the program was announced), core expenses grew ~4% y/y in both 4Q12 and 4Q13, and on a full-year basis, core expenses also grew ~5% y/y in 2013.

2) **...but we see 2014 as the inflection pt** – While top-line growth continues to be challenging, we have been impressed that BK has been able to generate modestly positive operating leverage over the last few quarters starting in 4Q13. For instance, in 2Q14, we estimate that core revenues were down ~1.5% y/y while core expenses declined ~4% y/y, resulting in ~2 pts of operating leverage. BK has commented that it sees the pace of regulatory expense growth moderating and we agree with this based on our conversations with industry experts, and we expect this to enable BK’s ongoing expense reduction initiatives to filter through to earnings.

■ **We agree with BK’s assessment that regulatory expense growth is likely to moderate going forward...** – Post-crisis, the trust banks took on considerable costs to deal with a number of new regulations affecting them including Dodd-Frank, Basel III, European market directives, and others. It is our sense after speaking with a number of industry experts that there is better clarity in the regulatory environment today and that the trust banks are in the later innings of investing for the significant regulations impacting them. Thus we agree with BK’s stance that the pace of regulatory expense growth will likely moderate going forward. With that said, we also note that the areas of regulatory focus are continually evolving, which could impact each bank differently depending on product and customer mix.

- **...which will enable BK's ongoing expense reduction initiatives to filter through to earnings** – As the pace of BK's spending on regulatory compliance moderates, we believe the company will be able to generate better operating leverage trends starting in 2014. Our model assumes core expense CAGR of 1-2% in 2013-2016 vs ~5% in 2010-2013. The biggest changes are in comp & benefits costs (due to headcount rationalization initiatives) and software and equipment (as BK generates leverage on prior tech investments).

Figure 79. We see 2014 as the inflection point in operating leverage and modest pick-up thru 2016



Source: Citi Research

“...the technology investments that we're making are factored into the expense base and we're realizing the synergies that are the platform consolidations and it's in the run rate.”

-Gerald Hassel, BK's CEO, on 2Q14 earnings call

- **We expect comp & benefits and tech expenses to grow at much more moderate clips through 2016** – Comp & benefits and tech expenses were the fastest growing expense lines in 2010-2013 and we expect them to grow much more moderately going forward. BK has announced that its headcount rationalization initiatives will generate >\$100 mil in annual run-rate savings, with ~50% of the savings expected to benefit the run-rate in 2H14. We also note that 2Q14 was the first quarter that FTEs have declined since 2012. Growth in software and equipment expense should also moderate as BK generates leverage on prior tech investments.

Figure 80. We expect growth in comp & benefits and tech expenses be much more moderate through 2016 vs in the prior few years

	2010	2013	2016	CAGR '10-'13	CAGR '13-'16
Comp & benefits	5,215	6,019	6,201	5%	1%
Professional, legal and outside services	1,099	1,252	1,316	4%	2%
Software and equipment	725	933	981	9%	2%
Net occupancy	588	629	652	2%	1%
Distribution and servicing	377	435	615	5%	12%
Sub-custodian	247	280	340	4%	7%
Business development	271	317	282	5%	-4%
Other	896	1,017	1,012	4%	0%
Total	9,418	10,882	11,399	5%	2%

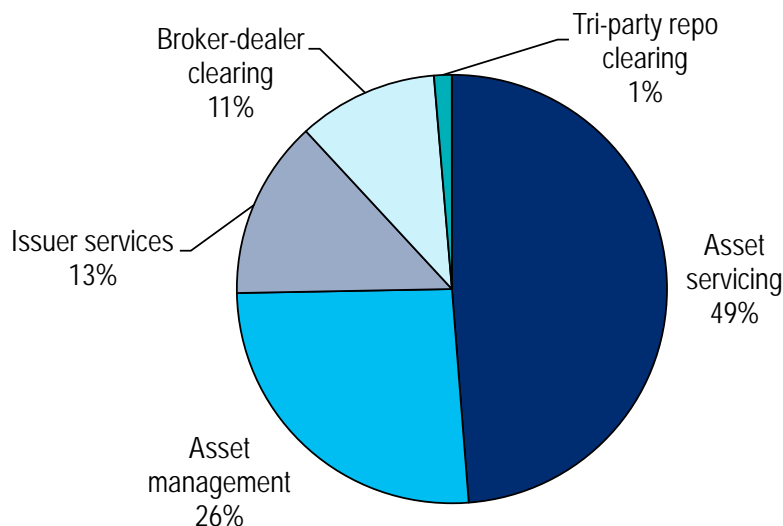
Source: Citi Research, company reports

Business Mix

Headquartered in New York, NY, BNY Mellon (BK) is the world's largest global custody bank with over \$28 trillion in assets under custody and/or administration. It is also the 9th largest US bank holding company with \$401 bil in total assets as of June 30, 2014. BK has the most diverse business mix of the trust banks.

- **Asset servicing comprises the bulk of revenues (~50% of revenues)** – In this category, we essentially lump together asset servicing fees (ex our estimate of tri-party repo clearing revenues), our estimate of allocated NII, and sec lending, FX, and treasury management fees. Relative to the other trust banks, we believe BK's has a less attractive AUC mix at ~65%/35% fixed income to equities vs closer to ~55%/45% for STT and NTRS, which causes BK to earn a lower revenue rate on their AUC (~1.4 bps vs closer to ~2-2.5 bps for NTRS and STT).
- **Sec lending represents a smaller % of revenues than other custody banks (~1% of segment revenues)** – Securities lending revenues represent a much smaller % of BK's revenues than NTRS and STT. As a % of custody fees, BK only generates <5% from securities lending vs 10% for STT & NTRS. This may be partially explained by BK's higher mix of fixed income AUC.
- **BK is a leading provider of treasury services (~5% of segment revenues)** – This business includes cash management and trade finance. According to Global Finance's 2014 rankings, major global banks like BofA, and WFC rank as the top providers of treasury and cash management services while BK was distinguished as the best provider of white-label treasury services to other banks and financial institutions. The other custody banks were not highlighted as top players.

Figure 81. BK's revenues are roughly ~50% Asset Servicing, ~25% Asset Management, and ~25% unique businesses



Source: Citi Research, company filing

- **Asset Management (~25% of revenues)** – BK is the sixth largest money manager in the world with ~\$1.6 tril in AUM at year-end 2013. It is predominantly an institutional asset manager with ~70% of AUM institutional, ~25% retail, and ~5% private client. BK operates a multi-boutique model with 15 specialized managers (Figure 82).

Figure 82. BK employs a multi-boutique model with 15 specialized asset managers

	% of total AUM	Specialty
Alcentra Group	1%	Global sub-IG debt
BNY-Mellon ARX	0%	Brazilian multi-strategy
BNY-Mellon Cash Investment Strategies	15%	Money market funds
BNY-Mellon Western Fund Management	10%	China capital markets specialist
The Boston Company	3%	Active fundamental equities
CenterSquare	1%	Global real estate
EACM Advisors	0%	Fund of hedge funds
Hamon Investment Group	0%	Asian equities
Insight Investment Management	26%	Liability-driven and risk management
Mellon Capital Management	20%	Global multi-asset and multi-strategy
Meriten Investment Management	2%	European fixed income and equities
The Newton Group	6%	Active multi-asset
Siguler Guff	1%	Multi-strategy private equity
Standish Mellon Asset Management	11%	Global fixed income
Walter Scott	4%	Global equities
Total	100%	

Source: Citi Research, company disclosures

Figure 83. BK ranks top 3 as corporate trustee across munis, structured, and corporate debt

Munis (\$ bil proceeds)		
	2013	Share
BK	67	41%
USB	54	34%
WFC	16	10%
Industry total	161	
Structured (\$ bil proceeds)		
	2013	Share
USB	70	25%
DB	59	21%
BK	30	11%
Industry total	275	
Corporate (\$ bil proceeds)		
	2013	Share
BK	319	17%
USB	201	11%
WFC	141	7%
Industry total	1,906	

Source: Citi Research, Thomson Reuters Deal Intelligence data

- **Unique businesses (~25% of revenues)** – We estimate that ~25% of BK's revenue mix is comprised of 3 businesses that the other custody banks do not play in: 1) issuer services (comprised of depository receipts and corporate trust); 2) broker-dealer clearing; and 3) tri-party repo clearing.

– **BK is a top player in Issuer Services (~15% of revenues) –**

- **BK is the #1 player in Depository Receipts (DRs)...** – In this business, BK provides day-to-day administrative services for DR programs, including maintaining shareholder records, processing dividends, guiding DR issuers through the pre-launch planning process, determining the appropriate DR program, etc. BK is the world's largest depository bank with 60% market share across all DRs as of year-end 2013⁹. Other large players include DB (15% market share), Citi (13%), and JP Morgan (12%).
- **...and is a top 3 player in Corporate Trust** – This business is essentially the handling of back-office administrative functions for bond issuances, including maintaining bank account and holder records, paperwork, reporting, and coupon disbursements to investors. Per Thomson Reuters data in Figure 83, BK is a top 3 player but has lost share over the last three years, which management partially attributes to the continued runoff of high margin securitizations issued in 2006-2007. We note that USB has been gaining share, partially due to a series of acquisitions including DB's muni trust business, and BAC's structured trust business.

