



FX Transaction Cost Analysis

City of San Jose Police & Fire Department Retirement Plan

Reporting Period FY 2023/24

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Summary

San Jose Police and Fire has actively completed FX TCA since Q4 2012 in order to monitor the costs of completing foreign exchange transactions within its portfolio. They have been concerns over the FX pricing practices of custody banks, as well as concerns over market participants manipulating the foreign market for gain. The objective for staff has been to measure the cost¹ of FX transactions, and whenever possible seek to improve the pricing outcomes. As the changes are implemented, the staff has looked for ongoing monitoring to ensure pricing remains fair and efficient from the custodian, as well as making sure that investment managers are adhering to best execution policies.

Klarity FX has provided the staff with quarterly reporting on FX TCA performance and made recommendations where necessary. The plans overall performance² on FX transaction costs can be described as ‘good’. The investment managers do not rely solely on the custody bank for FX execution, and actively seek the best execution from other FX counterparties wherever possible, this significantly helps in lowering overall FX costs for the plan and meets our best practice approach.

In Q4 2020 the plan changed its custodian bank from State Street to Bank of New York Mellon. Investment managers have been enrolled into the appropriate fx programs with BNY Mellon including the defined spread program. Analysis completed on transactions completed by BNY Mellon since October 2020 have shown excellent execution and a notable improvement in trading costs compared to State Street through the custodian relationship.

Since Q4 2012, the average transaction cost across the managers has been -0.02%, a good outcome.

State Street average cost	-0.09%	poor/acceptable/good
BNY Mellon average cost	-0.04%	poor/acceptable/good
All other FX Counterparties average cost	-0.010%	poor/acceptable/good

- For the FY23/24, the plan completed 1360 transactions for a total transaction volume of \$158mln with an average transaction size of \$116k.
- There were 6 participating investment managers, with Oberweis the most active, initiating 67% of total transactions, and 54% of transaction volume.
- There were 23 separate counterparties. With JP Morgan Chase the most active, completing 46% of transactions., and 44% of transaction volume.
- The custodian, BNY Mellon, completed 31% of the transactions.

- BNY Mellon completed 428 transactions, with a -0.06% spread taken on \$34mln in volume.
 - Oberweis continues to benefit from the BNY Mellon Defined Spread program, with 138 of the 380 transactions applicable for the program with a -0.10% spread applied. The overall execution performance for Oberweis was -0.05%, for the 380 transactions initiated during the fiscal year.
- The overall spread for ‘All Other FX Counterparties’ was -0.01%, a good result on 932 transactions.
- The long-term running total overall spread is maintained -0.02%.
- FX execution quality for the plan remains good and the improved fx transaction costs from the custodian switch to BNY Mellon has been maintained. There are no actions for any investment managers of fx counterparties.

¹ The available levels of analysis are explained in Appendix B&C

² For guidance purposes outcomes may be described as follows: good outcome is -0.05% to positive | acceptable outcome is -0.15% to -0.05% | poor outcome is below -0.15% These outcomes reference the spread taken on a transaction. E.G., A -0.20% spread taken on \$1,000,000 = \$2,000 taken. Which is qualified as a poor outcome.

Overview of FX Transactions

Period	2023/24
No. Transactions	1360
Total Volume Transacted	\$157,608,204
Average Trade Size	\$115,888
Spot / Forward	1337/23
FX Counterparties	23
FX Pairs	10
Investment Managers	6

