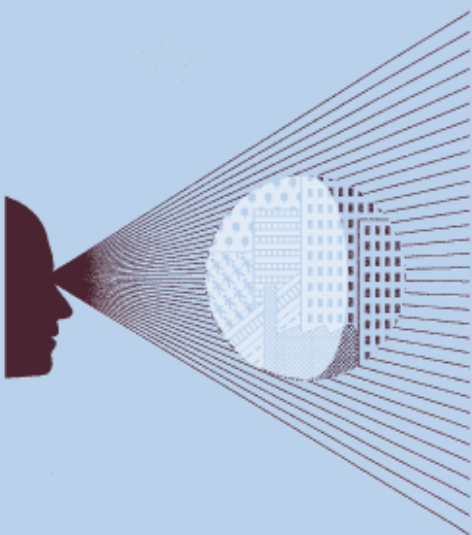


Costs of securities trading and post-trading—UK equities

April 2010



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Contents

1	Introduction and summary of main findings	1
1.1	Objectives and scope	1
1.2	Analytical approach	2
1.3	Report structure	3
1.4	Summary of main findings	3
2	Scope of trading and post-trading services	6
2.1	Services	7
2.2	Pricing schedules	7
3	User profiles	10
3.1	Design of user profile	10
3.2	Summary of the user profile	11
4	Estimates of costs	13
4.1	Estimate of costs based on existing EUI tariff	13
4.2	Comparison with the previous EUI tariff for CSD- and CCP-related services	15
5	Variations in user profiles	20
5.1	Netting efficiency	20
5.2	Size of trading activity	21
5.3	Average trade size	23
5.4	Users with aggressive/passive bias	23
A1	Tariffs and user profiles	26
A1.1	Tariffs	26
A1.2	User profiles	26
A2	Costs per value traded	28
A3	Trading and post-trading costs—previous EUI tariff	29
A3.1	Netting efficiency	29
A3.2	Size of activity	30
A3.3	Average trade size	31
A3.4	Users with aggressive/passive bias	32
A4	Trading and post-trading costs—hypothetical user profile	33
A4.1	Existing EUI tariff	33
A4.2	Previous EUI tariff	34

List of tables

Table 1.1	Trade and post-trade channels considered in this study	1
Table 1.2	Trading and post-trading costs, existing EUI tariff (pence per transaction)	5
Table 4.1	Trading and post-trading costs (pence per transaction)	14
Table 4.2	Distribution of trading and post-trading costs (per transaction, %)	14
Table 4.3	Distribution of post-trading costs (per transaction, %)	15
Table 4.4	Post-trading costs (pence per transaction)	16
Table 4.5	Trading and post-trading costs (pence per transaction)	18
Table 4.6	Distribution of trading and post-trading costs (per transaction, %)	18
Table 4.7	Distribution of post-trading costs (per transaction, %)	19
Table 5.1	Trading and post-trading costs, lower netting efficiency (pence per transaction)	21
Table 5.2	Trading and post-trading costs, '75% of a large user' (pence per transaction)	22
Table 5.3	Trading and post-trading costs, '50% of a large user' (pence per transaction)	22
Table 5.4	Trading and post-trading costs, small trade size (pence per transaction)	23
Table 5.5	Trading and post-trading costs, 'predominantly passive' user (pence per transaction)	24
Table 5.6	Trading and post-trading costs, 'predominantly aggressive' user (pence per transaction)	25
Table A1.1	Trading platform user profiles (average daily activity)	26
Table A1.2	CCP user profile (average daily activity)	27
Table A1.3	CSD user profile (average daily activity)	27
Table A1.4	Variations in user profiles	27
Table A2.1	Trading and post-trading costs (per value of transaction, bp)	28
Table A3.1	Trading and post-trading costs, lower netting efficiency (pence per transaction)	29
Table A3.2	Trading and post-trading costs, '75% of a large user' (pence per transaction)	30
Table A3.3	Trading and post-trading costs, '50% of a large user' (pence per transaction)	30
Table A3.4	Trading and post-trading costs, small trade size (pence per transaction)	31
Table A3.5	Trading and post-trading costs, 'predominantly passive' user (pence per transaction)	32
Table A3.6	Trading and post-trading costs, 'predominantly aggressive' user (pence per transaction)	32
Table A4.1	Trading and post-trading costs (pence per transaction)	33
Table A4.2	Distribution of trading and post-trading costs (per transaction, %)	34
Table A4.3	Trading and post-trading costs (pence per transaction)	34
Table A4.4	Distribution of trading and post-trading costs (per transaction, %)	35

1 Introduction and summary of main findings

1.1 Objectives and scope

Euroclear UK & Ireland (EUI) has commissioned Oxera to carry out an independent analysis of the costs that brokers incur when using trading platforms, central counterparties (CCP), and central securities depositories (CSD) for (order book) trading and post-trading in UK equities.¹

Over the last few years there has been a proliferation in channels through which UK equities can be traded and cleared: UK equities can be traded on venues including the London Stock Exchange (LSE), BATS, Chi-X, Market Plus, Turquoise; and trades can be cleared through LCH.Clearnet, EMCF, EuroCCP, and SIX x-clear.

This study provides an insight into the relative proportions of trading and post-trading costs across different channels. It assesses the current distribution of trading and post-trading costs for a (large) user within different channels and the factors driving the differences in the distribution of costs across channels.

The study focuses on three channels for UK equities (see Table 1.1). Other trading platforms (eg, Turquoise) and CCPs (eg, EuroCCP, and SIX x-clear) are not included in the analysis. In principle, the analysis could be extended at a later stage to include these and other infrastructure providers.

Table 1.1 Trade and post-trade channels considered in this study

Trading platform	LSE	BATS	Chi-X
CCP	LCH.Clearnet	EMCF	EMCF
CSD	EUI	EUI	EUI

Source: Oxera.

Each trade has two sides—one for the buyer and one for the seller—with both sides normally paying trading and post-trading fees. In line with standard industry practice, the trading and post-trading costs for one side are presented here, measured as both costs per transaction and value per transaction.

The analysis focuses on the prices charged by infrastructure providers (ie, tariffs) in March 2010. To provide insight into the effect of recent changes in EUI's tariff (these changes were implemented in March), the analysis also estimates the post-trading costs based on the previous tariff.