- **BK is the largest player in broker-dealer clearing (~10% of revenues)...** – BK participates in this business under its Pershing subsidiary and is by far the largest player as measured by number of broker-dealer clients with nearly 3x the next largest competitor (per InvestmentNews). National Financial Services (Fidelity), Broadcort (Merrill Lynch), and JP Morgan rank #2-4 and are roughly the same size.

- **...and also the biggest player in tri-party repo clearing (~1% of revenues)** – At a very high level, BK essentially manages all the administrative and back-office functions associated with the clearing and settlement of repo transactions. Based on tri-party clearing volumes, BK is the dominant competitor in this business with 80-85% market share in the US.

⁹ Per BNY Mellon's Depositary Receipt Market 2013 Yearbook

Capital

BK and STT are classified as G-SIFIs and must hold an additional 100 bps capital buffer over the 7% regulatory minimum. As of 2Q14, BK's fully-phased in standardized B3 T1C ratio of 10.4% (up >300 bps since year-end 2011) was well in excess of this minimum. However, the binding constraint for the trust bank business model is the SLR. As of 2Q14, BK's SLR at the bank holdco level was 4.7%.

Acquisitions & Divestitures

- **BK's acquisition activity has been driven by continuing to build out product breadth...** – Since Bank of New York merged with Mellon Financial in mid-2007, the company's acquisition activity has been focused on continuing to build product breadth, in-filling for product and geographic gaps. Some of the larger acquisitions over the past five years include: PNC's GIS business, which was an important piece to building out BK's fund administration business, Insight Investment Mgmt which added liability-driven asset management, and BHF which bolstered BK's asset servicing businesses in Germany/Europe.
- **...while divestitures have been focused on exiting non-core businesses** – Some of the larger divestitures included: Shareowner Services (low margins and US-only focus), legacy Mellon retail banking businesses, and Newton Investment Management's private client business.

Management Biographies

- **Gerald L. Hassell, Chairman and CEO** – Mr. Hassell was named Chairman and CEO of BK in 2011. He has spent his entire career with BK and has had direct management responsibility for a number of BK's investment services businesses, including Asset Servicing, Issuer Services, Treasury Services, and Clearing, as well as operations and technology.
- **Thomas P. (Todd) Gibbons, CFO** – Prior to being CFO, Mr. Gibbons was BK's Chief Risk Officer for nearly a decade. He joined in 1986 and held management positions in the capital markets business, including head of global treasury.
- **Brian T. Shea, Vice Chairman and CEO of Investment Services** – In June 2014, Mr. Shea was appointed Vice Chairman and CEO of BK's Investment Services businesses, which includes the following: Alternative Investment Services, Asset Servicing, Corporate Trust, Depositary Receipts, Broker-Dealer Services and Pershing. He joined BK through Pershing, where he was CEO.
- **Curtis Arledge, Vice Chairman and CEO of Investment Management** – In June 2014, Mr. Arledge was appointed Vice Chairman and CEO of BK's Investment Management business. He also oversees BK's Global Markets, Global Collateral Services, and Prime Services businesses. Prior to joining BK in 2010, Mr. Arledge was CIO for fundamental fixed income portfolios at BlackRock.

Managements' incentive compensation is split into a Corporate component and an Individual component. The Corporate component is based on BK achieving a targeted EPS at year-end. The Individual component relies upon hitting a targeted return on RWAs of 1.6% over 2013-2015. BK's 2014 incentive compensation scheme is largely unchanged relative to last year's plan.

Diversified Banks
North America | United States

Company Focus

■ Initiation of Coverage

Keith Horowitz, CFA
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keith.horowitz@citi.com

Neutral	2
Price (22 Sep 14)	US\$69.53
Target price	US\$70.00
Expected share price return	0.7%
Expected dividend yield	2.0%
Expected total return	2.6%
Market Cap	US\$16,380M

Price Performance
(RIC: NTRS.O, BB: NTRS US)



Northern Trust Corporation (NTRS)

Initiate with a Neutral and \$70 Target Price

■ **Initiating with a Neutral with a \$70 target price** – We are initiating coverage on NTRS with a Neutral and a \$70 target price, which implies ~3% expected total return. While NTRS has a 1) a strong capital position and conservative management philosophy, 2) premier wealth management business, and 3) the most upside to disclosure (~15%) on asset sensitivity vs the group, we remain on the sidelines on these levels as NTRS currently trades at a premium vs the group, despite a lower return profile due to their sub-scale asset servicing platform. Our target price implies a ~18x P/E ratio vs our 2015 EPS estimates which is above the historical average of ~17.5 x.

■ **NTRS has a very attractive Wealth Management business...** – We believe NTRS has the most valuable investment management franchise vs the group due to its higher margin financial advisory business vs BK and STT's more vanilla business model of investing clients' assets. Based on Barron's annual ranking of the top 40 wealth management firms in America, NTRS' WM AUM has grown at an 18% CAGR over the last two years (better than true competitors Bessemer Trust & US Trust).

■ **...But total returns are weighed down by a sub-scale custody business** – NTRS lacks the scale required to reach efficiencies in their Asset Servicing business given the high fixed costs and required technology spend. As such, we believe NTRS' normalized ROTE is sub-15% vs mid-20% for STT & BK. Due to their large exposure to the middle market pension fund community, NTRS faces continued return headwinds given that pension clients are lower margin relative to mutual funds, etc and there are headwinds to asset growth from the discontinuation of defined benefit plan offerings.

■ **Estimates slightly below in '14, in-line in '15, & '16** – Our 2014 estimate of \$3.20 is slightly below consensus of \$3.35, while our '15 & '16 estimates of \$3.85 (vs \$3.83 cons) and \$4.50 (vs \$4.49 cons) are in-line with consensus estimates.

EPS	Q1	Q2	Q3	Q4	FY	FC Cons
2013A	0.67A	0.78A	0.84A	0.70A	2.99A	3.00A
2014E	0.75A	0.75A	0.89E	0.82E	3.20E	3.35E
Previous	na	na	na	na	na	na
2015E	na	na	na	na	3.85E	3.83E
Previous	na	na	na	na	na	na
2016E	na	na	na	na	4.50E	4.49E
Previous	na	na	na	na	na	na

Source: Company Reports and dataCentral, Citi Research. FC Cons: First Call Consensus.

