

The Oxera Trading and Post-trading Monitor 2013

Note prepared for ASX Group

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1 Introduction

In December 2012, the Council of Financial Regulators in Australia (the Council) prepared a report for the Australian government analysing responses to a discussion paper on competition in the clearing and settlement of Australian cash equities.¹ The Council found that views were mixed on whether competition in clearing would deliver net benefits to the Australian financial system, and therefore recommended a cautious approach to the introduction of competition. In particular, it advised that a decision on any licence application from a central counterparty (CCP) seeking to compete in the Australian cash equities market be deferred for two years.

During this two-year period, the Australian Securities Exchange (ASX) intends to work with stakeholders to develop a code of practice for clearing and settlement of cash equities in Australia. To facilitate effective dialogue with stakeholders, ASX is in the process of establishing a website, which, among other things, will provide relevant context to the Australian cash equities market. This will include an international comparison of the charges for trading and post-trading services offered by infrastructure providers.

Through a number of studies,² Oxera has developed a methodology for drawing up such an international comparison, and has been commissioned by ASX to update recent analysis prepared for the Comissão de Valores Mobiliários (CVM), the Securities and Exchange

¹ Council of Financial Regulators (2012), 'Competition in clearing Australian cash equities: conclusions', December.

² See, for example, Oxera (2011), 'Monitoring prices, costs and volumes of trading and post-trading services', report prepared for European Commission DG Internal Market and Services, May; and Oxera (2010), 'Costs of securities trading and post-trading—UK equities', prepared for Euroclear, February 26th.

Commission of Brazil, which considers the relationship between infrastructure providers' charges and the scale of the market.³

The remainder of this note is structured as follows:

- section 2 summarises the key features of the methodology, including references to the data sources used and details of the user profiles;
- section 3 presents the results of the updated Oxera analysis.

2 Methodology

2.1 Overview of approach

The prices or costs of trading and post-trading services can be assessed in one of the following two ways.

- **User profile approach**, in which representative user profiles are applied to the pricing schedules of different infrastructure providers to give an estimate of the total charges that each user in each financial centre pays.
- **Revenue analysis**, in which the average unit cost for the trading and post-trading services is measured according to the revenues (divided by the number or value of transactions) of the service providers.

There are advantages and disadvantages to each approach, but to conduct a like-for-like comparison across financial centres, a user profile approach has certain advantages. This is because costs can vary between financial centres for two reasons: differences in prices and differences in the way brokers and investors use infrastructure providers. In the revenue analysis approach, it would be difficult to assess to what extent cost differences across financial centres are due to differences in prices or in profiles. In the user profile approach, however, the profile can be kept the same across all financial centres so that cost differences are due only to differences in prices. The user profile approach also allows the costs of different types of investor (retail and institutional) and broker (small and large) to be estimated.

The user profile approach has therefore been adopted for this study and the analysis presented is an update of the analysis in Oxera (2012).⁴ The analysis for CVM used 2011 pricing schedules whereas this analysis uses pricing schedules as of January 2013.⁵ The user profiles have also been adapted to better reflect investors and intermediaries active in the Australian, rather than the Brazilian, cash equities market.

2.2 Identification of relevant services and fees

This analysis focuses on including fees charged by infrastructure providers in each financial centre that covers the following four types of service.

- **Trading**—usually initiated when an order is placed and then executed at a trading platform. In addition to trade execution, trading platforms may provide other services for

³ Oxera (2012), 'What would be the costs and benefits of changing the competitive structure of the market for trading and post-trading services in Brazil?', prepared for Comissão de Valores Mobiliários, June.

⁴ Oxera (2012), 'What would be the costs and benefits of changing the competitive structure of the market for trading and post-trading services in Brazil?', prepared for Comissão de Valores Mobiliários, June.

⁵ A sensitivity analysis was undertaken and presented in the report for Comissão de Valores Mobiliários (see Oxera (2012), section 4.8). Additional sensitivity analysis has not been undertaken for this update.

which fees are charged (or fees are varied, depending on how the customer accesses or uses the platform), such as order management, market-making, and a combination of active and/or passive execution strategies.

- **Counterparty risk clearing**—in general, the CCP becomes the counterparty to each side of a transaction that is executed at the trading venues, so assumes any counterparty risk that those trading on an exchange would otherwise have to assume. The service of clearing involves the preparation of a transaction for settlement, and comprises trade netting (bundling multiple transactions into a single settlement order), and settlement instruction (processing the matched and netted trades to be sent for settlement). CCPs also provide fail management and related risk management services.⁶
- **Settlement services**—such services include pre-settlement positioning (ensuring that the buyer has the monies available and the seller the securities available) and the completion of a transaction through the transfer of ownership of assets and monies. Settlement services are initiated once the trade has been cleared by the CCP (for trades that are routed via CCPs), or, for gross trades that are not cleared by the CCP, once the trade is executed and ready for settlement. These services are usually provided directly by central securities depositories (CSDs) or indirectly by custodians/settlement agents, which maintain accounts with the CSDs.
- **Custody and safekeeping services**—such services involve account provision (at the end-investor or intermediary level), and, to varying levels of detail between different CSDs, the management of corporate actions. Other services that CSDs may provide, for which fees are charged, include (but are not restricted to) stamp assessment, collateral management and netting.