The study is subject to a number of limitations, as follows.

- The costs of trading and post-trading services are considered at the level of infrastructure providers only. Costs at other levels in the value chain (eg, custodians and brokers) are not included.²

¹ Equities constituted under the laws of the UK, which are directly admissible to Euroclear UK & Ireland.

² An analysis of the costs of trading and post-trading along the entire value chain is provided in Oxera (2009), 'Monitoring prices, costs and volumes of trading and post-trading services—a study prepared for the European Commission, DG Internal Market and Services', July.

- It focuses on estimating costs that arise directly from specific services relating to securities transactions, such as trading execution, clearing and settlement, as opposed to services related to the holding of the securities, such as custody and safekeeping.
- The study measures the explicit transaction-related costs incurred when using infrastructure providers. Other types of cost are not included, such as access and membership fees, or revenues such as the interest that brokers may receive on cash margins when using CCPs. Similarly, implicit trading costs (such as market impact costs) are also not included in the analysis.
- Although the core services offered by infrastructure providers and included in the analysis (eg, trade execution at the trading level and netting at the CCP level) have broadly similar characteristics, there may be differences in the definition of these services. A degree of consistency is provided by taking into account work on the definition of services (for example, by the European Commission, and the task forces set up by FESE and ECSDA), but no further adjustments are made to harmonise the definition of services.³
- The study does not consider other aspects of the service offering of infrastructure providers, such as liquidity and quality of service. It is not the purpose of this report to provide a comprehensive assessment of the attractiveness of individual infrastructure providers; for such an assessment, brokers would need to consider a wider range of factors than just transaction-related costs.

1.2 Analytical approach

The approach taken here is to design a profile of a (large) user and to apply this to the pricing schedules of the infrastructure providers; this results in an estimate of the costs that will be incurred. This is a standard approach for estimating the costs of services when the costs incurred depend on the profile of the user, and has been used in other cost studies of securities trading and post-trading, as well as in studies in other sectors.⁴ Some infrastructure providers have also designed user profiles themselves in order to illustrate how their pricing schedules work.

The profile designed in this study is that of a large broker and is informed by, among others, actual data from EUI on (large) brokers trading in UK equities.⁵ Only one profile is used and a sensitivity analysis is undertaken to understand the extent to which the findings of the analysis would be different for other types of profile.

A user profile analysis allows for flexibility and, in principle, can answer various questions, including the following.

- **What is the *actual* distribution of the costs of trading and post-trading services?**
This can be measured by designing a profile that reflects (as much as possible) the

³ European Commission (2006), 'Draft Working Document on Post-trading Activities', May; CESAME Sub-Group on Definitions (2005), 'Commission Services Working Document on Definition of Post-trading Activities', MARKET/SLG/G2(2005)D15283; ECSDA (2007), 'Glossary—Definitions of Services Relevant to the Code of Conduct', December; FESE, EACH, ECSDA (2006), 'European Code of Conduct for Clearing and Settlement', November.

⁴ See, for example, EuroCCP (2008), 'The Clearing Industry in Europe: Cost Comparison'. In this study the user profile approach is used to estimate an average price across the entire industry. For an example of the user profile approach outside the area of securities trading and post-trading, see Oxera (2006), 'The price of banking: an international comparison—a study prepared for the British Bankers' Association', November.

⁵ The Oxera price monitoring study for the European Commission focuses on changes over time in the average costs across the entire industry, with the costs mainly estimated on the basis of revenues divided by volume data provided by infrastructure providers and intermediaries. See Oxera (2009) 'Monitoring prices, costs and volumes of trading and post-trading services', July. This current study for Euroclear does not make use of any confidential data from the Oxera study for the European Commission—the data collected for the European Commission study is subject to a non-disclosure agreement.

existing profiles of large brokers trading in UK equities. For example, the profile would reflect the higher netting efficiencies in channels with greater volumes of trading.

- **What is the distribution of the costs of trading and post-trading services in the hypothetical scenario that all channels have similar volumes of trading** (which is likely to result in a similar netting efficiency across the channels)?

The primary objective of this study is to answer the first question. The second question is also relevant in that it allows an understanding of the differences in the distribution of trading and post-trading costs across channels that are driven purely by the tariffs rather than by the differences in the existing usage of the various channels. Furthermore, trading patterns may change over time. If brokers choose to send more of their total trading volume to some of the new trading venues, the distribution of trading and post-trading costs is likely to change (larger volumes of trade would increase the netting efficiency, thereby reducing post-trading costs). This second question is addressed in the aforementioned sensitivity analysis.

Infrastructure providers offer a range of services, some of which are essential for the broker to be able to trade, clear and settle, while others are not strictly necessary but may be used in practice (although typically less frequently than the core trading, clearing and settlement services)—eg, order management services, which some infrastructure providers offer as a separate chargeable service. Although it is technically possible to trade, clear and settle without using these services, most brokers are likely to use some of them. The study undertakes a careful assessment of the extent to which these services need to be included in the user profile, and what the impact would be on the total cost of trading and post-trading.

The user profile approach is subject to limitations. Due to the high degree of variation in the profiles of actual brokers, the approach does not allow for the entire industry to be captured. Each user is unique: the profiles of individual brokers are determined by the profile of their own trades and the profile of their underlying clients, and cannot be easily summarised in one user profile. However, as noted, it is not the purpose of this study to provide an estimate of the average industry cost of using infrastructure providers; rather, it is to illustrate what costs are incurred by a large broker, and to assess the proportion of trading and post-trading costs and how these proportions vary per channel. As explained, to ensure that the findings are robust to plausible changes in the user profile, this assessment is complemented by a sensitivity analysis.

1.3 Report structure

- Section 2 sets out the scope of services and tariff structures for the infrastructure providers considered in this study.
- Section 3 defines the user profile used in the study.
- Section 4 presents estimates of the trading and post-trading costs.
- Section 5 examines how the trading and post-trading costs differ depending on the characteristics of users.

The main findings of the study are set out below.

1.4 Summary of main findings

The analysis of infrastructure-related costs facing a large user yields a number of insights into how these costs are distributed across the value chain.