Figure 84. Northern Trust earnings model

													Year over Year Change			
	2Q13	3Q13	4Q13	1Q14	2Q14	3Q14E	4Q14E	2013	2014E	2015E	2016E	2013	2014	2015	2016	
Avg. Earning Assets	83,122	85,530	91,603	91,842	95,473	96,357	96,803	85,628	95,119	94,584	89,884	2%	11%	(1%)	(5%)	
Avg. Loans	28,602	28,662	28,858	29,177	30,053	30,882	31,252	28,697	30,341	32,104	33,484	(1%)	6%	6%	4%	
Net Interest Margin	1.10%	1.14%	1.12%	1.12%	1.06%	1.07%	1.06%	1.13%	1.08%	1.14%	1.31%	-5 bp	6 bp	18 bp	45 bp	
Net Interest Income	228	245	259	254	253	258	259	966	1,024	1,077	1,181	(6%)	6%	5%	10%	
Corporate & Institutional Services (C&I) Trust, Investment & Other	364	360	371	379	395	398	400	1,444	1,572	1,712	1,873	8%	9%	9%	9%	
Custody & fund administration services	234	239	251	252	261	269	274	949	1,057	1,156	1,264	10%	11%	9%	9%	
Investment management, includes fee waivers	74	71	75	75	78	78	80	296	311	347	396	5%	5%	12%	14%	
Securities lending	31	23	22	23	30	23	22	98	98	100	102	2%	0%	2%	2%	
Other services	25	26	23	29	27	27	24	101	106	109	111	9%	5%	2%	2%	
PFS Trust, Investment and Other Servicing Fees	293	288	303	300	312	315	321	1,166	1,248	1,364	1,494	9%	7%	9%	10%	
PFS Trust, Investment and Other Servicing Fees	252	253	265	263	274	278	283	1,015	1,098	1,210	1,335	8%	8%	10%	10%	
Global Family Office fees	42	35	38	37	37	38	38	151	150	154	159	18%	(1%)	3%	3%	
Foreign exchange trading income	71	63	51	50	53	66	53	244	222	249	274	19%	(9%)	12%	10%	
Treasury management fees	17	18	18	17	17	17	17	69	67	69	72	2%	(3%)	3%	4%	
Security commissions and trading income	18	17	15	15	18	17	15	68	64	64	64	(8%)	(6%)	0%	0%	
Other operating income	36	35	38	38	41	41	41	146	159	162	162	(2%)	9%	2%	0%	
Total Fee Income (Operating)	800	780	795	799	835	853	845	3,138	3,332	3,620	3,939	8%	6%	9%	9%	
Securities gains (losses)	0	(2)	0	(4)	0	-	-	(2)	(4)	-	-					
Other one-time items	-	33	-	-	-	-	-	20	-	-	-					
Total Revenue (GAAP)	1,028	1,055	1,054	1,049	1,089	1,111	1,104	4,122	4,353	4,697	5,120	5%	6%	8%	9%	
Loan loss provision	5	5	5	3	-	9	8	20	19	31	47	(20%)	(4%)	62%	49%	
Compensation	327	325	335	342	347	341	352	1,307	1,381	1,450	1,552	3%	6%	5%	7%	
Employee benefits	64	64	67	67	67	67	70	258	270	284	298	(0%)	5%	5%	5%	
Outside services	136	146	152	144	144	153	160	564	601	631	662	8%	7%	5%	5%	
Equipment and software	92	96	99	101	107	107	108	378	423	449	485	8%	12%	6%	8%	
Occupancy	44	43	44	44	43	43	43	172	173	175	177	1%	1%	1%	1%	
Other operating expense	67	68	80	69	62	63	63	295	258	260	271	7%	(13%)	1%	4%	
Total Expenses (Operating)	730	741	775	768	769	773	796	2,973	3,106	3,248	3,444	4%	4%	5%	6%	
Total restructuring charges	-	-	-	-	42	-	-	2	42	-	-					
Other one-time expenses	-	-	19	-	-	-	-	19	-	-	-					
Total Expenses (GAAP)	730	741	795	768	811	773	796	2,994	3,149	3,248	3,444	4%	5%	3%	6%	
Taxable-equivalent adjustment	8	8	9	9	7	7	7	33	29	27	27					
Pre-Tax Income (Operating)	286	302	246	270	271	322	293	1,076	1,156	1,390	1,602	8%	7%	20%	15%	
Tax expense	95	95	76	88	89	109	98	344	383	474	554	13%	11%	24%	17%	
Tax rate	34.9%	33.2%	33.4%	34.8%	34.5%	35.1%	34.9%	32.0%	33.2%	34.1%	34.6%					
Net Income from Cont Ops (Reported)	191	207	170	181	182	213	196	731	772	916	1,048	6%	6%	19%	14%	
Earnings allocated to participating securities	3	4	3	3	3	3	3	12	12	12	12					
Net Income Available to Common (Reported)	188	203	167	179	179	210	193	719	760	904	1,036	6%	6%	19%	15%	
Average diluted shares outstanding	241	241	240	239	238	237	236	241	237	234	230	(0%)	(1%)	(1%)	(2%)	
EPS (Reported)	\$0.78	\$0.84	\$0.70	\$0.75	\$0.75	\$0.89	\$0.82	\$2.99	\$3.20	\$3.85	\$4.50	6%	7%	20%	17%	
Book value per share	32.17	32.71	33.34	33.61	34.14	34.66	35.12	33.34	35.12	37.06	38.61	6%	5%	6%	4%	
Tangible book value per share	29.96	30.46	31.06	31.32	31.83	32.34	32.78	31.06	32.78	34.69	36.21	6%	6%	6%	4%	
ROE	10.0%	10.6%	8.7%	9.3%	9.2%	10.4%	9.4%	9.5%	9.5%	10.8%	12.1%					
ROTE	10.5%	11.2%	9.1%	9.7%	9.6%	11.1%	10.1%	10.0%	10.1%	11.6%	13.7%					

Source: Citi Research

Initiate with Neutral; Least attractive on returns and valuation – We initiate on NTRS with a Neutral rating and \$70 target price (estimated ETR of ~3%), which is a ~18x P/E multiple on our estimated 2015 EPS. While we acknowledge NTRS's premier wealth management franchise and strong, conservative management approach, we remain Neutral on the stock and prefer to stay on the sidelines due to lack of near-term catalysts. We also believe returns will be weighed down by their sub-scale asset servicing platform.

Strong Capital Position & Conservative Business Model

We like NTRS's strong capital position & conservative management approach – NTRS is not a designated global systemically important financial institution (G-SIFI) like STT & BK meaning their capital requirements are held to a lower threshold. They are held to leverage ratio of just 3% vs 5% for their peers and a CET1 ratio of 7% vs STT & BK's 8% - 8.5% (7% + G-SIFI assigned buffer). Despite not having the G-SIFI designation, NTRS still runs with comparable CET1 capital levels and leverage ratio as BK & STT. We consider NTRS to have the simplest business model of the three trust banks which complements a very conservative management approach as highlighted by their outperformance during the financial crisis (outperformed BK & STT by 18%).

- **NTRS has significant excess capital which can boost shareholder returns** – At 11.1% CET1 as of 2Q14, we believe NTRS holds more than enough capital given its relatively conservative business model. Mgmt has not provided a target CET1 capital ratio, but we believe 10% is a high enough operating target (for context, JPM's operating target is 10-10.5% and it is significantly more complex and global).
- **Management's conservative philosophy keeps a premium to the group** – Given its recent performance, NTRS has earned the right to be viewed as one of the better conservatively managed financial institutions. This is evidenced by their limited credit losses and their ability to maintain their dividend throughout the financial crisis (vs BK & STT having to significantly cut). Net charge-offs never got above 1% of total average loans vs a high of 3% for the financial services industry and their dividend remained consistent at 28c. And as a result, we believe it is afforded with a significantly lower cost of equity than peers, which leads to a P/E premium.

Premier Wealth Management Franchise

We like the growth prospects for their premier wealth management franchise – NTRS is widely regarded as having a premier wealth management division focused on high-net worth clients. NTRS provides a unique, goal-based system that creates a wealth management solution around the client's objectives rather than just putting them into a standardized risk-tolerance box. NTRS' wealth management division produces a steady stream of recurring revenues by taking an advisory fee over the assets managed vs a more volatile, transaction-based brokerage model. This high touch service also tends to create a sticky client base.

- **AUM growth and profitability have tracked towards the top of closest peer group** – Based on Barron's annual ranking of the top 40 wealth management firms in America, NTRS' wealth management AUM has grown at an 18% CAGR over the last two years. Among the closest available peer set, this AUM growth is second to only First Republic. We estimate that NTRS' Wealth Management division has averaged a 28% pre-tax margin post-crisis which ranks them towards the top vs their peer group.

Most Asset Sensitive Relative to Disclosure

NTRS is the most asset sensitive in the group vs their disclosure – Based on our proprietary ALCO analysis, we believe NTRS has the most potential upside relative to their 10-Q disclosure, and we estimate that NTRS could get a >20% benefit to current earnings base from a 100bps rate hike. We note that NTRS's asset sensitivity is helped by recoveries of fee waivers (~30% of the potential upside comes from a 100 bps move in rates).

But A Lower Return Profile...

NTRS' returns are weighed down by a sub-scale asset servicing platform... – We believe normalized ROTEs for NTRS' asset servicing business are below 15% vs mid-20s for both BK and STT. We attribute these lower returns mainly to the lack of scale which prevents NTRS from obtaining the same level of operational efficiencies that the larger players like BK and STT can achieve. After speaking with various industry experts, we believe NTRS' asset servicing platform is more of a 'boutique' model, focused on providing a high touch, more tailored approach to servicing clients. NTRS is very concentrated in the lower margin, pension fund space, but offsets this with their top hedge fund servicing platform.

- **Boutique model makes it harder to scale the business** – We believe Northern Trust operates their custody business as a boutique model, focused on a high degree of detailed service to clients requiring a more high-touch approach. Scale is crucial for the custody business given the high fixed costs from the required technology spend.
- **Large exposure to the lower margin, pension fund clients** – After speaking with various industry experts, we believe that the lower margin pension fund represent a big piece of its custody clientele. Furthermore, Northern Trust has exposure to the defined benefit pension funds which is a gradually shrinking business and will likely be a drag on net new assets as the funds continue to roll-off. Pension funds often receive the lowest pricing for assets and profit margins are smaller than a client like an alternative asset manager.

...And premium valuation keeps us neutral

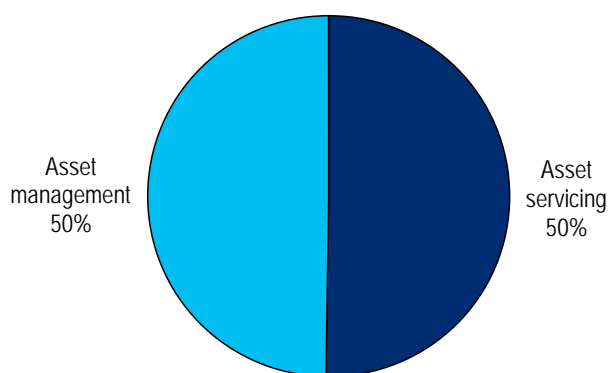
At a premium valuation with no NT visible upside catalysts, we prefer the sidelines – Given the premium multiple NTRS already trades at (18x vs 15x for the group) and the lower return profile vs the group weighed down by their asset servicing division, we prefer to sit out at these levels and initiate with a Neutral. NTRS currently trades at 18x our '15 EPS estimate, slightly higher than the historical average of ~17.5x. In the near term, we don't see any meaningful catalysts to drive upside given the headwinds in activity levels and rates. We like that NTRS has limited downside given their defensive trading traits and the M&A premium embedded in the multiple.