Charges (or rebates) associated with other services, such as the provision of data or security lending, are not included. Such costs are not closely related to the volume and value of trading that an investor undertakes.

Different infrastructure providers charge for these services in different ways. It is usual for both fixed fees (eg, membership and access charges) as well as variable fees (eg, per-transaction fees) to be charged (see section 2.3 for further details)—this analysis considers both types.⁷ Variable fees can be applied per transaction, per value of transaction, or per share per transaction. It is also quite common for trading platforms to use a combination of the three. To be able to draw comparisons between the costs of trading and post-trading in each financial centre, all charges for each type of service have been aggregated and presented as a fee per value of transaction and per transaction, as explained in the following section.

2.3 Identification of relevant fees and translating these into costs

The following sub-sections explain in more detail how the total cost for each level of the value chain has been calculated.

⁶ When trading equities on stock exchanges and using CCP clearing services, investors/clearing members are required to post collateral. The costs associated with this holding of collateral at a CCP have not been included in this analysis because the amount of collateral is specific to the contract traded, and therefore the cost could vary substantially depending on the profile of the trader. In most financial centres, interest is paid on the collateral. Although the exact level of interest rate may vary, given the short settlement cycle the difference in costs across financial centres was unlikely to affect the conclusions in the report for Comissão de Valores Mobiliários.

⁷ One-off application fees and connectivity costs have been excluded. When considered relative to typical volumes and values of trading, these fees are small and will not affect the results of the analysis.

2.3.1 Trading platform costs

Different trading platforms charge for their trading services in different ways. Usually, there is a fixed fee—an access and/or membership fee for each firm to use the trading platform—and a variable fee—either a charge per transaction (common in Europe), per value of transaction (eg, Australia), or per share per transaction (eg, Canada and the USA). Volume discounts are also often available. The total trading platform costs associated with each user profile can be calculated as follows.

- **Fixed fees**—each fixed fee can be converted into a per-value-of-transaction fee by considering the total (average) value of trading within the relevant time period. The average value of trading is based on the assumptions of the user profile. For example, a monthly membership fee is divided by the average value of trading by the user in each month.
- **Volume discounts** can be incorporated by considering the total value of trading (or number of transactions) undertaken within the time period to which the volume discounts apply. In financial centres where the trading platform fees are charged to the broker rather than directly to the end-investor, volume discounts are based on the volume of services purchased by the broker. Therefore, to incorporate the volume discount in these financial centres, the average volume of trading by *brokers* (ie, not investors) needs to be considered. In financial centres where the discount is based on the volume of service purchased by the end-investor, the volume of trading by the end-investor needs to be considered. The value chain and pricing schedules in each financial centre have been carefully considered to ensure that the appropriate approach has been taken.
- **Per-share-per-transaction fees**—in the case of US and Canadian costs, where charges are per share per transaction, it is necessary to take into account the average number of shares per transaction (and their average price) in each financial centre, to calculate a fee on a per-value-of-transaction basis.

The total cost can be presented on a per-transaction basis by dividing by the average number of trades associated with the user profile, or, on a per-value-of-transaction basis, by dividing by the average value of trading associated with the user profile.⁸

2.3.2 CCP costs

In most financial centres, there is a separate charge for CCP services.⁹ This service tends to be charged on a per-transaction basis, which can be converted into a per-value-of-transaction basis in a similar way as for trading platform fees.

CCP services may be charged on a pre-netting transaction basis (per trade executed on the trading venue) or on a post-netting transaction basis (per settlement instruction sent). Where the charge is applied using the latter, information is required on the average netting efficiency ratio for the CCP. For European CCPs this information is available from the European Central Bank (ECB), and usually in the CCPs' annual reports.¹⁰

⁸ Fee per transaction (Fp) = $\frac{\text{Total cost for all transactions (C)}}{\text{Total number of transactions (N)}}$ and average trade size (A) = $\frac{\text{Total value of all transactions (V)}}{\text{Total number of transactions (N)}}$, and

Fee per value of transaction (Fbp) = $\frac{\text{Total cost for all transactions (C)}}{\text{Total value of all transactions (V)}}$. So, $Fbp = \frac{Fp}{A}$

⁹ In some countries this is not the case. For example, in Brazil the charge for CCP clearing is included in the settlement fee charged by Bovespa.

¹⁰ See, for example, London Stock Exchange (2011), 'Delivering on our strategy: Getting in shape, Leveraging our assets, Developing opportunities', Annual Report, p. 21, or Deutsche Börse Group (2003), 'Zwischenbericht – Quartal 2/2003', Interim Report, p. 5.

Similar to trading platforms, CCPs often charge fixed fees (membership/access) and per-transaction fees, and may offer volume discounts. These have been incorporated into the analysis in the following ways.