Table 1. Data Summary

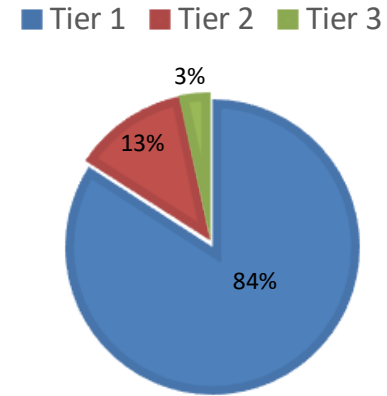


Figure 1. Transactions by currency tier

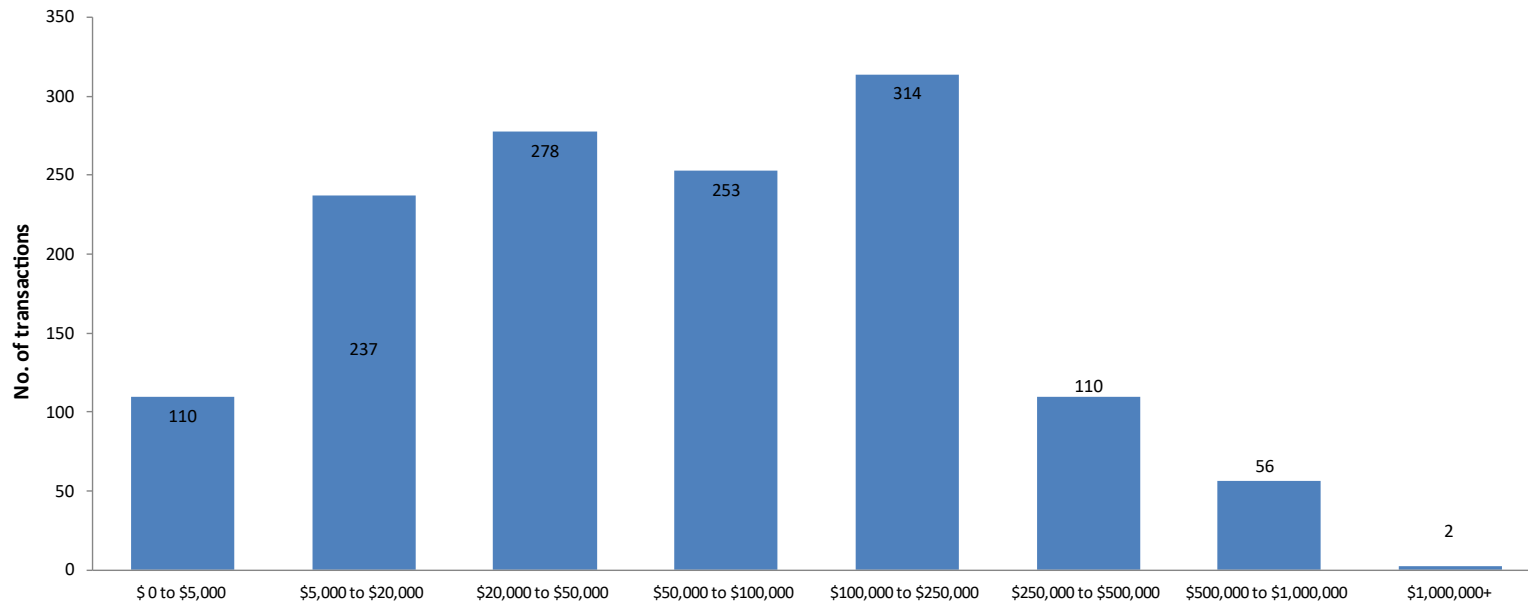
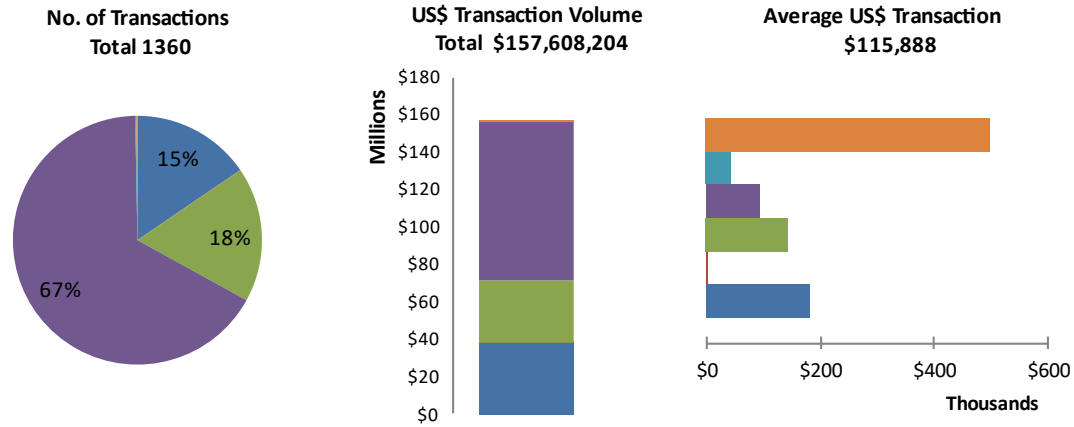