Company Profile

Headquartered in Chicago, IL, Northern Trust is a leading provider of asset servicing, fund administration, asset management, fiduciary, and banking solutions for corporations, institutions, families and individuals globally. Northern Trust focuses on servicing and managing assets under two primary businesses: Corporate & Institutional Services (C&IS) and Wealth Management, and also has an Asset Management business which it offers to both Wealth Management and C&IS clients. C&IS provides institutional & corporate clients with custody, fund

administration, investment management, FX and securities lending services. Wealth Management provides a range of services from trust, investment management and custody to philanthropic consulting, estate administration and private and business banking. Northern Trust separates their business by client, Institutional & Corporate vs Retail/Personal. We prefer to group the business by product type: Asset Servicing and Asset Management. Asset Servicing represents roughly ~50% (Including Custody, FX, Sec Lending & Treasury Management) of total revenue while Asset Management is ~50% (including PF&S and Investment Management).

Figure 85. Northern Trust's revenues are roughly ~50% Asset Servicing and ~50% Asset Mgmt



Source: Citi Research, company filings

- **To better compare NTRS, we group the businesses by product** – NTRS prefers to look at their businesses by client type, institutional vs individual. We prefer to split the businesses by products: Asset Servicing and Asset Management. For NTRS, Asset Servicing will include the entire C&IS businesses except Investment Management catered to institutions. This line item has been moved into Asset Management. Wealth Management is also included in Asset Management. We then allocate NII to each business segment.

Asset Servicing comprises ~50% of total revenues

- **Core Custody is the largest contributor to the Asset Servicing** – Northern Trust is the 7th largest custody bank with ~\$6 tril in AUC as of 2Q14, much smaller than STT & BK. Its AUC mix is more balanced than the other custody banks, with roughly ~46% in Equities, ~36% in Fixed Income, and the rest in short duration products. Geographically, its AUC mix is levered towards North America (52%) with EMEA also contributing (36%) and APAC contributing less than 10%. Core custody fees contain custody and fund administration fees which are driven primarily by asset values, transaction volumes and number of accounts. We estimate that 30% of NII is due to the core custody business based on NTRS' 2013 business segment disclosure.
- **Northern Trust acquired Omnium in 2011, a leading hedge fund admin platform...** – Northern Trust acquired Omnium from Citadel in 2011 which not only added ~\$70 bil in assets under administration, but allowed NTRS to obtain a global hedge fund servicing platform. Alternative servicing, not just for hedge funds, tends to be higher margin businesses.

-And led to recent win with Bridgewater to service back/middle office functions – Northern Trust was appointed by Bridgewater to independently replicate certain middle and back office services. It will provide 'backup' for certain functions such as trade processing, valuation, cash management, and accounting and collateral management. The assets being serviced, ~\$140 bil, would be classified as assets under administration.
- **Foreign Exchange revenue represents ~6% of revenue** – Foreign exchange services are primarily provided in connection with NTRS's global custody business. Out of the three Trust Banks, NTRS was the only one to successfully avoid lawsuits against their FX exchange services offered.
- **Securities Lending represents ~2% of revenues** – NTRS provides securities lending for clients looking for an asset enhancement product. As of 2Q14, the securities lending collateral managed by NTRS was ~\$116 bil.

Asset Management comprises 50% of total revenue

- **Wealth Management is the biggest contributor to the Asset Mgmt bucket** – NTRS has one of the strongest Wealth Management franchises in the industry. NTRS's Wealth Management unit manages roughly 25% of total AUM, or ~\$220 bil. Advisory is the primary focus of the Wealth Management division followed by the more commoditized investment products. Advisory fees are recurring and less transaction based, meaning a base fee is applied to total assets.
- **NTRS has created a niche offering specifically for Global Family Offices** – Global Family Office (GFO) represents ~5% of total revenues. As part of their Wealth Management offering, NTRS provides tailored advice and services to family office clients whose wealth typically exceeds ~\$200 mil.
- **Institutional Investment Management is 7% of total revenues** – NTRS's institutional investment management business manages roughly 75% of total AUM, or ~\$663 bil.
- **AUM is concentrated in Equities; Management style is primarily index** – NTRS primarily manages equity products; Equities comprise 56% of AUM, followed by Cash & Other Assets at 31% and Fixed Income securities at 13% of 2Q14. Index, or passive, style management is ~50% of AUM while active management represents ~42% of AUM.

Management Bios

Uniquely, NTRS frequently moves senior people around to broaden their managerial experience. Recently, NTRS went through this management re-shuffling moving the CFO, Head of C&IS, and Head of Wealth Management.

- **Frederick H. Waddell, Chairman and CEO** – Mr. Waddell has been Chairman of NTRS since 2009 and CEO since 2008. Prior to this role, Mr. Waddell was the President of the Corporation and the Bank from 2006 – 2011, and COO from 2006-2008.
- **William L. Morrison, President** – Mr. Morrison has been the President and since 2011 and also served as COO until recently. Prior to this role, Mr. Morrison served as CFO. From 2003 – 2009 he served as President of Personal Financial Services and Chairman of Northern Trust NA. From 1996 – 2004 he served as Chairman, President and CEO of NTRS Bank of Florida, and President and a Director of NTRS of Florida Corporation.

- **S. Biff Bowman, CFO** – Prior to his current role, he was the Head of Human Resources and a member of the Management Group. Earlier, he served as EVP, Head of Americas Region, Corporate & Institutional Services, with responsibility for all of the institutional businesses in North & South America. Biff has also served as CEO of EMEA, Managing Director of NTRS' Guernsey operation. Biff joined NTRS in 1985.
- **Steve L. Fradkin, Head of Wealth Management** – Prior to his current role, Steve was the President of C&IS since 2009. Steve also served as an EVP and CFO of NTRS. Earlier, Steve also led NTRS' International business. He joined NTRS in 1985.
- **Michael G. O'Grady, President of C&IS** – Prior to his current role, Mike was the CFO of NTRS. He joined NTRS in August 2011 from BAC, where he was a Managing Director in the Investment Bank Group and head of the Depository Institutions Group for the Americas. Mike joined Merrill Lynch in 1992 as an Associate after having previously worked at Price Waterhouse.
- **Jana R. Schreuder, COO** – Jana joined NTRS in 1980 and has held various roles including President of Wealth Management and a member of the Management Group. Prior to her current role, Jana was President of Operations & Technology, Corporate Head of Risk Management.

Executive Compensation Program

NTRS performance based compensation plan constitutes the right to receive a share of the Corporation's common stock and vest over a three-year performance period and subject to a an average annual rate of return on equity. NTRS's 2014 compensation plan is an ROE target of 10%; previously the 2013 target was 8.0% - 10.0% to get 100% vesting of stock awards. The Committee usually excludes one-time charges, but has discretion over what is included or not from the calculation.

Diversified Banks
North America | United States

Company Focus

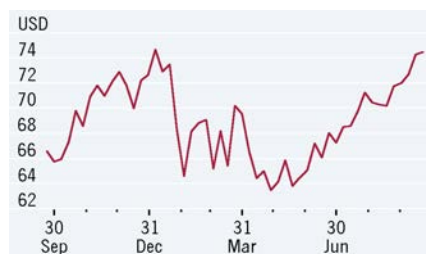
■ Initiation of Coverage

Keith Horowitz, CFA
+1-212-816-3033
keith.horowitz@citi.com

Buy	1
Price (23 Sep 14)	US\$74.53
Target price	US\$90.00
Expected share price return	20.8%
Expected dividend yield	1.6%
Expected total return	22.4%
Market Cap	US\$31,565M

Price Performance

(RIC: STT.N, BB: STT US)



State Street Corporation (STT)

Initiating Coverage With a Buy Rating and \$90 target price

■ **Initiating with a Buy rating** – We are initiating coverage on STT with a Buy Rating and a \$90 target price, which implies ~22% upside. STT significantly outperformed in 2013 by delivering expense savings as part of its Business & IT transformation program. However YTD, STT has underperformed BK & NTRS by >10 percentage pts driven by guidance around higher expenses due to increased regulatory requirements, and we see upside from current levels. We believe STT is the best way to play our positive view on the custody business. STT will be able to drive improving operating leverage as market-driven revenues increase due to better expense management vs pre-crisis and a scalable servicing platform that will enable them to drive higher profitability vs peers. The company is also well-levered to higher rates, and could see additional revenue upside from its leading middle office and front office businesses. Although we estimate, that STT can generate the highest ROTE of the three players in a normal environment (nearly 30% vs ~26% for BK and ~18% for NTRS), STT currently trades at the lowest multiple at ~13.5x 2015 estimates vs ~15x for BK and ~18x for NTRS.