- **Fixed fees**—each fixed fee can be converted into a per-value-of-transaction fee by considering the total (average) value of trading undertaken by the user within the relevant time period. For example, a monthly membership fee is divided by the average value of trading each month, based on the user profile.
- **Volume discounts** can be incorporated by considering the total value of trading undertaken within the time period to which the volume discounts apply. As with trading platform volume discounts, in financial centres where the CCP fees are charged to the clearing member rather than directly to the end-investor, the volume discounts apply to the volume of activity of the *clearing member*. Therefore, in order to incorporate the volume discounts in these financial centres and calculate a representative clearing cost, the average volume of activity of a clearing member needs to be considered. This has been approximated by the average volume of activity by brokers.
- **Pre-netting transaction fees**—the total cost associated with pre-netting transaction fees is calculated by applying the fee rate (including any volume discounts) to the number of transactions as determined in the user profile.
- **Post-netting transaction fees**—to incorporate post-netting transaction fees, the number of post-netting transactions (settlement instructions) arising from executing the investor's trade(s) needs to be calculated by applying the netting efficiency for the relevant financial centre to the assumed number of transactions according to the user profile. The post-netting transaction fee rate (including any volume discounts) is then applied to this number to estimate a total cost. The netting efficiency used is as reported in the CCPs' annual reports, or, for European CCPs, where the netting efficiency is not reported in the annual report it has been calculated using ECB statistics.
- **Fail management fees**—to incorporate the total cost arising from failed trades, the analysis has assumed that 0.002% of a broker's trades fail, and that failed trades are resolved in one day. This is based on information provided by ASX on the number of failed Australian equity trades in 2012.

The total cost can be presented on a per-transaction basis (by dividing the total cost by the average number of trades associated with the user profile), or on a per-value-of-transaction basis (by dividing the total cost by the average value of trading associated with the user profile).¹¹

2.3.3 CSD costs

In general, CSDs charge fixed fees (eg, membership and access fees) and two types of variable fee: a clearing and settlement fee (typically charged per transaction) and a custody fee (typically charged in proportion to the assets under management). Volume discounts are common, particularly in the case of the custody fee, in which case, where omnibus accounts are held, the volume discount is applied to the value of assets under custody of the intermediary (ie, the custodian). Where end-investor accounts are held (eg, in Brazil), the discounts apply to the value under custody held only by the end-investor.

- **Fixed fees** have been included in the analysis in exactly the same way as for trading platforms and CCPs.

¹¹ See footnote 8.

The costs associated with per-transaction fees (clearing and settlement fees) have been incorporated into the analysis in a similar way as for CCP services, but, where omnibus accounts are provided, the additional settlement instruction to transfer securities between the custodian and the broker has been accounted for.

The remainder of this section explains in more detail the steps taken to estimate CSD costs. Whether netting occurs and whether fees were charged on a pre- or post-netting basis has been carefully noted.

Fees applied to the number of post-netting transactions

The first step is to calculate the number of post-netting transactions (settlement instructions) arising from executing the investor's trade(s). There are two types of settlement instruction: instructions to move the securities purchased into (or sold out of) the CSD account of the broker of the investor, and an additional instruction to transfer the securities between the broker and the end-investor (or, where the securities are held in the CSD in the custodian's omnibus account, to the end-investor's custodian).

- The first type is calculated by applying the netting efficiency as reported in the relevant CCP's annual report (or as calculated from the ECB statistics) to the number of (trading) transactions as determined in the user profile.¹² The total cost is then computed by applying the fee rate (taking into account any volume discounts) to the estimated number of post-netting transactions.¹³
- The cost of the second type depends on the number of transfers that need to be made between the broker and the end-investor (or the end-investor's custodian, as relevant). This depends on the number of different *stocks* traded by the end-investor each day. This study analyses the costs for a range of users, including retail investors and institutional investors.

Fees applied to the number of pre-netting transactions

- The total cost associated with fees charged on a pre-netting basis is calculated in the same way as above for post-netting, but the fee rate (taking into account any volume discounts) is applied to the number of transactions, pre-netting, as determined by the user profile.

Fees applied to the value of assets under management

Fees charged on the value of assets under management are converted into a fee per value of transaction in the following way.

- **Volume discounts**—in order to calculate the appropriate custody fee rate, volume discounts need to be taken into account. Where omnibus accounts are held, these discounts are based on the value of assets under management across the whole omnibus account and where accounts are held at the end-investor level, discounts depend on the value of assets held by each end-investor. The average size of omnibus accounts has been estimated based on the size of custodian accounts in Europe adjusting for the relative size of brokers in Australia.
- **Value of assets under management**—to estimate the custody cost associated with a given value of trading, it is necessary to consider how frequently the investor trades, and, therefore, for a given value of trading, what the expected average value of assets

¹² Total number of post-netting transactions (N_s) = number of transactions (N) * (1 – netting efficiency rate) + 1.

¹³ Total cost (C_s) = N_s * fee rate.

under management is.¹⁴ This has been estimated, with ASX’s assistance, by considering the turnover velocity on ASX and the typical value of equity holdings by superannuation funds in Australia (for the institutional investor profiles)¹⁵ and the average value of holdings by retail investors (for the retail investor profiles).¹⁶

The total cost can be presented on a per-transaction basis (by dividing the total cost by the average number of trades associated with the user profile), or on a per-value-of-transaction basis (by dividing the total cost by the average value of trading associated with the user profile).¹⁷

2.4 Design of investor and intermediary profiles in Australia

To compute the total cost of trading in each financial centre representative of a range of investors, the three user profiles presented in Table 2.1 have been considered.