Figure 2. Transaction size distribution (\$)

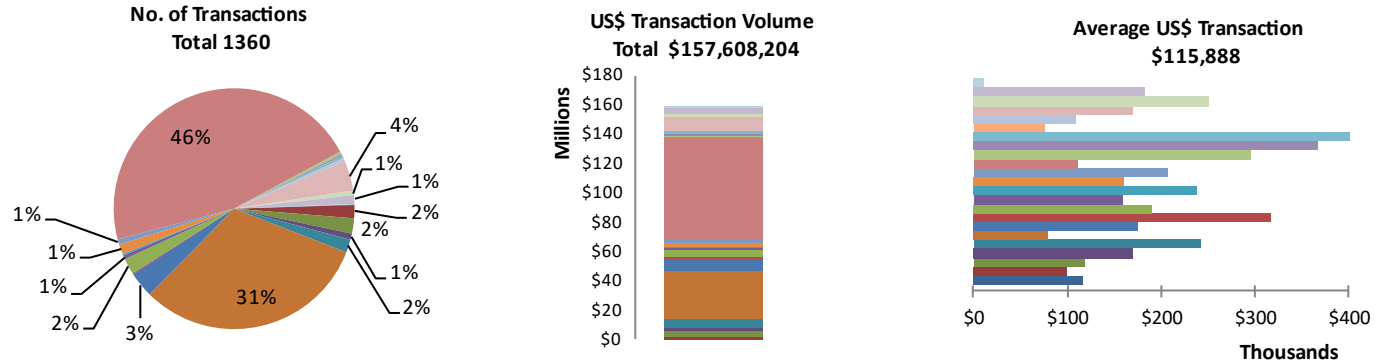
Investment Manager Breakdown



Investment Manager	No. of Transactions	US\$ Transaction Volume (Millions)	Average US\$ Transaction (Thousands)
ARTISAN GLOBAL VALUE	210	\$37,789,804	\$179,951
CASH ACCOUNT	1	\$558	\$558
MORGAN STANLEY INT	238	\$33,860,757	\$142,272
OBERWEIS INTL OPPORTUNITIES	907	\$84,877,745	\$93,581
TRISTAN EPISO III	2	\$84,605	\$42,303
TRISTAN EPISO V	2	\$994,735	\$497,368