■ **We see STT generating positive operating leverage in 2015 and 2016** – Generating positive operating leverage has been a challenge for STT as market-driven revenues (FX, Sec Lending) have declined post-crisis. However, we believe better management of the post-crisis, and technology investments that have built additional scale into the business model will drive positive operating leverage going forward. The evidence of these changes can be seen in a decline in compensation expense as a percentage of total expenses from 59% to 54% since 2007, and a 28% increase in revenue per FTE is 28% vs the end of 2009. We see operating leverage for STT as negative in 2014 driven by higher compliance and regulatory costs and flat in 2015 before turning positive (160 bps) vs consensus expectations for flat operating leverage in 2016.

■ **Our estimates are slightly above consensus** – Our 2014 estimate of \$4.97 (vs consensus of \$4.81), 2015 estimate of \$5.45 (vs consensus of \$5.36), and 2016 estimate of \$6.35 (vs consensus of \$6.17) are slightly ahead of consensus primarily on better revenues. Our 2016 estimate is ahead largely due to higher NII as rates begin to move up in 2H15 into 2016 (our estimates are based on forward curve expectations), and lower expenses.

EPS	Q1	Q2	Q3	Q4	FY	FC Cons
2013A	0.96A	1.24A	1.19A	1.15A	4.54A	4.54A
2014E	0.99A	1.39A	1.30E	1.30E	4.97E	4.81E
Previous	na	na	na	na	na	na
2015E	na	na	na	na	5.45E	5.36E
Previous	na	na	na	na	na	na
2016E	na	na	na	na	6.35E	6.17E
Previous	na	na	na	na	na	na

Source: Company Reports and dataCentral, Citi Research. FC Cons: First Call Consensus.

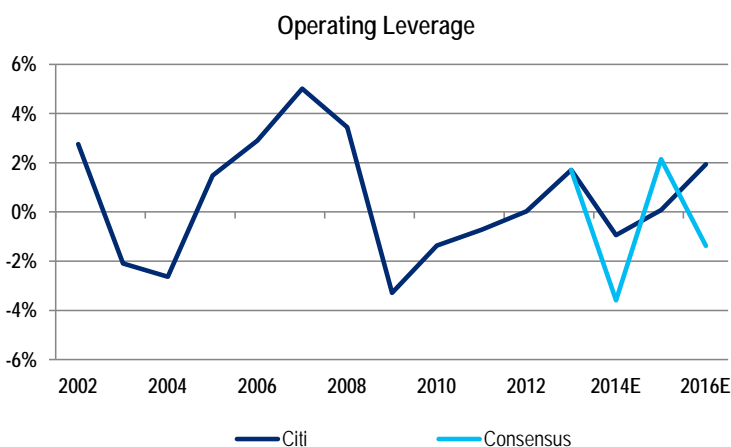
Figure 86. State Street earnings model

	2Q13	3Q13	4Q13	1Q14	2Q14	3Q14E	4Q14E		2013	2014E	2015E	2016E	Year over Year Change			
									2013	2014E	2015E	2016E	2013	2014E	2015E	2016E
Avg. Earning Assets	178,275	173,305	182,510	186,906	206,323	206,233	206,083		178,101	201,386	193,378	165,006	6%	13%	(4%)	(15%)
Avg. Loans	14,003	13,859	14,504	14,602	15,061	15,325	15,516		13,781	15,126	15,947	16,451	19%	10%	5%	3%
Net Interest Margin (Operating basis)	1.31%	1.27%	1.30%	1.24%	1.12%	1.09%	1.10%		1.30%	1.14%	1.22%	1.56%	-16 bp	-16 bp	8 bp	34 bp
Net Interest Revenue	582	553	596	572	575	567	570		2,308	2,284	2,338	2,579	(6%)	(1%)	2%	10%
Servicing fees	1,201	1,211	1,232	1,238	1,288	1,327	1,339		4,819	5,192	5,487	5,775	9%	8%	6%	5%
Management fees	277	276	290	292	300	323	327		1,106	1,242	1,358	1,460	11%	12%	9%	8%
Foreign exchange trading	171	147	125	134	144	154	131		589	564	620	682	15%	(4%)	10%	10%
Brokerage and other fees	133	118	111	119	116	112	113		472	460	483	508	(5%)	(2%)	5%	5%
Securities finance	131	74	76	85	147	81	84		359	397	425	455	(11%)	11%	7%	7%
Processing fees and other	92	94	98	113	108	115	118		403	453	476	500	3%	12%	5%	5%
Total fee revenue (operating)	2,005	1,920	1,932	1,981	2,103	2,112	2,112		7,748	8,308	8,848	9,379	7%	7%	7%	6%
Securities gains (losses)	(7)	(4)	-	6	(2)	-	-		(9)	4	-	-				
Total revenues (reported)	2,580	2,469	2,528	2,559	2,676	2,679	2,682		10,047	10,596	11,186	11,957	3%	5%	6%	7%
Loan Loss Provision	-	-	6	2	2	2	2		6	8	8	8				
Compensation and employee benefits	917	903	934	1,085	974	993	1,009		3,789	4,061	4,345	4,606	(1%)	7%	7%	6%
Information systems and communications	235	235	228	244	244	244	237		935	969	1,006	1,044	11%	4%	4%	4%
Transaction and processing services	186	185	182	191	193	192	189		733	766	796	828	4%	4%	4%	4%
Occupancy	114	113	124	114	115	114	125		467	468	478	487	(1%)	0%	2%	2%
Other	301	251	292	283	292	310	312		1,088	1,197	1,245	1,295	3%	10%	4%	4%
Total expenses (operating)	1,753	1,687	1,760	1,917	1,818	1,854	1,872		7,012	7,461	7,871	8,261	2%	6%	5%	5%
One-timers in expenses	45	35	86	111	32	-	-		180	143	-	-				
Total expenses (reported)	1,798	1,722	1,846	2,028	1,850	1,854	1,872		7,192	7,604	7,871	8,261				
Tax-equivalent adjustment	67	72	95	101	106	106	106		300	419	424	424				
Pretax Income	760	710	667	539	750	717	701		2,729	2,708	2,883	3,264	6%	(1%)	6%	13%
Tax expense	181	164	145	99	127	137	131		630	494	553	698	(1%)	(22%)	12%	26%
Tax rate	30.0%	30.2%	31.5%	31.3%	27.2%	29.5%	29.3%		30.7%	29.2%	29.5%	30.4%				
Net Income	579	546	522	440	623	580	571		2,099	2,214	2,331	2,567	8%	5%	5%	10%
Dividends on preferred stock	6	7	6	6	19	19	19		26	63	94	109	(10%)	142%	49%	16%
Earnings allocated to participating securities	2	2	2	1	1	1	1		8	4	4	4				
Net Income to Common	571	537	514	433	603	560	551		2,065	2,147	2,233	2,454	9%	4%	4%	10%
Avg diluted shares	461	452	445	439	435	430	425		455	432	410	385	(5%)	(5%)	(5%)	(6%)
EPS	\$1.24	\$1.19	\$1.15	\$0.99	\$1.39	\$1.30	\$1.30		\$4.54	\$4.97	\$5.45	\$6.35	15%	9%	10%	17%
Book value per share	44.78	46.30	46.94	49.42	51.06	51.91	52.75		46.94	52.75	56.73	60.05	3%	12%	8%	6%
Tangible book value per share	26.60	27.68	27.97	29.26	30.78	31.49	32.19		27.97	32.19	34.64	36.57	2%	15%	8%	6%
ROE	11.2%	11.0%	10.3%	8.7%	11.9%	10.9%	10.7%		10.3%	10.6%	10.8%	12.3%				
ROTE	18.6%	17.8%	16.9%	14.0%	18.8%	17.1%	16.6%		16.7%	16.9%	16.6%	21.4%				

Source: Citi Research

Investors have focused on continued expense growth for STT, highlighting that the company has not been able to consistently generate positive operating leverage. As shown in Figure 87, STT has been challenged in generating operating leverage post-crisis as market-driven revenues have declined. However, we believe better management of the business vs pre-crisis and returns generated from the past technology investments will help drive positive operating leverage and earnings growth for STT going forward. We do not believe consensus numbers reflect the positive operating leverage in STT's business model as rates and market-based revenues move higher. In 2016, we show accelerating operating leverage (200 bps) as STT begins to see benefits from higher rates and market based-revenues, while consensus numbers imply negative operating leverage (-30 bps).

Figure 87. Historically, State Street has not shown a consistent positive operating leverage



Source: Company filings, Citi Research

“So, we think inherently this business should deliver operating leverage. As most of us know, when the fee-based business is growing nicely, there is an expense associated with that. We should always have an operating leverage relationship between fee-based business and cost to deliver those services.”