Table 2.1 User profiles for investors in Australia

	User 1 Retail investor	User 2 Institutional investor— large	User 3 Institutional investor— more active
Assets under management (AUD\$ '000)	165	1,000,000	100,000
Total value of annual trades (AUD\$ '000)	165	500,000	200,000
Average order size (AUD\$ '000)	12	125	125
Average number of stocks traded per day	Less than 1 ¹	16	4 to 5

Note: ¹ The retail investor is assumed to trade two securities on each day it trades, but to trade on only seven days a year.

Source: Oxera analysis, informed by World Federation of Exchanges statistics and information provided by ASX.

User 1, representing a typical ‘active’ retail investor in Australia, is assumed to hold, on average, a portfolio of 14 stocks and to trade on seven days a year.¹⁸ Each time that User 1 trades, it sells one stock and purchases a new stock, thereby trading in two stocks at a time, with a value of AUD\$12,000 in each.

Users 2 and 3 represent institutional investors in Australia. User 2 is larger but proportionally less active than User 3. User 2 has assets of AUD\$1 billion and a trading velocity of 50%, while User 3 has assets of AUD\$100m and a trading velocity of 200%. Both profiles are representative of local Australian institutional investors, including superannuation funds. The average order size (value of trading, in each security, on each day) is assumed to be AUD\$125,000. The actual trade size corresponding to these client orders is expected to be somewhat lower, as brokers commonly split trades to minimise market impact.

¹⁴ Assets under management = $\frac{\text{Total value for transactions (V)}}{\text{Velocity of trading}}$

¹⁵ As reported in KPMG (2011), ‘Superannuation trends and implications’, November.

¹⁶ As reported in ASX (2011), ‘2010 Australian share ownership study’.

¹⁷ See footnote 8.

¹⁸ A large proportion of Australian retail investors do not trade at all. (According to a 2011 ASX study, 51% of direct retail investors had neither bought nor sold shares in the preceding 12 months. See ASX (2011), ‘2010 Australian share ownership study’, p. 14.) The costs that such inactive traders incur will be predominately custody fees rather than charges for the flow-related services of trading, clearing and settlement on which this analysis focuses. Therefore, only the results for active retail investors have been presented in this note.

In most financial centres, volume discounts provided by infrastructures are applied to the volume (or value) of activity undertaken by the intermediary, rather than the end-investor. In such financial centres, even relatively small investors may benefit indirectly from large volume discounts should they use a large broker, or hold accounts with large custodians. For example, in Australia the most significant proportion of retail trading is done by the two largest online brokers (Comsec and E-Trade).¹⁹

Therefore, for each of the three investor profiles, the cost of trading and post-trading in each financial centre has been calculated assuming that they used different-sized brokers and custodians. The characteristics of the intermediary profiles that have been considered are set out in Table 2.2 and represent the range of intermediaries active in the Australian cash equities market. The daily number of trades, daily trading value and number of failed trades relate to the broker, while the average size of the CSD account reflects the size of custodian used.

Table 2.2 Intermediary profiles

	Small Intermediary 1	Medium Intermediary 2	Large Intermediary 3	Very large Intermediary 4
Average daily number of trades	1,000	20,000	100,000	200,000
Average daily trading value (AUD\$m)	10	200	1,000	2,000
Average size of CSD account (AUD\$m)	63	2,620	39,250	86,360
Average number of failed trades	<1	<1	2	4

Source: Oxera analysis, informed by World Federation of Exchanges statistics and information provided by ASX.

2.4.1 Financial centres analysed

The cost of trading and post-trading in a number of financial centres has been analysed. The sample is not intended to be exhaustive, but does include a total of 17 different trading channels covering 14 financial centres. The sample has been selected to include the larger financial centres, such as the USA and the UK, and several financial centres that share similar characteristics with trading and post-trading services in Australia. For example, Germany, Brazil and Italy are considered since Deutsche Börse, Bovespa and Borsa Italiana have volumes and values of trading that are comparable to the levels observed on ASX.

Table 2.3 below presents a high-level summary of the comparators considered, identifying some key characteristics, such as where competition exists, the degree of vertical integration, and, in order to indicate size and therefore give an indication of the degree of economies of scale, the number of transactions executed on the exchange in 2012. (An overview of the pricing schedules is provided in Appendix 1.)

¹⁹ Based on information provided by ASX.