Table 2. Investment manager data summary

FX Counterparties



Counterparty	No. of Transactions	US\$ Transaction Volume (Millions)	Average US\$ Transaction (Thousands)
AUSTRALIA AND NEW ZEALAND BANKING G	1	\$116,894	\$116,894
BANK OF AMERICA N A	24	\$2,414,831	\$100,618
BANK OF MONTREAL THE	28	\$3,316,041	\$118,430
BARCLAYS BANK PLC WHOLESALE	11	\$1,868,436	\$169,858
BNP PARIBAS SA FORMERLY BANQUE NATI	24	\$5,792,574	\$241,357
BNY MELLON BANK	428	\$33,683,202	\$78,699
BROWN BROTHERS HARRIMAN AND CO	47	\$8,215,930	\$174,807
CALYON LONDON	2	\$634,258	\$317,129
CITIBANK NA	29	\$5,510,996	\$190,034
DEUTSCHE BANK AG	7	\$1,117,438	\$159,634
FX CONNECT BROKER (FXC)	3	\$715,309	\$238,436
GOLDMAN SACHS INTERNATIONAL	18	\$2,892,408	\$160,689
HSBC BANK USA N A	10	\$2,067,815	\$206,782
JPMORGAN CHASE BK NA	629	\$69,712,250	\$110,830
MORGAN STANLEY CAPITAL SRVCS INC NY	5	\$1,479,749	\$295,950
NATWEST MARKETS PLC UNITED KINGDOM	3	\$1,103,450	\$367,817
NORTHERN TRUST COMPANY THE	5	\$2,109,776	\$421,955
ROYAL BANK OF CANADA	1	\$75,798	\$75,798
STANDARD CHARTERED BANK	5	\$543,863	\$108,773
STATE STREET BANK AND TRUST CO	55	\$9,291,501	\$168,936
TORONTO DOMINION SECURITIES TORONTO	8	\$2,003,801	\$250,475
UBS AG	16	\$2,930,912	\$183,182
WESTPAC BANKING CORPORATION	1	\$10,971	\$10,971

Table 3. FX counterparty data summary

Bank of New York Mellon Focus

	ARTISAN GLOBAL VALUE	CASH ACCOUNT	MORGAN STANLEY INT	OBERWEIS INTL OPPORTUNITIES	TRISTAN EPISO III	TRISTAN EPISO V	Total Transactions/ %Spread from Benchmark
BNY Bank Negotiated	-	-	1 0.41%	242 -0.03%	-	-	243 -0.03%
BNY Defined Spread	2 -0.10%	1 -0.10%	40 -0.08%	138 -0.10%	2 -0.10%	2 -0.09%	185 -0.09%
Total Transactions/ %Spread	2 -0.10%	1 -0.10%	41 -0.07%	380 -0.05%	2 -0.10%	2 -0.09%	428 -0.06%

Table 4. Breakdown of BNY Mellon transactions by execution method (Count & Average Spread)

	BNY Mellon		All Other FX Counterparties		All % Spread
	% Spread	Count	% Spread	Count	
\$0-5,000	-0.08%	80	-0.03%	30	-0.07%
\$5,001-20,000	-0.07%	125	-0.01%	112	-0.04%
\$20,001 -50,000	-0.01%	69	-0.01%	209	-0.01%
\$50,001-100,000	-0.04%	57	-0.02%	196	-0.02%
\$100,001-250,000	-0.04%	65	0.01%	249	0.00%
\$250,001-500,000	-0.08%	22	0.02%	88	0.00%
\$500,001-1,000,000	-0.07%	9	-0.01%	47	-0.02%
\$1,000,001+	-0.10%	1	-0.23%	1	-0.16%
	-0.06%	428	-0.01%	932	-0.02%

Table 5. Comparison of BNY Mellon vs. All Other across transaction size

	% Spread	Average Transaction size	No. of Transactions
Tier 1	-0.06%	\$76,637.73	356
Tier 2	-0.06%	\$71,326.70	50
Tier 3	-0.02%	\$128,810.75	22
	-0.06%	\$78,699.07	428

Table 6. BNY Mellon performance by Tier Group

	SJPF (BNY)	Peer Group	Performance
	% Spread	% Spread	SJPF/Peer
Grand Total	-0.06%	-0.11%	BETTER