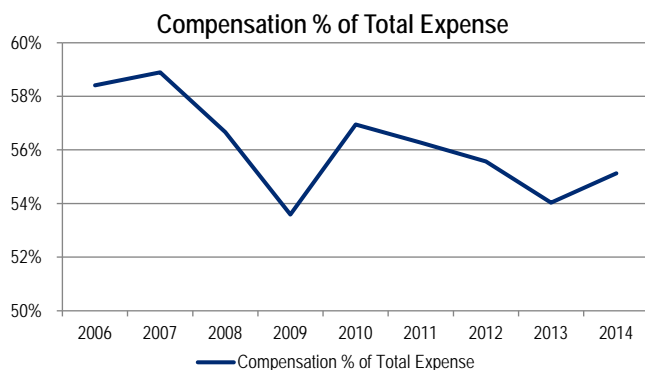
- Jay Hooley, STT CEO, 3Q14
Barclay's conference

■ **We believe a different management strategy for the business than in the past will help drive operating leverage**— Prior to the financial crisis, favorable tailwinds to securities lending from increasing leverage and high margins in the foreign exchange business led banks, including STT, to focus on topline growth. As shown in Figure 87, this strategy worked well for STT between 2005 and 2008 as market-based revenues climbed towards their peak, leading to positive operating leverage for STT. However, operating leverage suffered post-crisis as market-based revenues fell due to litigation (FX) and regulation (sec lending). This has forced the Trust banks to re-focus, and STT is looking to generate profitability by managing expenses against fee-based revenues, with market-based revenues providing additional upside.

– **These benefits are already visible in results as compensation as a percentage of total expenses has fallen from 60% to 54%...** – Critics often point to continued mid-single digits core expense growth at STT as evidence that the company continues to invest in technology with no visible benefits. However, we believe that the core expense growth is being driven largely by higher regulatory investments and is masking the benefits from technology investments. Compensation as a percentage of total expense has been declining steadily, which we believe reflects the need for less staff as STT leverages its systems. As shown in Figure 88, compensation expense as a percentage of total expenses has fallen from 59% of total expenses in 2007 down to 54% of total expenses in 2013.

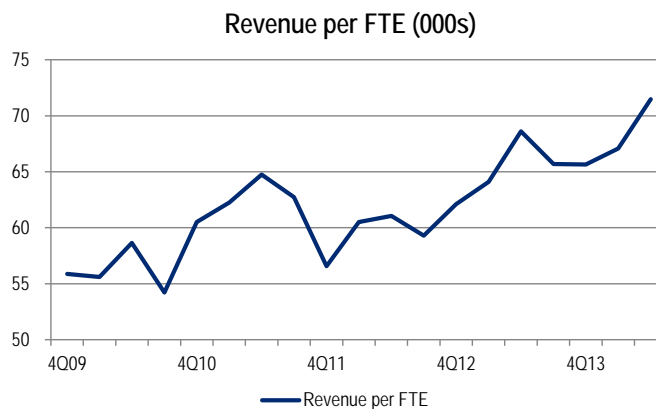
- **...And revenue per FTE has been increasing steadily since 2009...** - In Figure 89, we show revenue per FTE has increased from ~55k to ~70k.

Figure 88. Compensation as a percentage of total expenses for STT has trended down over time...



Source: Company filings, Citi Research

Figure 89. ...while revenue per FTE has been rising reflecting the operating leverage in their model



Source: Company filings, Citi Research

- **In addition, STT's technology investments have built additional leverage into their business model**– The Trust banks generally have sought to better manage expenses post-crisis, but we view STT as the best-positioned to drive positive operating leverage. STT has invested to develop a lot of its technology in-house. As market-based revenues increase, STT will not have to increase technology spend to compensate outside vendors and consultants from the higher workload vs peers who outsource more of their technology functions.
- **STT has taken a very disciplined approach to its technology investments, which will likely pay dividends in the future.** By having one flexible platform that they can add all the clients they onboard to, it helps to limit the costs from adding additional customers, building leverage and improving profitability. Also, by focusing on building, maintaining, and improving one platform, it makes the end product better for customers. Technology can be a key differentiator in winning business when pricing is competitive and we believe STT's technology gives them a competitive advantage vs peers. It's important to note that while the process is standardized, the systems provide clients the flexibility to customize the product to their needs.
- **This focus is reflected in STT's acquisition strategy** – One of the challenges of acquiring in the servicing business can be integration of technology into existing platforms. This can be challenging either because a new business is acquired that requires different technology, or the integration can't be done seamlessly. In either case, it can require the company to maintain multiple systems, which can be costly. From what we understand, State Street has avoided this problem in the acquisitions they have made as the acquisitions have either added capabilities to an existing platform or allowed it to leverage the current platform through the acquisition of additional assets. STT's focus going forward will be on leveraging the existing platform, as highlighted by comments made recently at an industry conference.

“We don't think that acquisition is a logical strategy for us in the near to midterm... our capital deployment will be in investing in those things internally that have the right return characteristics, to continue to grow and leverage the business and also returning capital to shareholders...”

*- Jay Hooley, STT CEO, 3Q14
Barclay's conference*

- In 2002, STT purchased the Trust and Custody division of Bankers' Trust, owned at the time by Deutsche Bank. This acquisition was important because it significantly added to STT's custody business and gained them more recognition as a top player in the global custody market, and helped expand STT's servicing business geographically by giving them a larger presence in Europe. STT was able to further leverage their existing platform through the 2007 purchase of Investors Financial Services, in which they were able to transition \$2.3 tril in assets to their existing servicing platform, building additional leverage.
- **...and we see this leverage helping generate ~25% ROTE in servicing** – In a normalized interest rate environment, we see STT as generating the highest ROTE in the asset servicing business among the three Trust banks. We see normal ROTE for STT's asset servicing segment of 25% vs 23% for BK and 11% for NTRS.

Asset Servicing and Management Synergies

We believe STT has a better natural complement between its asset management and asset servicing business than BK due to its focus on passive investing, which is an easier cross-sell opportunity as passive investment strategies require less due diligence on behalf of fund sponsors. As a result, growth in assets or further penetration of existing asset servicing clients will also help to drive investment management AUM growth.

- **A market share shift towards passive investing should benefit STT...** – STT's servicing business can also benefit from growth in the investment management business. Passive investing is gaining share vs active investing, with global ETF AUM expected to grow another ~50% by 2015¹⁰, which should provide an opportunity for STT. As the servicer for SSGA and the ETF platform, growth in AUM will lead to growth in AUC for the servicing business.
- **...And although STT has lost some market share recently...** – As we discussed previously in the section on Trust bank asset management, STT has lost some market share recently (18% in May 2012 to 16% in May 2014). This has been partly due to higher exposure to Gold ETFs, which have seen outflows as risk appetite has increased. STT has also lost some share to Vanguard, which has cut pricing on retail ETFs
- **...They continue to add higher yielding products to their lineup to improve performance** – STT is working to further diversify their product lineup with higher yielding products which we believe will help drive revenue growth and improve pre-tax margins in the asset management businesses. For example, during a recent presentation at a competitor conference STT highlighted the addition of a bank loan fund it has created with GSO/Blackstone and a “high octane” fixed income fund with DoubleLine.

Risks

STT is asset sensitive, but not as much as NTRS and BK – STT's lower asset sensitivity relative to peers could weigh somewhat on the stock as rates moves higher. We see upside to NTM earnings of roughly 10% for STT, which is better than the average regional bank but still trails the 20-25% we see for BK and NTRS. However, unlike BK...we believe STT will see some benefit to capital as the excess deposits leave since the key capital constraint for both banks is SLR, and STT is currently compliant while BK is below target.

¹⁰ Per McKinsey & Company's report titled “The Second Act Begins for ETFs”

FX litigation remains a risk – CALPERS sued State Street in October 2009 claiming breach of contract and fraud with regards to their foreign exchange practices. CALPERS claimed STT overcharged for foreign exchange transactions and provided little transparency into the pricing process. CALPERS is suing for treble damages of \$300 million in damages based on actual damages of \$100 mil. The case remains open. STT has also received subpoenas and requests for information for various other parties, as well as the US Attorney General and the SEC regarding foreign exchange transactions that could lead to additional action. STT has not reserved for these actions due to the uncertainty around losses.

Higher OLA also could weigh modestly (2-3% impact) on EPS – The banking industry is also awaiting a proposal from US regulators on the Orderly Liquidation Authority (OLA), which will require the G-SIFI banks including BK and STT to hold loss absorbing capital. The capital would absorb bank losses in the event of a failure, allowing the underlying subsidiaries to continue to operate in receivership until the government can re-capitalize the company and re-launch it in to the market. Although press reports have put the minimum capital requirement at 15-16.5% (equity and parent level debt as a % of RWAs), at its recent investor day WFC noted they believe the threshold will be somewhere between 18-24%. We estimate loss absorbing capital for BK of 22% which would put them in or near compliance with an 18-24% requirement (see Figure 5). STT would be a little behind with 17% loss absorbing capital. However, assuming they issue long-term debt to meet the requirement, it would only be a 2% impact on 2014 EPS estimates at an 18% requirement and 3% at a 20% requirement.