Table 2.3 Summary of comparators

Financial centre	Infrastructure providers	Common ownership group	Year significant trading on alternative trading venues began ¹	Number of equity trades in 2012 (m) ²	Netting efficiency (%)
India	NSE India National Securities Clearing Corporation National Securities Depository	Partly ³	– ⁴	1,406	n.a. ⁵
USA	NYSE NSCC DTCC	No ⁶	Pre-2000	1,375	98.0
UK—Chi-X	Chi-X Europe LCH.Clearnet EuroClear	No	2008	438	95.3
Canada	Toronto Stock Exchange (TSX) CDS	No	2008	216	97.6
Brazil	BM&FBovespa	Yes	–	160	n.a. ⁵
Hong Kong	Hong Kong Stock Exchange (HKSE) Hong Kong Securities Clearing Company (HKSCC)	Yes	–	148	n.a. ⁵
UK—London Stock Exchange	London Stock Exchange LCH.Clearnet EuroClear	Partly ⁷	2008 ⁸	146	95.3
Australia—ASX	Australian securities exchange (ASX) ASX Settlement Corporation	Yes	2012	154	n/a ⁹ (95)
Germany	Deutsche Börse Eurex Clearstream	Yes	2009	104	91.9
Italy	Borsa Italiana CC&G Monte Titoli	Yes	2009	57	95.6
Spain	BME Spanish Exchanges Iberclear	Yes	–	40	n.a. ⁵
Indonesia	Indonesia Stock Exchange KPEI KSEI	Yes ¹⁰	–	30	n/a ⁹ (83)
South Africa	Johannesburg Stock Exchange Strate	Yes	–	27	83.0

Financial centre	Infrastructure providers	Common ownership group	Year significant trading on alternative trading venues began ¹	Number of equity trades in 2012 (m) ²	Netting efficiency (%)
Singapore	Singapore SE (SGX)	Yes	–	21 ¹¹	n.a. ⁵
Mexico	Bolsa Mexicana de Valores CCV Indeval	Yes	–	19	n/a ⁸ (83)
Poland	Warsaw Stock Exchange KDPW	Partly ¹²	–	12	n.a. ⁵
Argentina	Buenos Aires Stock Exchange (BCBA) Caja de Valores	Yes	–	1	n.a. ⁵
Australia—Chi-X	Chi-X ASX Settlement Corporation	No	–	n/a ⁹	n/a ⁹ (95)

Note: ¹ Year in which at least 10% of trading in the underlying equities of the stock exchange index occurs away from the incumbent (based on Fidessa information on the fragmentation of national stock indices). ² This refers to the number of Electronic Order Book (EOB) trades executed on the exchange. ³ NSDL is promoted by Industrial Development Bank of India, Unit Trust of India, and National Stock Exchange (NSE). ⁴ Trading in India has historically been fragmented among venues, with the Bombay Stock Exchange and NSE India being the two primary trading venues at present. ⁵ n.a. indicates that either no netting is performed by the exchange or an estimate of the netting efficiency is not required to assess the costs of trading on the specific exchange—for example, because settlement charges do not depend on the number of transactions settled. ⁶ DTCC is a user-owned company. ⁷ LSE acquisition of a majority stake (57.8%) in LCH.Clearnet is due to complete in q2 2013. ⁸ Assessments of the level of competition in the UK equity trading market performed by the UK Office of Fair Trading in 2006 and 2007 appear to suggest the existence of potential—as opposed to actual—competition only. See Office of Fair Trading (2006), ‘Anticipated merger between NYSE Group, Inc. and Euronext N.V.’, October 12th, p. 4, and Office of Fair Trading (2007), ‘Anticipated merger between NYSE Group, Inc. and Euronext N.V.’, January 24th, p. 21. ⁹ n/a indicates that data was not available. The assumed netting efficiency used in the model is in brackets and is based on the calculated netting efficiency for CCPs of similar sizes. In the case of ASX Settlement Corporation, the netting efficiency rate is based on netting efficiency rates observed in the European CCPs considered; while for CCV and KPEI, the netting efficiency rate is based on the netting efficiency observed at Strate. ¹⁰ The Indonesia Stock Exchange owns KPEI and holds (directly and indirectly) a 28.5% stake in KSEI. ¹¹ Number of equity trades on SGX Mainboard (single-counted) as provided by SGX. ¹² The Warsaw Stock Exchange, Polish State Treasury and the National Bank hold equal stakes in the CCP/CSD (KDPW).

Source: World Federation of Exchanges database; Federation of European Securities Exchanges database; ECB database; and Oxera analysis.