- On the LSE/LCH.Clearnet/EUI channel, 83% of costs are incurred at the trading level, while 17% are incurred at the post-trading level. At the post-trading level, around 15% of

total costs arise at the CCP level (where 2% of total costs are for services provided by EUI), while 2% arise at the CSD level. This cost distribution depends to some extent on where the line is drawn between CCP and CSD services, and therefore needs to be interpreted with caution.

- On the BATS/EMCF/EUI and Chi-X/EMCF/EUI channels, 41% of costs are incurred at the trading level, while 59% are incurred at the post-trading level. At the post-trading level, around 54% of total costs arise at the CCP level (including 16% of total costs for services provided by settlement agents), while 5% arise at the CSD level.

The infrastructure-related direct trading and post-trading costs of a large user differ between channels. The total infrastructure-related costs associated with the LSE/LCH.Clearnet/EUI channel are higher (around 21.2 pence per transaction) than those associated with the BATS/EMCF/EUI and Chi-X/EMCF/EUI channels. These differences are driven primarily by differences in the costs arising at the trading platform level, whereby the trading costs on the LSE are higher than those observed on BATS and Chi-X.

As explained above, this comparison takes into account explicit trading costs only, and does not consider implicit trading costs. Since the liquidity levels on the LSE are currently likely to be higher than those on BATS and Chi-X, implicit trading costs associated with trading on the LSE are likely to be lower than those on BATS and Chi-X. Given the magnitude of implicit trading costs, they form an important consideration of users deciding between different trading and post-trading channels. Analysis of the total trading costs (explicit and implicit) on these three platforms is beyond the scope of this study.

The post-trading costs associated with trading through the LSE/LCH.Clearnet/EUI channel are broadly in line with those associated with the BATS/EMCF/EUI and Chi-X/EMCF/EUI channels, while the total EUI cost (including the netting fee) on the LSE/LCH.Clearnet/EUI channel (1.0 pence or less than 5% of the total cost) is lower than the EMCF/EUI settlement-related fees on the Chi-X or BATS channels.

The costs have been affected by a recent change in the EUI tariff for settlement, clearing and netting services. As a result of introducing the new tariff in March 2010, the total EUI cost on the LSE/LCH.Clearnet/EUI channel (including the netting fee) went down from 2.5 pence to around 1.0 pence per transaction, while the costs on the BATS/EMCF/EUI and Chi-X/EMCF/EUI channels increased by 0.1 pence. The overall distribution of costs between the trade and post-trade services was not materially affected.

Table 1.2 Trading and post-trading costs, existing EUI tariff (pence per transaction)

	LSE, LCH.Clearnet, EUI	BATS, EMCF (and settlement agent), EUI	Chi-X, EMCF (and settlement agent), EUI
Trading platforms			
Transaction fee	23.8	3.0	3.0
CCPs			
CCP fee	3.8	2.6	2.6
Fail management fee	–	0.1	0.1
Netting fee (service provided and charged for by EUI)	0.2	–	–
CCP clearing fee (pass-through from EUI)	0.1	–	–
CCP settlement fee (pass-through from EUI)	0.1	–	–
CCP settlement fee (pass-through from settlement agent)	–	1.1	1.1
CSDs			
Settlement fee	0.3	0.4	0.4
Stamp assessment fee	0.3	–	–
Non-settling own account transfer fee (stamp-related)	–	0.03	0.03
Direct input	0.03	0.03	0.03
Total post-trading costs	4.8	4.3	4.3
Total trading and post-trading costs	28.5	7.3	7.3

Source: Oxera.

Given that different infrastructure providers considered in this study use a different basis for pricing (including ad valorem and per gross and net transaction fees, and sliding scales), users with characteristics that differ from the large user modelled in this study may face a different distribution of costs across trading and post-trading, and different relative costs across the three channels. The sensitivity analysis suggests that the findings in relation to the differences in the trading and post-trading costs are robust to plausible changes in assumptions about the netting efficiency, size of activity, average trade size, and mix of aggressive and passive trades.

2 Scope of trading and post-trading services

This section sets out the different activities and roles of the infrastructure providers in the equity trading and post-trading value chain, and provides a basis for assessing the costs associated with purchasing trading and post-trading services for UK equities.

Activities in the equity trading and post-trading value chain are complex, and involve many processes and a variety of service providers and market participants. In general, at the infrastructure provider level, the activities can be broadly categorised as trading, clearing and settlement.

- **Trading** is usually initiated when an order is placed and then executed at a trading platform. Platforms include exchanges, multilateral trading facilities and crossing networks. In addition to trade execution, these platforms may provide other services for which fees are charged (or fees are varied depending on how the customer accesses the platform), such as order management, market making, and a combination of active and/or passive execution strategies.
- CCPs provide **counterparty risk clearing** services. In general, 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.
- **Settlement** is the pre-settlement positioning (ensuring that the buyer has the monies available and that the seller has the securities available) and the completion of a transaction through the transfer of ownership of assets and monies, and is initiated once the trade has been cleared by the CCP (for trades that are routed via CCPs), or, alternatively, 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 CSDs or indirectly by custodians/settlement agents, who maintain accounts with the CSDs. Other services provided by CSDs for which fees are charged include (but are not restricted to) stamp assessment, collateral management, netting, and custody and safekeeping-related activities.

The focus for the purposes of this study is on estimating the costs that arise directly from specific services relating to securities transactions (such as trading execution, clearing and settlement), as opposed to services related to the holding of the securities.

In terms of the securities transactions related services, providers offer a range of services, some of which are essential for the broker to be able to trade, clear and settle, while others are not strictly necessary but may be used in practice (although typically less frequently than the core trading, clearing and settlement services)—eg, order management services, which some infrastructure providers offer as a separate chargeable service. Although it is technically possible to trade, clear and settle without using these services, most brokers are likely to use some of them. The study undertakes a careful assessment of the extent to which these services need to be included in the user profile, and what the impact would be on the total cost of trading and post-trading.

2.1 Services

The services are identified in this section across three channels:

- LSE, LCH.Clearnet, and EUI;
- BATS, EMCF (and settlement agent), and EUI;
- Chi-X, EMCF (and settlement agent), and EUI.