Figure 90. STT may have a slight drag to meet OLA requirements, which have not yet been defined

	Basel 3 T1C	Preferred	TruPS	Parent Level LT Debt	Total	Basel 3 RWA	Equity + Parent Debt as % of RWA
BK	16	2	0	15	33	143	23%
STT	14	1	1	5	22	124	17%

Source: Citi Research

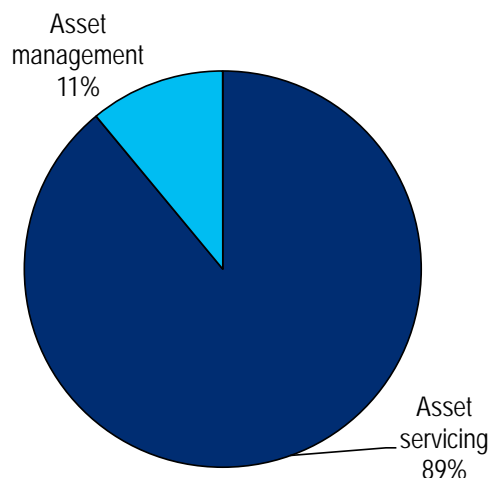
- **But STT appears well-positioned to meet the new SLR requirements** - Due to its G-SIFI designation given by the Financial Stability Board, STT must hold an additional 100 bps capital buffer over the 7% regulatory minimum. As of 2Q14, STT's Basel 3 Tier 1 Common ratio under the fully phased in Standardized Approach was estimated at 11.3%. While this leaves STT with a large excess capital position on a Tier 1 Common basis, the SLR is likely to be the binding constraint for the Trust banks going forward. The SLR looks at gross assets and ignores the lower risk-weightings of securities and other ST investments that make up the majority of Trust bank balance sheets. STT appears to be well-positioned to meet the requirements as STT's SLR was estimated at 6.1% for 2Q14 at the holding company level (vs the 5.0% minimum) and 5.8% at the bank subsidiary (vs the 6.0% minimum).

Company Profile

STT operates in two primary businesses: 1) Investment Servicing (89% of revenues, see Figure 91), which includes custody & accounting, foreign exchange, brokerage & trading, securities finance, loans & lease financing and other services for mutual funds, corporate & public retirement plans, insurance companies, foundations & endowments, and other collective investment funds and 2)

Investment Management (11% of revenues), which offers both active and passive management, research, and advisory services to institutional and other sophisticated investors.

Figure 91. State Street's revenues are 90% Investment Servicing and 10% Investment Management



Source: Citi Research, company filings

STT's custody business has a higher percentage of assets in equity, which leads to higher servicing fees (48% of total revenue) – State Street was the third largest global custodian at the end of 2013, and had \$21.7 tril in asset under custody (AUC) at the end of 2Q14. State Street's AUC mix is tilted more towards equities (55% of AUC), which generally receive higher servicing fees vs fixed income and cash assets. We estimate STT's servicing fees (which represented ~60% of fee income in 2Q14) as a percentage of AUC were 2.5% in 2Q14 vs 2.0% for NTRS (45% equity) and 1.4% for BK (35% equity).

- **FX (5%) is now a smaller percentage of revenue following recent litigation** – STT provides foreign exchange services for clients requiring currency exchange to settle foreign trades in their portfolios. FX revenue as a percentage of STT's revenue has declined from an average of 9% from 2001 to 2009 to 6% in 2013. While some of this decline may be attributable to market conditions, some is also likely due to changes in FX pricing transparency, driven by recent lawsuits against the Trust banks for overcharging on FX trades.
- **Securities Finance (6%) benefitting from addition of Enhanced Custody product** – The addition of a new Enhanced Custody product to supplement the traditional agency lending business, which STT noted in their recent earnings call represented 25% of 2Q securities finance revenue and >100% of the growth vs prior year, has helped support this revenue line more so than other banks.

STT ranks as the second largest asset manager in the United States – State Street Global Advisors (SSGA), STT's asset management business, is the second largest money manager in the US with \$2.3 trillion in assets under management. Although State Street offers active investment strategies, its AUM are primarily invested in passive investment strategies (62%) and ETFs (17%), as SSGA's SPDR ETF platform is the second largest in the industry. Despite the focus on passive investing, SSGA has only seen 3% CAGR from 2007-2013, vs 6% for the industry, with 10% CAGR in passive AUM offset by an 11% CAGR decline in active investments and cash AUM.

- **...Which leads to lower management fees (11% of total revenue), but generally higher pre-tax margins** – We estimate STT earned just 5 bps of revenue on its AUM in 2Q14, as passive and ETF investing generates lower fees relative to active management. Although the fees are generally lower passive/ETF managers tend to generate higher pre-tax margins. STT's investment management business generated a 35-40% pre-tax margin in 2013, vs 30-35% for asset managers generally. BLK, which also has a large ETF platform, generated a pre-tax margin of >40% in 2013.

Management Bios

- **Joseph (Jay) L. Hooley, Chairman, President and CEO** – Mr. Hooley has served as the CEO of State Street since 2010. Prior to his current role, Mr. Hooley served as the president and COO from 2008 to 2010, and headed State Street's investment servicing business from 2000 to 2008, during which he oversaw the acquisitions of Deutsche Bank's Global Securities Services business (2003) and Investors Financial Services Corporation (2007).
- **Joseph C. Antonellis, Vice Chairman** – Mr. Antonellis serves as State Street's Vice Chairman and heads the European and Asia-Pacific Global Services and Global Markets. Prior to his current role, Mr. Antonellis served as the head of State Street's Global Information Technology and Operations, and also headed the North American global services business unit, the investment manager outsourcing business unit, and the Global Product Management division.
- **Michael W. Bell, EVP and CFO** – Mr. Bell has served as the CFO of State Street since August of 2013. Prior to joining State Street, Mr. Bell served as the CFO of Manulife Financial Corporation. Mr. Bell was previously at Cigna Corporation for 24 years, including 7 years as CFO.
- **Michael Rogers, EVP, Head of Global Markets and Global Services, Americas** – Mike Rogers joined STT in July 2007 as part of the acquisition of Investors Financial Services (IBT). During his 27 year tenure at Investors he served as manager of accounting and control, controller, executive vice president, and president. Mr. Rogers is the global head for State Street Global Markets and the head of the Americas business for State Street Global Services.

The Bank of New York Mellon Corporation

Company description

The Bank of New York Mellon (BK) is a global financial services company with assets of \$401 bil as of 2Q14. It is the largest asset servicer in the world, with ~\$28.5 tril in total assets under custody and administration, and is also a top 10 global asset manager with ~\$1.6 tril in assets under management. We estimate that ~50% of BK's revenues are asset servicing, ~25% to asset management, and ~25% to unique businesses (corporate trust, depository receipts, broker-dealer clearing, and tri-party repo clearing).

Investment strategy

We rate the shares of BK Neutral (2). We see BK as having solid normalized earnings power, however, we believe the stock's current valuation leaves risk/reward fairly balanced given continued near-term top-line challenges due to low interest rates, money market fee waivers, and run-off of structured products in corporate trust.

Valuation

Our \$42 target price for BK is derived from our discounted residual income model, which values an enterprise based on its discounted excess returns over its cost of equity. Our residual income model incorporates our 3-year forward earnings projection followed by a 7-year fade period and finally a steady state terminal value at year 10. The key inputs to the model are an adjusted cost of equity of approximately 10.5%. We also incorporate a long-term ROTE estimate of ~25% to account for business mix implied norms. We assume a ~3% long-term growth rate.

Risks

Factors which could cause the company to exceed our target price include better-than-expected expense control, better-than-expected pricing dynamics, a quicker-than-expected increase in interest rates, a pronounced increase in asset values, better-than-expected economic growth, and better-than-expected trading volumes.

Factors which could cause the company to fail to achieve our target price include a prolonged low rate environment, a pronounced decline in asset values, weaker-than-expected trading volumes, new regulatory developments, and to a more limited extent, unfavorable outcomes from outstanding litigation.

Northern Trust Corporation

Company description

Northern Trust (NTRS), headquartered in Chicago, is a financial services company with assets of \$106 bil as of 2Q14. NTRS has over \$6 tril in assets under custody as well as a \$924 bil in assets under management. NTRS operates in two principal segments: Corporate and Institutional Services (C&IS) and Personal Financial Services (PFS). C&IS (52% of revenue) provides trust and custody services to institutional investors. PFS (43% of revenue) provides wealth management services to high-net-worth individuals and families.

Investment strategy

We rate the shares of NTRS Neutral (2). NTRS arguably has one of the best franchises in financial services as a result of its premier wealth management business that caters to high net worth individuals. In addition, NTRS is the most well capitalized of the trust banks. However, we think NTRS' current valuation already reflects these positives.

Valuation

Our \$70 target price is derived from our discounted residual income model, which values an enterprise based on its discounted excess returns of its cost of equity. Our residual income model incorporates our 3-year forward earnings projection followed by a 7-year fade period and finally a steady state terminal value at year 10. The key inputs to the model are a CAPM-derived cost of equity of approximately ~10%. We also incorporate an estimated long-term ROTE of ~18% to account for business mix implied norms. We assume a ~4.5% long-term growth rate.

Risks

Factors which could cause the company to exceed our target price include better-than-expected expense control, a quicker-than-expected increase in interest rates, a pronounced increase in asset values, better-than-expected economic growth, better-than-expected pricing dynamics and better-than-expected trading volumes.

Factors which could cause the company to fail to achieve our target price include a prolonged low rate environment, a pronounced decline in asset values, weaker-than-expected trading volumes, new regulatory developments, and to a more limited extent, unfavorable outcomes from outstanding litigation.