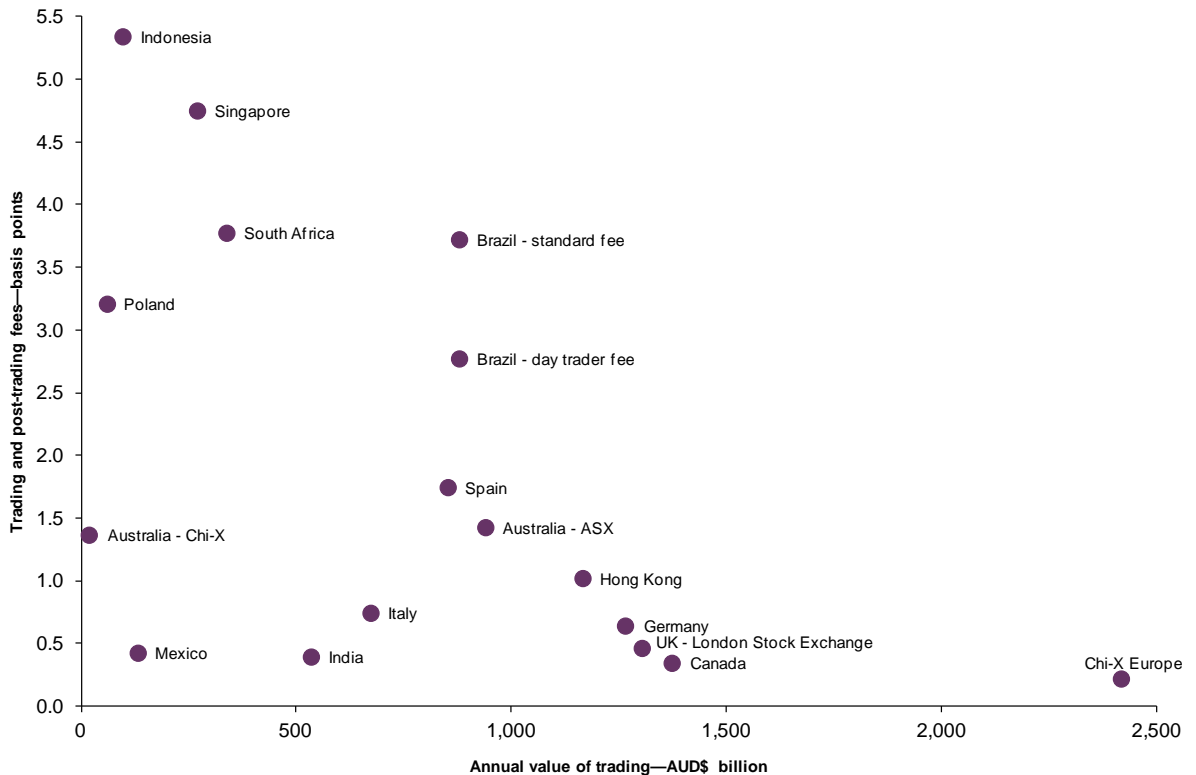
3 International comparison of the costs of using infrastructure providers' trading and post-trading services

This section presents the updated international comparison of the costs of using infrastructure providers' trading and post-trading services.

Figures 3.1 and 3.2 present the relationship between the total cost associated with infrastructure trading and post-trading services, and the value of trading at each stock exchange, to assess whether economies of scale might account for the difference in trading fees. (The references to the underlying data are provided in Appendix 2.) Two very different investor profiles are considered: Figure 3.1 presents the costs for User 3 (a large local institutional investor) using the Intermediary 3 channel (representative of large intermediaries in Australia); and Figure 3.2 presents the costs for User 1 (a retail investor) using the Intermediary 1 channel (representative of small intermediaries in Australia).

These figures show some evidence of economies of scale. For both types of investor the cost for trading and post-trading services provided by infrastructures generally decreases as the size of the financial centre increases. Surrounding this general trend, there is some variation, with the total cost of trading and post-trading services in some smaller financial centres being lower than the size of their financial centre might suggest (particularly in the case of costs incurred by institutional investors). This could reflect a strategic decision by such financial centres to develop their markets and encourage more activity by institutional investors.

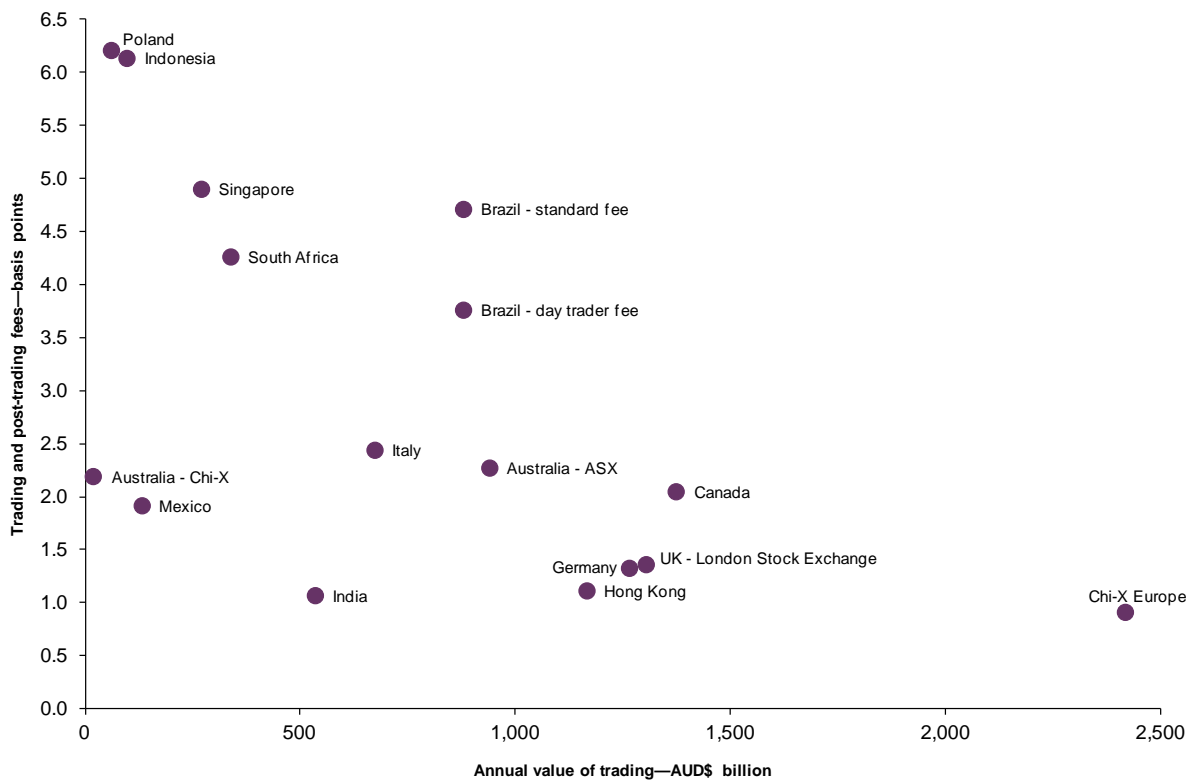
Figure 3.1 Relationship between the cost of trading and post-trading and the value of trading—institutional investors using large intermediaries