The mix of services available to market participants at the trading and post-trading level varies across infrastructure providers; however, the core services (eg, trade execution at the trading level and netting at the CCP level) have broadly similar characteristics. The way these services are charged for also varies by provider. To capture the prices that are charged for the same set of services, the characteristics of the customer, together with the dimensions that determine the price paid, need to be specified for any characteristic that has a significant impact on the prices paid for the use of the infrastructures.

Services included across the infrastructure providers are listed below (only order book trading is considered).

LSE	Trade execution services
Chi-X	Trade execution services across passive and aggressive trades
BATS	Trade execution services across passive and aggressive trades
LCH.Clearnet	CCP clearing, fail management and pass-through costs from EUI, including the EUI settlement fee and the EUI CCP clearing fee
EMCF	Clearing, fail management and pass-through costs from settlement agents (Fortis and BNP Paribas)
EUI	<p>A distinction is made between the pricing structures of services included under the existing and previous tariff guidelines. Both have been modelled separately.</p> <p>Under the existing tariff, transaction services, netting, stamp assessment, non-settling own account transfer (NC OAT)⁶ and direct input, as well as CCP clearing and settlement pass-through services (relevant for LCH.Clearnet only) have been included.</p> <p>The previous tariff structure included all the services defined in the existing one, although the level and pricing structure for some services (settlement, netting, and direct input) have been changed.</p>

The analysis also considers the impact of order management costs (at the trading level) on the distribution of costs across the value chain, and the relative costs of the three channels considered in the study.

2.2 Pricing schedules

A high-level review is provided below of the pricing mechanisms of the services considered for this study. It is important to note that infrastructure providers price similar services differently. For example, the LSE levies an ad valorem fee for trading services based on a sliding scale. The first £2.5 billion of value of orders executed is charged at 0.45 basis points (bp), the next £2.5 billion value traded at 0.40bp, the next £5 billion at 0.30bp, and all subsequent value traded at 0.20bp. All trades are subject to a 10 pence minimum charge. In

⁶ Not all trading in UK equities is subject to stamp duty. On the LSE/LCH.Clearnet/EUI channel, EUI carries out stamp assessments and reports to HRMC on trading that is subject to and not subject to stamp duty. On the BATS/EMCF/EUI and Chi-X/EMCF/EUI channels, brokers can use a specific EUI service (non-settling own account transfer (NC OAT)) to provide information about trades that are subject to stamp duty to HMRC.

addition, a fixed fee of £0.01 and £0.05 is charged per order management across non-persistent orders⁷ and high-usage⁸ surcharge (events).

BATS charges a standard fixed rate fee of 0.28bp on the value of aggressive integrated order book services, whereas a rebate of 0.18bp is payable on the value of passive integrated order book executions. There are no separate charges for order management services.

Chi-X's pricing structure is similar to that of BATS. Chi-X charges a standard fixed-rate fee of 0.3bp on the value of aggressive executions, whereas a rebate of 0.2bp is payable on the value of passive executions. As in the case of BATS, there are no separate charges for order management services.

LCH.Clearnet charges for clearing services using a sliding-scale mechanism based on the average daily volume of clearing transactions, from 1 penny to 10 pence per clearing transaction.⁹ It does not charge separately for fail trade management. The pricing of pass-through costs from EUI—including the EUI settlement fee and the EUI CCP clearing fee—are described below, under EUI.

EMCF charges for clearing transactions based on the number of orders/executions (whichever turns out to be cheaper). A fixed fee of €0.05 per order or €0.03 per execution is charged. For failed trades, a fixed fee of €15 is charged for each fail. In addition to the services indicated, EMCF charges a fee of €1.32 per settlement instruction; this reflects an arrangement with Fortis/BNP Paribas which provides settlement agent services to EMCF and its users.

EUI estimates settlement fees for transaction services ('domestic delivery') according to a sliding-scale methodology using average daily volume of settlements. For example, the first 1,500 settlements are charged at 45 pence, the next 1,501–3,000 at 42.5 pence, and each subsequent volume band at a lower fee. Settlements above 20,001 will be charged at 7.5 pence. The direct input—which is the mechanism by which transactions in the CREST system are created on a participant's behalf—is charged at a discountable fee of 5 pence per gross and net settlements. Netting is charged at a fixed fee of 25 pence per net settlement.

Pass-through charges for services offered to LCH.Clearnet (including settlement and CCP clearing) are determined as follows.

- **Settlement fee**—the cost per daily net settlement instruction from aggregate trades through LCH.Clearnet is determined using the same tariff structure that is applied to users, which is subsequently allocated pro-rata across users based on daily net settlement instructions.
- **CCP clearing services fee**—this is composed of a fixed clearing service fee and a variable settlement fee based on aggregate monthly net settlement instructions through LCH.Clearnet. The cost per net settlement instruction is estimated at the aggregate level for LCH.Clearnet and subsequently allocated pro-rata across users based on monthly net settlement instructions.

⁷ Non-persistent orders are defined as any order which cannot reside in the order book. This includes orders with any of the following characteristics: validity type ENE (Execute and Eliminate); validity type FOK (Fill or Kill); market mechanism type AA (Aggressive Type A); market mechanism type AB (Aggressive Type A).

⁸ The order management surcharge applies—in addition to any applicable order management charge—to each order event (order entry, modification and deletion) in excess of the applicable figure. All automatically executed trades (fills on the exchange trading system) during continuous trading and auctions are counted. The surcharge is assessed on a daily basis separately for each member firm in each segment. The number of order events per electronic trade permitted before the order management surcharge becomes payable is 100.

⁹ The first 10,000 transactions are charged at 10 pence; 10,001–20,000 transactions at 7 pence; 20,001–40,000 at 5 pence; 40,001–60,000 at 4 pence; 60,001–80,000 at 3 pence; 80,001–100,000 at 2 pence; and above 100,001 at 1 penny.

Prior to tariff changes introduced in March 2010, EUI had the following pricing structure for settlement, netting and direct input fees.