Table 7. SJPF (BNY Mellon) performance compared to Peer Group

Summary Results

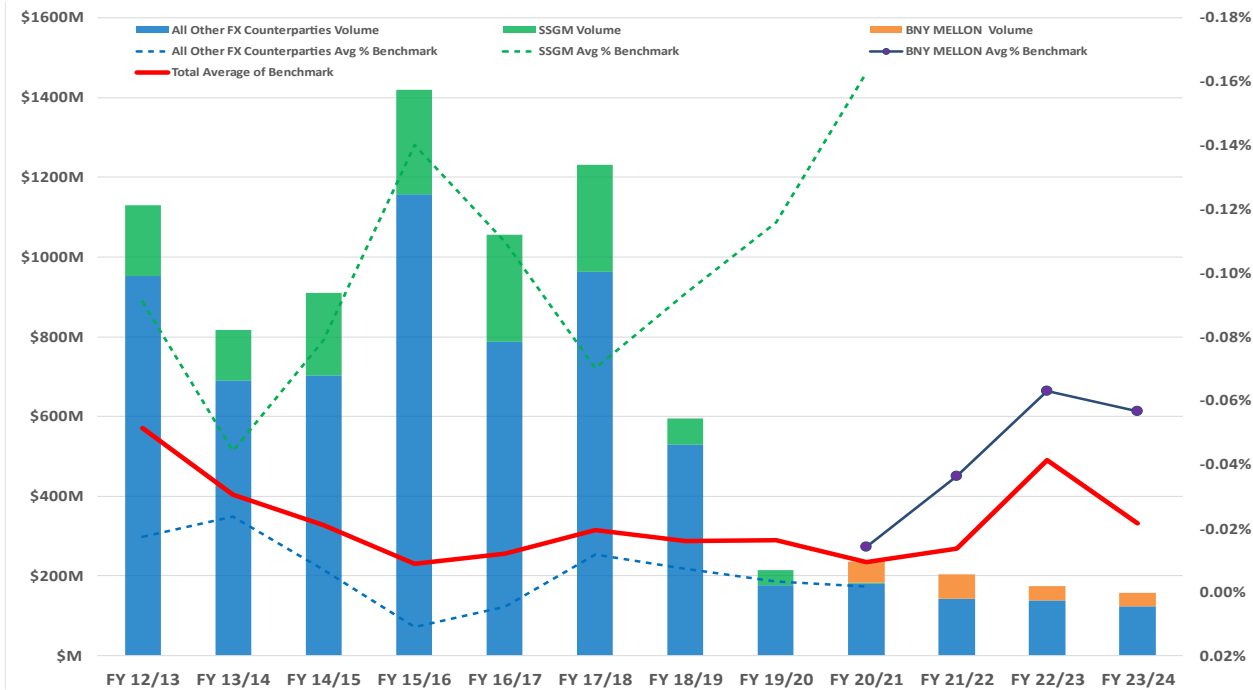


Figure 3. Avg % performance compared to transaction volume for SSGM / BNY Mellon vs. All Other FX Counterparties, by Fiscal Year

	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	Grand Total
All Other FX Counterparties - Volume	\$952.8M	\$690.3M	\$703.1M	\$1157.3M	\$787.2M	\$963.7M	\$528.5M	\$176.2M	\$180.2M	\$142.8M	\$137.8M	\$123.9M	\$6543.8M
SSGM (GRP) - Volume	\$176.9M	\$126.4M	\$206.1M	\$261.4M	\$268.6M	\$268.3M	\$67.2M	\$38.7M	\$1.8M	-			\$1415.3M
BNY Mellon (GRP) - Volume									\$53.5M	\$60.7M	\$37.2M	\$33.7M	\$185.1M
All Other FX Counterparties - Avg % Spread	-0.02%	-0.02%	-0.01%	0.01%	0.00%	-0.01%	-0.01%	0.00%	0.00%	0.00%	-0.03%	-0.01%	-0.01%
SSGM (GRP) - Avg % Spread	-0.09%	-0.04%	-0.08%	-0.14%	-0.11%	-0.07%	-0.09%	-0.12%	-0.16%	-			-0.09%
BNY Mellon (GRP) - Avg % Spread									-0.01%	-0.04%	-0.06%	-0.02%	-0.04%
Grand Total	-0.05%	-0.03%	-0.02%	-0.01%	-0.01%	-0.02%	-0.02%	-0.02%	-0.01%	-0.01%	-0.04%	-0.02%	-0.02%