Note: For each of the financial centres considered, the value of EOB trading on the relevant trading venue during the 12-month period ending January 2013 (the latest available period for which data is consistently available) is reported. To increase the scale of the chart, Argentina has been excluded where the costs of 9bp are much

higher than the other financial centres considered. For a similar reason, the USA has been excluded, in this case because the value of EOB trading on NYSE is much higher than the other financial centres considered.
 Source: The Oxera Trading and Post-trading Monitor.

Figure 3.2 Relationship between the cost of trading and post-trading and the value of trading—retail investors using small intermediaries



Note: For each of the financial centres considered, the value of EOB trading on the relevant trading venue during the 12-month period ending January 2013 is reported. To increase the scale of the chart, Argentina has been excluded where the costs of 9bp are much higher than the other financial centres considered. For a similar reason, the USA has been excluded, in this case because the value of EOB trading on NYSE is much higher than the other financial centres considered.
 Source: The Oxera Trading and Post-trading Monitor.

A1 Overview of pricing schedules

Table A1.1 Overview of pricing schedules—trading platforms

	Fixed fees	Basis of variable fees	Volume discounts
BM&FBovespa	No	Per value of transaction	Volume discounts available to high-frequency traders only
London Stock Exchange	Yes	Per value of transaction	Discounts based on monthly trading activity
BATS Chi-X Europe	No	Per value of transaction	Rebates on passive executions
Frankfurt	Yes	Per value of transaction	Discounts based on daily trading activity. The exchange offers three tariff menus which accommodate different trade-offs between fixed and variable fees. A minimum fee per transaction applies
Borsa Italiana	Yes	Per transaction	Discounts based on number of transactions. The exchange offers two tariff packages which accommodate different trade-offs between fixed and variable fees
Bolsas y Mercados Españoles	Yes	Both per value and per number of transactions	Overall trading costs capped by a maximum ad valorem charge
SGX	Yes	Per value of transaction	A flat rate applies
NYSE	Yes	Per traded share	Rebates on orders that add liquidity to the platform
Toronto	Yes	Per traded share	Rebates on orders that add liquidity to the platform
Warsaw	Yes	Both per value and per number of transactions	Discounts based on the size of the trading order. Cap on maximum fee per transaction
BMV	Yes	None (only a fixed fee applies with adjustments to reflect volume discounts)	Discounts based on monthly value of trade. Discount structure exhibits strong incentives for brokers to achieve a threshold level of trading activity
Indonesia Stock Exchange	No	Per value of transaction	A flat rate is applied. A minimum monthly fixed fee applies
Johannesburg	Yes	Per value of transaction	Volume discounts apply. Minimum and maximum per-transaction fees apply
ASX	Yes	Per value of transaction	Lower fees apply to cross-trades
Chi-X (Australia)	No	Per value of transaction	A 50% discount applies to aggressive orders
Buenos Aires	No	Per value of transaction	A flat rate is applied
NSE India	No	Per value of transaction	Volume discounts apply
Hong Kong	No	Both per value and per number of transactions	Flat rates are applied

Source: Oxera analysis of pricing schedules.