- **Settlement fee**—EUI charged for transaction services at a rate of 42.5 pence per settlement. This included set-up (12.5 pence), matching (5 pence), central creation (17.5 pence), cash settlement (12.5 pence) and securities settlement (12.5 pence).¹⁰
- **Netting fee**—EUI estimated the netting fee using a stepping-scale mechanism based on the average daily volume of settlements (pre-netting). A fee of 4.7 pence per settlement (pre-netting) was levied if the average daily volume was between 0 and 10,000, a fee of 0.625 pence was levied if it was between 185,001 and 200,000, and a fee of 0.5 pence if it exceeded 200,001.¹¹
- **Direct input fee**—direct input was charged at 3 pence.

A volume discount was applied to the settlement transaction and direct input charges. For the purposes of this study, a 25% discount to standard charges is assumed for the user profile.

This change in tariffs also affected pass-through charges for settlement services offered to LCH.Clearnet). Pass-through charges for settlement services offered to LCH.Clearnet (including settlement) were determined as follows. The cost per daily net settlement instruction from aggregate trades through LCH.Clearnet was determined using a 21.7 pence rate (42.5 pence standard rate with a 49% discount, which is calculated using the assumption of the average daily volume on LCH.Clearnet), which was subsequently allocated pro-rata across users based on daily net settlement instructions.

This analysis is based on infrastructure providers' pricing schedules in March 2010. In late April the London Stock Exchange announced a trial for certain changes to its pricing schedule for a specific group of users. These changes have not been included in the analysis.

¹⁰ The central creation charge applies only when set-up and matching are not used, and vice versa.

¹¹ For example, if a user has 190,000 average daily number of transactions then a fee of 0.625 pence will be levied on all 190,000 transactions.

3 User profiles

3.1 Design of user profile

The profile has been designed using:

- data from Euroclear on its clients' activity;
- user profiles published by infrastructure providers in their pricing schedules;
- examples used in other public domain studies.¹²

The user profile captures the relevant features of services offered by infrastructure providers, in particular accounting for the different types of service offered across different providers and the pricing structure associated with those services. For example, to account for the variation in pricing of trading services across trading platforms, the profile includes an assumption about the size of activity and mix of passive and aggressive trades.

More specifically, at the high level, the following user characteristics are used to determine costs at the trading level since these three variables capture the significant unit cost variability across the three trading platforms:

- the number of transactions;
- the average value of transactions;
- the proportion of trades that are executed on a 'passive' basis.

Tariff structures differ among CCPs and are different from those of trading platforms. Therefore, additional assumptions are required to model the costs of users of CCPs. The following characteristics have been included:

- the number of transactions, including relevant activity outside the platforms analysed;
- netting efficiency;
- the total number of transactions (across all users) of the CCPs.

The following characteristic is used when modelling costs at the CSD level:

- the total number of settlements, including those outside the platform/CCP that is analysed.¹³

As explained in section 1, the primary objective of the analysis is to estimate the *actual* distribution of the costs of trading and post-trading services based on a profile that reflects to the greatest extent possible the existing profiles of large brokers trading in UK equities. The actual situation is that the volumes of trading through the LSE/LCH.Clearnet/ EUI channel are larger than those through the other two channels. The netting efficiency is therefore likely to vary across channels, and this will be reflected in the profile. From the technical viewpoint, it would also be appropriate to reflect in the profile a variation in the volume of trading across the three channels (ie, assuming lower volumes of trading through BATS and Chi-X). However, there is no need to make this explicit since a change in trading volume would not alter the costs in the Chi-X/EMCF/EUI and BATS/EMCF/EUI channels. The volume of trading

¹² See, for example, EuroCCP (2008), 'The Clearing Industry in Europe: Cost Comparison'.

¹³ For some services, the average price charged by EUI per transaction depends on the total volume of relevant activity. In those instances, the number of additional trades is used to estimate the average price (or the discount) that is then applied to the number of settlement instructions going through the channel modelled. The cost associated with these additional trades (ie, a multiple of the average price and the number of additional transactions) is not taken into account when considering the total trading and post-trading costs associated with a particular trading and post-trading channel.

is therefore measured according to the average daily volumes of trades through the LSE/LCH.Clearnet/EUI channel based on EUI data and a number of cross-checks, such as user profiles published in infrastructure providers' pricing schedules.

Although only one profile is designed, as noted this is complemented by a sensitivity analysis that assesses the implications of changing the parameters of the user profile—for example, by altering the netting efficiency and volume of trading and mix of aggressive and passive trades. This then also provides insight into how the distribution of trading and post-trading costs would change if exactly the same hypothetical user profile were used across all three channels.

3.2 Summary of the user profile

This section summarises the assumptions used for the user profile across the trading platforms, CCPs and CSDs.

3.2.1 Trading platforms

The following assumptions are used to define a large user of trading platforms.

- Average daily number of transactions—assumed to be 110,000, based on data on large users of the LSE provided by EUI.
- Average value of transactions—assumed to be £8,000 on the LSE, and £6,000 on BATS and Chi-X, based on data on large users of the LSE provided by EUI, and data from FESE.
- Proportion of trades executed on a 'passive' basis—assumed to be 50%, which is an average for the market as a whole.
- Order management—although order management is a separate chargeable service in the case of some trading platforms, the extent to which it is used is generally relatively small and therefore unlikely to affect the distribution of trading and post-trading costs significantly. For this reason, the user profile does not include any order management services.

3.2.2 CCPs

The following summarises the assumptions made in relation to a large user of CCPs.

- Average daily number of transactions—all transactions at the trading platform level are cleared through CCPs, hence the average daily number of transactions at the CCP level associated with trading in UK equities on the LSE/BATS/Chi-X is equivalent to that at the trading level.¹⁴

An average CCP fee on LCH.Clearnet is calculated using a sliding scale that takes into account not only volume associated with trading in UK equities on the LSE, but also other equity clearing volume.¹⁵ For the purposes of calculating average fee on LCH.Clearnet, it is assumed that a large user has average daily clearing volume of

¹⁴ EMCF's tariff structure estimates CCP costs according to the number of orders or executions (users can choose between these). For the purposes of this analysis, the CCP costs on EMCF are estimated according to the number of executions rather than the number of orders. For orders with a relatively high number of executions, it will be cheaper to pay a charge per order. This means that the actual costs of using EMCF could be lower than estimated in this report.