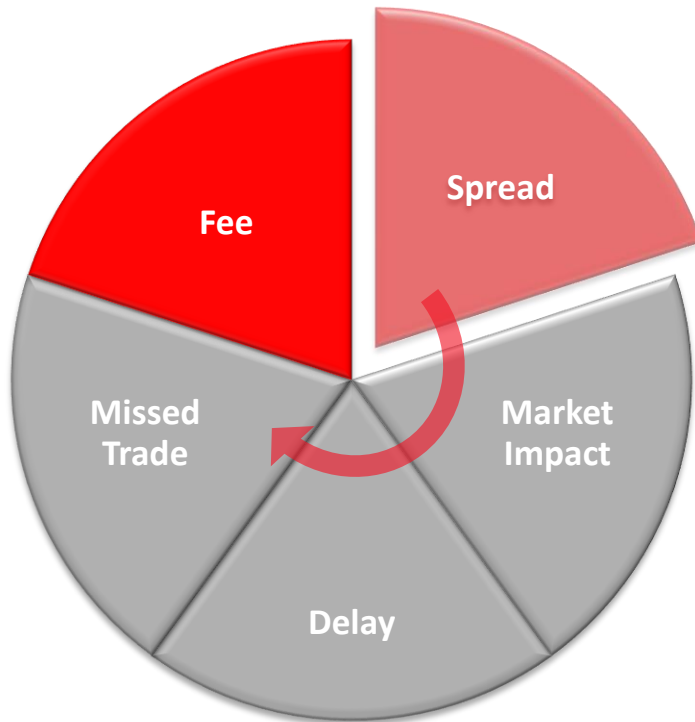
Table 8. Summary of Avg % performance compared to transaction volume for Custodian vs. All Other FX Counterparties, by Fiscal Year

	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	Running Total Average%
ARTISAN GLOBAL VALUE	-0.04%	0.00%	0.02%	-0.01%	-0.02%	-0.03%	-0.03%	0.03%	0.02%	0.00%	-0.06%	-0.02%	-0.01%
BRANDES INVESTMENT PARTNERS				0.21%									0.21%
CASH ACCOUNT												-0.10%	-0.10%
MACKAY SHIELDS	-0.15%												-0.15%
MORGAN STANLEY INT										0.06%	-0.05%	-0.02%	-0.03%
OBERWEIS INTL OPPORTUNITIES			-0.06%	-0.01%	-0.02%	-0.03%	-0.01%	-0.03%	-0.02%	-0.02%	-0.04%	-0.02%	-0.02%
ORION EURO RE IV										-0.09%	-0.11%		-0.10%
RS INVESTMENT MANAGEMENT, L.P.	-0.08%	-0.11%	-0.10%										-0.08%
RUSSELL CURRENCY HEDGING ACCT				0.04%	0.00%	0.05%	-0.02%						0.03%
RUSSELL INVESTMENT MANAGER RUSSELL 3000	-0.29%	-0.23%											-0.26%
RUSSELL INVESTMENT MANAGERS EAFE & CAD	-0.49%	-0.14%	-0.18%	0.05%	-0.18%	0.00%	-0.16%	-0.15%					-0.19%
RUSSELL INVESTMENTS MSCI ACWI (trmd 11/2012)	-0.14%	0.67%	0.04%										0.10%
RUSSELL INVESTMENTS MSCI ACWI VALUE (trmd 11/2012)	-0.17%		-0.16%										-0.08%
RUSSELL INVESTMENTS OVERLAY ACCOUNT	-0.02%	-0.02%	0.00%	-0.01%	0.00%	0.01%	-0.01%						-0.01%
RUSSELL INVST MSCI EAFE + CAD SMALL CAP	-0.35%		-0.70%		-0.14%	-0.13%	-0.01%						-0.21%
RUSSELL OVERLAY-GAA	-0.05%												-0.04%
RUSSELL OVERLAY-HEDGE FUNDS	0.00%	0.01%	-0.04%	-0.02%									-0.01%
RUSSELL OVERLAY-REAL ESTATE	-0.01%	0.01%	0.01%	0.02%	0.01%	0.00%	-0.01%						0.01%
TERMINATED MANAGER ASSETS				-0.21%	-0.17%		-0.10%	-0.29%					-0.20%
TRANSITION ACCOUNT	-0.10%	0.02%		0.00%	0.20%								-0.02%
TRISTAN CAPITAL PARTNERS				-0.01%	0.06%	-0.06%		-0.03%					-0.01%
TRISTAN EPISO III												-0.10%	-0.10%
TRISTAN EPISO IV										-0.10%	-0.11%		-0.10%
TRISTAN EPISO V										-0.19%	-0.11%	-0.09%	-0.13%
WILLIAM BLAIR & COMPANY		0.05%	-0.17%	0.68%	-0.02%	-0.20%							0.07%
Grand Total	-0.02%	-0.04%	-0.03%	-0.05%	-0.04%	-0.05%	-0.03%	-0.02%	-0.01%	-0.01%	-0.04%	-0.02%	-0.02%