Table A1.2 Overview of pricing schedules—CCPs

	Fixed fees	Basis of variable fees	Volume discounts
BM&FBovespa (CBLC)	n/a: CCP services are included in CBLC charges	n/a: CCP services are included in CBLC charges	n/a: CCP services are included in CBLC charges
LCH.Clearnet Ltd	Yes	Per transaction	Discount based on daily number of transactions
Eurex AG	Yes	Per transaction, per value of transaction and per settlement instruction	Discounts based on monthly number of transactions.
CC&G	Yes	Per transaction	Discounts based on the number of transactions. Additional charges apply for failed trades
Iberclear	Yes	Per value of transaction	A minimum and maximum fee per transaction apply
SGX	Yes	Per value of transaction	Maximum fee capped according to the number of transactions executed
NSCC	Yes	Per value of transaction and settlement and per number of transactions	Discounts based on the number of transactions
CDS	Yes	Per transaction	A flat rate is applied
KDPW CCP	No	Per transaction	A flat rate is applied
CCV	Yes	Per value of transaction	Additional fees apply for failed trades (both value and number)
KPEI	No	Per value of transaction	A flat rate is applied
Strate	Yes	Per value of transaction and per number of transactions and settlement instructions	Discounts apply depending on the value of individual transactions
ASX Settlement Corporation	Yes	Per value of transaction	Flat rates apply
Buenos Aires	n/a: no separate charges for CCP and CSD services	n/a: no separate charges for CCP and CSD services	n/a: no separate charges for CCP and CSD services
National Securities Clearing Corporation	n/a: no separate charges for CCP services	n/a: no separate charges for CCP services	n/a: no separate charges for CCP services
Hong Kong Securities Clearing Company Limited	No	Per settlement instruction	A flat rate is applied

Source: Oxera analysis of pricing schedules.

Table A1.3 Overview of pricing schedules—CSDs

	Fixed fees	Safekeeping fee	Basis of settlement fees	Volume discounts
BM&FBovespa (CBLIC)	Yes	Yes	Per value of transaction	For fee per value of securities held, volume discounts are available according to the value of the end-investor's account
Euroclear (for London Stock Exchange trades)	Yes	No	Both per number of transactions and per number of settlement instructions	Discounts based on daily number of transactions. Additional rebates applicable to the final amounts payable have been removed in 2012
Clearstream Banking	Yes	Yes	Per settlement instruction	Flat rate is applied. Settlement fee is charged by Eurex. Discounts based on value of securities under custody also apply
Monte Titoli	Yes	Yes	Per settlement instruction	Discounts based on value of securities under custody
Iberclear	Yes	Yes	Per settlement instruction	Discounts based on value of securities under custody. Additional fees are charged for failed trades
SGX	n/a: no separate charges for CSD services	n/a: no separate charges for CSD services	n/a: no separate charges for CSD services	n/a: no separate charges for CSD services
DTCC	Yes	Yes	Per settlement instruction	Discounts based on number of settlement instructions. Additional fees apply for failed trades (number and value)
CDS	Yes	Yes	Per transaction and per settlement instruction	Flat rates apply. Additional fees apply for failed trades
KDPW	Yes	Yes	Per number of settlement instructions	Additional fees are charged for failed trades (number and value)
Indeval	No	No	Per settlement instructions	A lower rate applies to cash transfers—as opposed to security transfers
KSEI	No	No	Per settlement instruction	Flat rates apply
Strate	n/a: no separate charges for CSD services	n/a: no separate charges for CSD services	n/a: no separate charges for CSD services	n/a: no separate charges for CSD services
ASX Settlement Corporation	Yes	No	Various charges applicable to the number of transactions, settlement instructions, or security transfers	Settlement fail fees apply (value of failed trades)

	Fixed fees	Safekeeping fee	Basis of settlement fees	Volume discounts
Caja de Valores	n/a: no separate charges for CCP and CSD services	n/a: no separate charges for CCP and CSD services	n/a: no separate charges for CCP and CSD services	n/a: no separate charges for CCP and CSD services
National Securities Depository (India)	No	No	Number of instructions	Fee is applied to debit instructions only (ie. only to one of the two parties in a transaction)
Hong Kong Securities Clearing Company Limited	No	No	Per value of transaction	Total fee is capped, based on number of transactions executed

Source: Oxera analysis of pricing schedules.

A2 Data tables

Table A2.1 Total cost of trading and post-trading services for different investor profiles—data supporting Figures 3.1 and 3.2

Stock exchange	Value of trading (\$ billion)	User 1, Intermediary 1	User 2, Intermediary 2	User 3, Intermediary 3
USA	13,438	0.6	0.2	0.2
Chi-X Europe	2,416	0.9	0.3	0.2
Canada	1,372	2.1	0.4	0.3
UK—London Stock Exchange	1,303	1.4	0.7	0.5
Germany	1,264	1.3	1.0	0.6
Hong Kong	1,165	1.1	1.0	1.0
Australia—ASX	939	2.3	1.4	1.4
Brazil—standard fee	878	4.7	4.2	3.7
Brazil—day trader fee	878	3.8	3.2	2.8
Spain	852	8.9	1.9	1.7
Italy	672	2.4	1.9	0.7
India	534	1.1	0.4	0.4
South Africa	337	4.3	3.8	3.8
Singapore	269	4.9	4.8	4.8
Mexico	131	1.9	0.5	0.4
Indonesia	96	6.1	5.3	5.3
Poland	60	6.2	4.4	3.2
Australia—Chi-X	18	2.2	1.4	1.4
Argentina	2	9.5	9.5	9.5

Note: User 3, Intermediary 3 presents the data plotted in Figure 3.1, and User 1, Intermediary 1 presents the data plotted in Figure 3.2. The total cost for User 2, Intermediary 2 is included for completeness. Similar to User 3, User 2 represents an institutional investor, but one that is less active. Likewise, Intermediary 2 is similar to Intermediary 3, but smaller and less active.

Source: The Oxera Trading and Post-trading Monitor