¹⁵ EMCF also clears for other platforms and therefore the total number of CCP transactions is higher than the sum of transactions going through BATS and Chi-X. Given that EMCF does not apply a volume discount, omitting this additional activity does not affect the results.

126,500 or 115% of average daily order book trading volume assumed for a large user on the LSE (110,000).¹⁶

- Netting efficiency—assumed to be 99.3%, based on the data on large users of the LSE provided by EUI. Due to lower volume of trading, the netting efficiency for EMCF is likely to be lower, and is assumed to be 99.0%.
- Fail management—a fail rate of 1% of the total number of settlements has been assumed.
- The average daily volume of LCH.Clearnet (post-netting) is assumed to be 38,600 (based on data from LCH.Clearnet and ECB). This volume is used to estimate the relevant CCP services fee (pass-through from EUI).

3.2.3 CSDs

The following summarises the assumptions made in relation to a large user of CSDs.

- Total number of transactions—all transactions at the trading platform level are cleared through CCPs and subsequently routed to CSDs for settlement. It is assumed that there are additional settlement instructions in UK equities that a user routes to EUI. This additional volume represents activity that does not go through the channel modelled, and represents, for example, volume associated with the OTC trading and dark pools. It is assumed that the total number of settlements is equal to 10,000.¹⁷
- The analysis also considers costs that arise in relation to the reporting of the stamp duty status to HMRC. On the LSE/LCH.Clearnet channel, all trades require a stamp assessment service. For the BATS/EMCF/EUI and Chi-X/EMCF/EUI channels it is assumed that information on trades that are subject to stamp duty is reported to HMRC using a non-settling own account transfer. This service is required only for trades that are subject to stamp duty. It is assumed that 1% of trades going through these channels require this service.¹⁸
- It is assumed that, under the previous tariff, a large user of EUI received a volume discount of 25%. This volume discount is applied to the settlement fees and direct input fee; the stamp assessment fee was not included in the volume discount.

3.2.4 Variations in user profiles

The analysis models the impact of differences in various user characteristics. For the purposes of this analysis, the following variations have been modelled:

- a netting efficiency assumption of 96.0% and 99.3% (across all channels);
- compared with a large-user base-case scenario of 110,000 average daily number of transactions, users with 75% and 50% of the volume of a large user have been modelled;
- an average trade size of £4,000 (compared with £8,000 for a large user on the LSE, and £6,000 for a large user on BATS and Chi-X).
- instead of the proportion of trades executed on a 'passive' basis of 0.5 used for a large user, the costs are modelled assuming proportions of 0.75 and 0.25 respectively.

¹⁶ Assumption based on data from LCH.Clearnet, ECB and LSE.

¹⁷ See footnote 14 for further detail.

¹⁸ Assumptions based on data provided by EUI.

4 Estimates of costs

4.1 Estimate of costs based on existing EUI tariff

Analysis of the infrastructure-related costs facing a large user yields a number of insights into how these costs are distributed across the value chain (see Tables 4.1–4.3).

- in the LSE/LCH.Clearnet/EUI channel, 83% of costs are incurred at the trading level and 17% at the post-trading level. At the post-trading level, around 15% of total costs arise at the CCP level and 2% at the CSD level; and
- in the BATS/EMCF/EUI and Chi-X/EMCF/EUI channels, 41% of costs are incurred at the trading level and 59% at the post-trading level. At the post-trading level, around 54% of total costs arise at the CCP level and 5% at the CSD level.

The infrastructure-related trading and post-trading costs of a large user differ between channels. The total infrastructure-related costs associated with the LSE/LCH.Clearnet/EUI channel are higher (around 21.2 pence per transaction) than those associated with the BATS/EMCF/EUI and Chi-X/EMCF/EUI channels.¹⁹ These differences are driven primarily by differences in the costs arising at the trading platform level, whereby trading costs on the LSE are higher than those observed on BATS and Chi-X. As explained in section 1, this analysis takes into account explicit trading costs only, and does not consider implicit trading costs. Since the liquidity levels on the LSE are currently likely to be higher than those on BATS and Chi-X, the implicit trading costs associated with trading on the LSE are likely to be lower than those on BATS and Chi-X. Analysis of the total (explicit and implicit) trading costs on these three platforms is beyond the scope of this study.

The post-trading costs associated with trading through the LSE/LCH.Clearnet/EUI channel are broadly in line with those associated with the BATS/EMCF/EUI and Chi-X/EMCF/EUI channels, while the total EUI cost (including the netting fee) on the LSE/LCH.Clearnet/EUI channel (1.0 pence or less than 5% of the total cost) is lower than the EMCF/EUI settlement-related fees on the Chi-X or BATS channels.

The findings in relation to differences in the trading platform, CCP and CSD costs are robust to changes in assumptions about the size of activity, the mix of aggressive and passive trades, and users' netting efficiencies (see section 5 for more detail).²⁰

The findings in relation to the distribution of costs, and differences between the channels, do not change materially if the costs are estimated using identical user profiles (ie, netting efficiency and the average transaction size are equivalent to that of a large user of the LSE/LCH.Clearnet/EUI channel) for all three channels. (Appendix 4 documents the results.)

The costs of trading and post-trading services can also be measured in terms of the value of transactions. This is a useful measure—in particular from an end-user (fund manager/investor) perspective. Expressed on this basis, the total infrastructure-related trading and post-trading costs are equal to 0.38bp when using the LSE/LCH.Clearnet/EUI channel, and 0.09bp when using BATS/EMCF/EUI and Chi-X/EMCF/EUI channels (see Appendix 2).

¹⁹ As discussed in section 3, this analysis does not include all infrastructure providers' services and charges (eg, annual membership charges, information services). However, including these services and charges would not change the conclusions of the analysis presented in this study.

²⁰ The conclusions are also not affected if the costs of order management services—under plausible assumptions on propensity to use these services—are included in the analysis.