Table 9. Investment Manager % performance by Fiscal Year

Appendix A – FX Costs(Spread vs Fee)

- FX Transaction Cost Analysis investigates the true cost to the client when executing a deal.
- FX component implicit in international transactions adds a layer of opacity; FX TCA is a means of adding transparency.



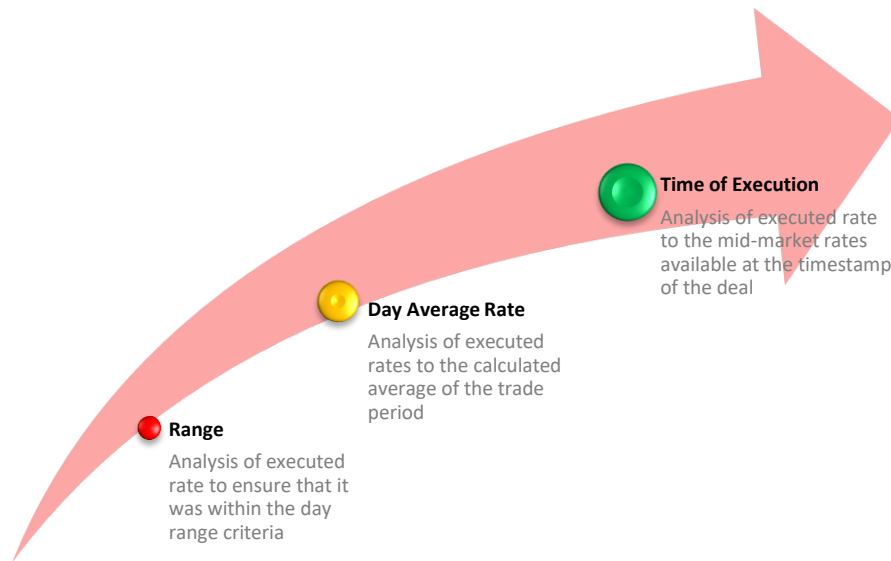
Explicit costs

should be reasonably transparent, consisting of the agent fee plus the spread on the asset. What if the spreads are not readily available and reported, as is the case in currency markets? Quantifying the spread is an Achilles heel for managers

Implicit costs

are generally accepted to be more difficult to ascertain and are generally broken into three areas: market impact, delayed execution, and missed trades. Often used to mask excessive spreads.

Appendix B – Analysis Classification



Range:

Quick snapshot to identify major issues with fee models. Results are only indicative of trading performance within the day range. It is not possible to assess or make strong conclusions on the transaction costs for the portfolio, but it is possible to identify strongly inferior practices.

Day Average Rate:

Trading behavior modeling to identify transaction costs, based on average rate performance as the benchmark. Results are dependent upon a significant sample/population size to justify the assumed average rate distribution.