State Street Corporation

Company description

STT is a global financial services company with ~\$235 bil in assets as of June 30, 2014. STT operates in two principal segments: Investment Servicing (~90% of revenues) and Investment Management (~10% of revenues). Investment Services provides trust and custody services to institutional investors and had 28.4 bil in Assets under Administration as of June 30, 2014. STT's investment management division, State Street Global Advisors, is currently the second largest asset manager in the US (as of Year-end 2013) with ~2.6 trillion in AUM, most of which are passively managed.

Investment strategy

We rate the shares of STT Buy (1). We see STT is the best play on our positive view of the custody business. We believe better management of expenses than in the past, a scalable servicing platform, and returns on prior technology investments will help drive positive operating leverage for the company going forward. The company is also well-levered to higher rates, and could see additional revenue upside from its leading middle office and front office businesses.

Valuation

Our \$90 target price for STT is derived from our discounted residual income model, which values an enterprise based on its discounted excess returns over its cost of equity. Our residual income model incorporates our 3-year forward earnings projection followed by a 7-year fade period and finally a steady state terminal value at year 10. The key inputs to the model are an adjusted cost of equity of ~10.5%, which includes a 2% risk-free rate, a 7.5% equity risk premium, and a beta of 1.15. We also incorporate a long-term ROE estimate of ~16% (vs mgmt's 12-15% target) and a ROTE estimate of ~27.5% to account for business mix implied norms. We assume a ~5% long-term growth rate.

Risks

Factors which could cause the company to exceed our target price include a quicker-than-expected increase in interest rates, a pronounced increase in asset values, better-than-expected economic growth, better-than-expected pricing dynamics and better-than-expected trading volumes.

Factors which could cause the company to fail to achieve our target price include a prolonged low-rate environment, a pronounced decline in asset values, weaker-than-expected trading volumes, regulatory developments and unfavorable outcomes from outstanding FX litigation.

Appendix A-1

Analyst Certification

The research analyst(s) primarily responsible for the preparation and content of this research report are named in bold text in the author block at the front of the product except for those sections where an analyst's name appears in bold alongside content which is attributable to that analyst. Each of these analyst(s) certify, with respect to the section(s) of the report for which they are responsible, that the views expressed therein accurately reflect their personal views about each issuer and security referenced and were prepared in an independent manner, including with respect to Citigroup Global Markets Inc and its affiliates. No part of the research analyst's compensation was, is, or will be, directly or indirectly, related to the specific recommendation(s) or view(s) expressed by that research analyst in this report.

IMPORTANT DISCLOSURES

Northern Trust Corporation (NTRS)

Ratings and Target Price History Fundamental Research



	Date	Rating	Target Price	Closing Price
1	8-Oct-11	Stock rating system changed		
2	24-Sep-12	*2	*50.00	47.76
3	16-Apr-13	2	*53.00	53.40

* Indicates change

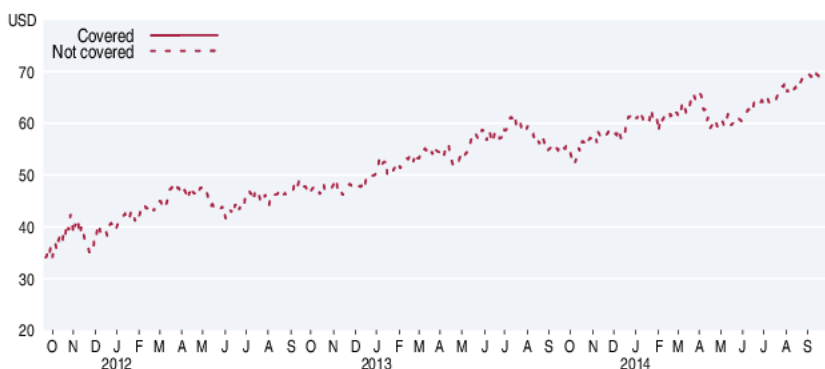
	Date	Rating	Target Price	Closing Price
4	15-Jul-13	2	*64.00	61.73
5	17-Oct-13	2	*60.00	56.51
6	2-Jan-14	2	*68.00	60.89

	Date	Rating	Target Price	Closing Price
7	23-Jan-14	2	*69.00	62.60
8	16-Apr-14	2	*66.00	59.04
9	3-Jul-14	Coverage terminated		

Rating/target price changes above reflect Eastern Standard Time

Northern Trust Corporation (NTRS)

Ratings and Target Price History Best Ideas Research Relative Call (3 Month)



* Indicates change

Rating/target price changes above reflect Eastern Standard Time

State Street Corporation (STT)

Ratings and Target Price History

Fundamental Research



	Date	Rating	Target Price	Closing Price
1	8-Oct-11	Stock rating system changed		
2	24-Sep-12	*1	*54.00	43.39
3	21-Jan-13	1	*61.00	53.36
4	21-Apr-13	1	*65.00	56.93

* Indicates change

	Date	Rating	Target Price	Closing Price
5	15-Jul-13	1	*79.00	69.25
6	22-Oct-13	1	*78.00	67.54
7	2-Jan-14	1	*92.00	73.16
8	27-Jan-14	1	*91.00	68.30

	Date	Rating	Target Price	Closing Price
9	27-Feb-14	1	*90.00	67.39
10	25-Apr-14	1	*89.00	63.79
11	3-Jul-14	Coverage terminated		

Rating/target price changes above reflect Eastern Standard Time

State Street Corporation (STT)

Ratings and Target Price History

Best Ideas Research

Relative Call (3 Month)



	Date	Rating	Target Price	Closing Price
1	15-Feb-13	*ADD MP	-	57.24

* Indicates change

	Date	Rating	Target Price	Closing Price
2	7-Feb-14	*REM MP	-	68.23

Rating/target price changes above reflect Eastern Standard Time

The Bank of New York Mellon Corporation (BK)

Ratings and Target Price History

Fundamental Research



	Date	Rating	Target Price	Closing Price
1	8-Oct-11	Stock rating system changed		
2	24-Sep-12	*1	*27.00	23.20
3	4-Jan-13	*2	27.00	27.29

* Indicates change

	Date	Rating	Target Price	Closing Price
4	18-Apr-13	2	*28.00	26.70
5	15-Jul-13	*1	*34.00	30.69
6	2-Jan-14	1	*40.00	34.56

	Date	Rating	Target Price	Closing Price
7	20-Jan-14	1	*39.00	32.70
8	22-Apr-14	1	*40.00	33.75
9	3-Jul-14	Coverage terminated		

Rating/target price changes above reflect Eastern Standard Time

The Bank of New York Mellon Corporation (BK)

Ratings and Target Price History

Best Ideas Research

Relative Call (3 Month)



* Indicates change

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Citigroup Global Markets Inc. owns a position of 1 million USD or more in the debt securities of State Street Corp

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Citi Research Equity Ratings Distribution

Data current as of 30 Jun 2014

Citi Research Global Fundamental Coverage

% of companies in each rating category that are investment banking clients

12 Month Rating			Relative Rating		
Buy	Hold	Sell	Buy	Hold	Sell
49%	40%	12%	0%	100%	0%
55%	53%	46%	0%	54%	0%

Guide to Citi Research Fundamental Research Investment Ratings:

Citi Research stock recommendations include an investment rating and an optional risk rating to highlight high risk stocks.

Risk rating takes into account both price volatility and fundamental criteria. Stocks will either have no risk rating or a High risk rating assigned.

Investment Ratings: Citi Research investment ratings are Buy, Neutral and Sell. Our ratings are a function of analyst expectations of expected total return ("ETR") and risk. ETR is the sum of the forecast price appreciation (or depreciation) plus the dividend yield for a stock within the next 12 months. The Investment rating definitions are: Buy (1) ETR of 15% or more or 25% or more for High risk stocks; and Sell (3) for negative ETR. Any covered stock not assigned a Buy or a Sell is a Neutral (2). For stocks rated Neutral (2), if an analyst believes that there are insufficient valuation drivers and/or investment

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Prior to May 1, 2014 Citi Research may have also assigned a three-month relative call (or rating) to a stock to highlight expected out-performance (most preferred) or under-performance (least preferred) versus the geographic and industry sector over a 3 month period. The relative call may have highlighted a specific near-term catalyst or event impacting the company or the market that was anticipated to have a short-term price impact on the equity securities of the company. Absent any specific catalyst the analyst(s) may have indicated the most and least preferred stocks in the universe of stocks under consideration, explaining the basis for this short-term view. This three-month view may have been different from and did not affect a stock's fundamental equity rating, which reflected a longer-term total absolute return expectation. For purposes of NASD/NYSE ratings-distribution-disclosure rules, most preferred calls corresponded to a buy recommendation and least preferred calls corresponded to a sell recommendation. Any stock not assigned to a most preferred or least preferred call was considered non-relative-rated (NRR). For purposes of NASD/NYSE ratings-distribution-disclosure rules we corresponded NRR to Hold in our ratings distribution table for our 3-month relative rating system. However, we reiterate that we did not consider NRR to be a recommendation.

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