Table 4.1 Trading and post-trading costs (pence per transaction)

	LSE, LCH.Clearnet, EUI	BATS, EMCF (and settlement agent), EUI	Chi-X, EMCF (and settlement agent), EUI
Trading platforms			
Transaction fee	23.8	3.0	3.0
CCPs			
CCP fee	3.8	2.6	2.6
Fail management fee	–	0.1	0.1
Netting fee (service provided and charged for by EUI)	0.2	–	–
CCP clearing fee (pass-through from EUI)	0.1	–	–
CCP settlement fee (pass-through from EUI)	0.1	–	–
CCP settlement fee (pass-through from settlement agent)	–	1.1	1.1
CSDs			
Settlement fee	0.3	0.4	0.4
Stamp assessment fee	0.3	–	–
Non-settling own account transfer fee (stamp-related)	–	0.03	0.03
Direct input	0.03	0.03	0.03
Total trading and post-trading costs	28.5	7.3	7.3

Source: Oxera.

Table 4.2 Distribution of trading and post-trading costs (per transaction, %)

	LSE, LCH.Clearnet, EUI	BATS, EMCF (and settlement agent), EUI	Chi-X, EMCF (and settlement agent), EUI
Trading platforms			
Transaction fee	83.4	41.1	41.1
CCPs			
CCP fee	13.2	35.6	35.6
Fail management fee	–	1.8	1.8
Netting fee (service provided and charged for by EUI)	0.6	–	–
CCP clearing fee (pass-through from EUI)	0.5	–	–
CCP settlement fee (pass-through from EUI)	0.5	–	–
CCP settlement fee (pass-through from settlement agent)	–	15.7	15.7
CSDs			
Settlement fee	0.9	5.2	5.2
Stamp assessment fee	0.9	–	–
Non-settling own account transfer fee (stamp-related)	–	0.4	0.4
Direct input	0.1	0.4	0.4
Total trading and post-trading costs	100	100	100

Source: Oxera.

Table 4.3 Distribution of post-trading costs (per transaction, %)

	LSE, LCH.Clearnet, EUI	BATS, EMCF (and settlement agent), EUI	Chi-X, EMCF (and settlement agent), EUI
CCPs			
CCP fee	79.3	60.4	60.4
Fail management fee	–	3.0	3.0
Netting fee (service provided and charged for by EUI)	3.7	–	–
CCP clearing fee (pass-through from EUI)	2.9	–	–
CCP settlement fee (pass-through from EUI)	2.7	–	–
CCP settlement fee (pass-through from settlement agent)	–	26.6	26.6
CSDs			
Settlement fee	5.5	8.7	8.7
Stamp assessment fee	5.3	–	–
Non-settling own account transfer fee (stamp-related)	–	0.6	0.6
Direct input	0.6	0.6	0.6
Total post-trading costs	100	100	100

Source: Oxera.

4.2 Comparison with the previous EUI tariff for CSD- and CCP-related services

The EUI tariff used in the analysis above was introduced in March 2010. The main changes were: introduction of a sliding scale for the settlement fee; a change in the calculation of the netting fee from gross to net basis; and an increase in the direct input fee (details are provided in section 2). This section compares the costs under the new tariff with the costs under the previous tariff.

4.2.1 Impact of changes in the EUI tariff on post-trading costs

The introduction of this tariff reduced the post-trading costs incurred by a large user (see Table 4.4). The post-trading costs in the LSE/LCH.Clearnet/EUI channel decreased by 1.5 pence per transaction, while the costs in the other two channels increased by 0.1 pence per transaction.

Table 4.4 Post-trading costs (pence per transaction)

	LSE, LCH.Clearnet, EUI	BATS, EMCF (and settlement agent), EUI	Chi-X, EMCF (and settlement agent), EUI
Existing EUI tariff			
CCPs			
CCP fee	3.8	2.6	2.6
Fail management fee	–	0.1	0.1
Netting fee (service provided and charged for by EUI)	0.2	–	–
CCP clearing fee (pass-through from EUI)	0.1	–	–
CCP settlement fee (pass-through from EUI)	0.1	–	–
CCP settlement fee (pass-through from settlement agent)	–	1.1	1.1
CSDs			
Settlement fee	0.3	0.4	0.4
Stamp assessment fee	0.3	–	–
Non-settling own account transfer fee (stamp-related)	–	0.03	0.03
Direct input	0.03	0.03	0.03
Total post-trading costs	4.8	4.3	4.3
Previous EUI tariff			
CCPs			
CCP fee	3.8	2.6	2.6
Fail management fee	–	0.1	0.1
Netting fee (service provided and charged for by EUI)	1.8	–	–
CCP clearing fee (pass-through from EUI)	0.1	–	–
CCP settlement fee (pass-through from EUI)	0.2	–	–
CCP settlement fee (pass-through from settlement agent)	–	1.1	1.1
CSDs			
Settlement fee	0.2	0.3	0.3
Stamp assessment fee	0.3	–	–
Non-settling own account transfer fee (stamp-related)	–	0.03	0.03
Direct input	0.02	0.02	0.02
Total post-trading costs	6.3	4.2	4.2

Source: Oxera.

4.2.2 Impact of change in EUI tariff on distribution of trading and post-trading costs

The changes in the EUI tariff had an impact on the costs of some of the services, although the overall distribution of costs between the trade and post-trade services was not materially affected. The results presented in Tables 4.5–4.7 show that, under the previous EUI tariff:

- on the LSE/LCH.Clearnet/EUI channel, 79% of costs were incurred at the trading level, while 21% were incurred at the post-trading level. At the post-trading level, around 19% of total costs arose at the CCP level (where 7% of total costs are for services provided by EUI), while 2% arose at the CSD level;
- on the BATS/EMCF/EUI and Chi-X/EMCF/EUI channels, 42% of costs were incurred at the trading level, while 58% were incurred at the post-trading level. At the post-trading level, around 54% of total costs arose at the CCP level (including 16% of total costs for services provided by settlement agents), while 5% arose at the CSD level.

The total infrastructure-related costs associated with the LSE/LCH.Clearnet/EUI channel were (around 22.9 pence per transaction) higher than those associated with the BATS/EMCF/EUI and Chi-X/EMCF/EUI channels.²¹ These differences were driven primarily by differences in the costs arising at the trading platform level, where the trading costs on the LSE are higher than those observed on BATS and Chi-X.