Time of Execution:

Detailed cost modeling to identify transaction costs based on actual vs. traded as the benchmark. Results from this analysis draw strong conclusions on actual transaction costs but the ability to complete this analysis is limited to the availability of timestamp data from the FX counterparties and custodian.

Appendix C - Analysis Methodology



In this illustration the client is selling Euro's and receiving US Dollar's. The higher the EUR/USD FX rate the more US Dollar's received.

Day Range

- If the exchange rate achieved is greater than 1.2640 then the transaction was executed "Better than the Day Range"
- If the exchange rate achieved is lower than 1.2540 then the transaction was executed "Worse than the Day Range"

Day Average Rate

- Calculated as the average of the high and low exchange rates available on the day. In this example this is the average of 1.2640, 1.2540, is 1.2590.
- If the exchange rate achieved is greater than 1.2590 then the transaction was executed "Better/superior than the Day Average Rate"
- If the exchange rate achieved is lower than 1.2590 then the transaction was executed "Worse/inferior than the Day Average Rate"

Appendix D - Tier Groups, currency classification

		Currency	RIC
Tier 1	High Liquidity	US dollar	USD
		Euro	EUR
		Japanese yen	JPY
		Pound sterling	GBP
		Australian dollar	AUD
		Swiss franc	CHF
		Canadian dollar	CAD
Tier 2	Medium Liquidity	Hong Kong dollar	HKD
		Swedish krona	SEK
		New Zealand dollar	NZD
		Korean won	KRW
		Singapore dollar	SGD
		Norwegian krone	NOK
		Mexican peso	MXN
Tier 3	Low Liquidity	Indian rupee	INR
		Russian rouble	RUB
		Chinese renminbi	CNY
		Polish zloty	PLN
		Turkish lira	TRY
		South African rand	ZAR
		Brazilian real	BRL
		Danish krone	DKK
		New Taiwan dollar	TWD
		Hungarian forint	HUF
		Malaysian ringgit	MYR
		Thai baht	THB
		Czech koruna	CZK
		Philippine peso	PHP
		Chilean peso	CLP
		Indonesian rupiah	IDR
		Israeli new shekel	ILS
		Colombian peso	COP
		Romanian leu	RON
Saudi riyal	SAR		
Argentine peso	ARS		
Peruvian Nuevo sol	PEN		
Lithuanian litas	LTL		

Appendix E – Custodian Execution Models

METHOD	SSGM FXS	Indirect FX Services	The foreign exchange request is made indirectly to SSGM, by email or fax, initiated by the investment manager.
	SSGM FXC	Direct FX Services: FX Connect	The foreign exchange request is made through the online dealing platform (fxconnect).
	SSGM REP	Indirect FX Services; Income Repatriation	The foreign exchange request is automated, typically tax reclaims, dividends, standing instructions.
	SSGM SUBCUSTODIAN	SSGM preferred counterparties	For currencies not traded by SSGM, the foreign exchange request will be sent to the local sub-custodian for execution.
	SSGM P	Direct FX Services; Phone	The foreign exchange request is made directly to SSGM, by phone, initiated by the investment manager.
	SSGM BTB	Direct FX Services	The foreign exchange request is made directly to the custodian, typically through peer to peer networks, or online dealing systems.
TYPE (Hourly/Daily/Restricted)	SSGM HPS <i>(Direct/Indirect)</i>	Hourly Price Service	FX rates are established every hour on the hour between 9am and 4pm in each region. Rates constrained by session Hi-Lo for trading region.
	SSGM SSH	Security Settlements & Holdings	FX rates are generally established at the end of the trading day in the region, with the exception of same day value activity and restricted currencies. Rates constrained by session Hi-Lo for trading region.
	SSGM AIR	Automated Dividend & Interest Income Repatriation Service	FX Rates are established at the beginning of the HK trading day (or at the beginning of trading session for restricted currencies) for all funds regardless of the location of the custody client or SSGM trading desk. Rates established without reference to the hi/lo trading range.