At the post-trading level, the costs associated with trading through the LSE/LCH.Clearnet/EUI channel were also higher (around 2.1 pence per transaction) than those associated with BATS/EMCF/EUI and Chi-X/EMCF/EUI. This difference in costs arose in the CCP-related services: in the CCP fee, in settlement agent services ('settlement fee pass-through'), and in some of the services provided by EUI ('settlement fee' and 'clearing fee pass-through from EUI', and 'netting fee directly charged for by EUI').

The findings in relation to differences in the trading platform, CCP and CSD costs are robust to changes in assumptions about the size of activity, the mix of aggressive and passive trades, and users' netting efficiencies (see Appendix 3 for more detail).²²

The findings in relation to the distribution of costs, and differences between the channels, do not change materially if the costs are estimated using identical user profiles (ie, netting efficiency and average transaction size equivalent to that of a large user of the LSE/LCH.Clearnet/EUI channel) for all three channels. (Appendix 4 documents the results.)

The costs of trading and post-trading services can also be measured in terms of the value of transactions. Expressed on this basis, the total infrastructure-related trading and post-trading costs were equal to 0.38bp when using the LSE/LCH.Clearnet/EUI channel, and 0.09bp when using BATS/EMCF/EUI and Chi-X/EMCF/EUI channels (see Appendix 2).

²¹ As discussed in section 3, this analysis does not include all infrastructure providers' services and charges (eg, annual membership charges, information services). However, including these services and charges would not change the conclusions of the analysis presented in this study.

²² The conclusions are also not affected if the costs of order management services —under plausible assumptions on propensity to use these services—are included in the analysis.

Table 4.5 Trading and post-trading costs (pence per transaction)

	LSE, LCH.Clearnet, EUI	BATS, EMCF (and settlement agent), EUI	Chi-X, EMCF (and settlement agent), EUI
Trading platforms			
Transaction fee	23.8	3.0	3.0
CCPs			
CCP fee	3.8	2.6	2.6
Fail management fee	–	0.1	0.1
Netting fee (service provided and charged for by EUI)	1.8	–	–
CCP clearing fee (pass-through from EUI)	0.1	–	–
CCP settlement fee (pass-through from EUI)	0.2	–	–
CCP settlement fee (pass-through from settlement agent)	–	1.1	1.1
CSDs			
Settlement fee	0.2	0.3	0.3
Stamp assessment fee	0.3	–	–
Non-settling own account transfer fee (stamp-related)	–	0.03	0.03
Direct input	0.02	0.02	0.02
Total trading and post-trading costs	30.1	7.2	7.2

Source: Oxera.

Table 4.6 Distribution of trading and post-trading costs (per transaction, %)

	LSE, LCH.Clearnet, EUI	BATS, EMCF (and settlement agent), EUI	Chi-X, EMCF (and settlement agent), EUI
Trading platforms			
Transaction fee	79.1	41.4	41.4
CCPs			
CCP fee	12.5	35.9	35.9
Fail management fee	–	1.8	1.8
Netting fee (service provided and charged for by EUI)	5.8	–	–
CCP clearing fee (pass-through from EUI)	0.5	–	–
CCP settlement fee (pass-through from EUI)	0.5	–	–
CCP settlement fee (pass-through from settlement agent)	–	15.8	15.8
CSDs			
Settlement fee	0.7	4.4	4.4
Stamp assessment fee	0.8	–	–
Non-settling own account transfer fee (stamp-related)	–	0.4	0.4
Direct input	0.1	0.2	0.2
Total trading and post-trading costs	100	100	100

Source: Oxera.

Table 4.7 Distribution of post-trading costs (per transaction, %)

	LSE, LCH.Clearnet, EUI	BATS, EMCF (and settlement agent), EUI	Chi-X, EMCF (and settlement agent), EUI
CCPs			
CCP fee	59.8	61.4	61.4
Fail management fee	–	3.1	3.1
Netting fee (service provided and charged for by EUI)	27.8	–	–
CCP clearing fee (pass-through from EUI)	2.2	–	–
CCP settlement fee (pass-through from EUI)	2.4	–	–
CCP settlement fee (pass-through from settlement agent)	–	27.0	27.0
CSDs			
Settlement fee	3.5	7.5	7.5
Stamp assessment fee	4.0	–	–
Non-settling own account transfer fee (stamp-related)	–	0.7	0.7
Direct input	0.3	0.4	0.4
Total trading and post-trading costs	100	100	100

Source: Oxera.

5 Variations in user profiles

The infrastructure-related trading and post-trading costs vary depending on the characteristics of users. In particular, the netting efficiency, size of activity, mix of aggressive and passive trades, and average trade size affect the distribution of costs along the value chain and the costs across infrastructure providers. This section presents a brief overview of how variations in these characteristics affect the infrastructure-related costs. This analysis is carried out under the current EUI tariff.

5.1 Netting efficiency

Netting efficiency is an important determinant of the costs incurred at the CSD level, and, to a lesser degree, at the CCP level. Variation in netting efficiency among users can arise for a number of reasons. All else being equal, a lower level of trading activity is likely to result in lower netting efficiency; therefore, smaller users generally have lower netting efficiencies than larger users. Similarly, if a given user puts only a small proportion of its trades (in UK equities) through a particular CCP, the netting efficiency that the user will achieve on this CCP is likely to be lower than its netting efficiency on a CCP where it clears most of its trades.

Some services at the CSD and CCP level are charged according to the number of post-netting settlement instructions. Therefore, although reduced netting efficiency will not affect the level of these costs per post-netting number of transactions, it will increase the costs when expressed per gross number of transactions. Users with different netting efficiencies will therefore, all else being equal, face different CSD- and CCP- level costs, and, potentially, different total infrastructure-related costs associated with the different channels considered in this study.²³

A large user with netting efficiency of 96.0% (compared with a netting efficiency of 99.3% for a large user of the LSE/LCH.Clearnet/EUI channel, and 99.0% for a large user of the BATS/EMCF/EUI and Chi-X/EMCF/EUI channels as assumed in the user profile modelled in section 4) would face post-trading costs of:

- 8.1 pence when using the LSE/LCH.Clearnet/EUI channel (compared with post-trading costs of 4.8 pence based on a netting efficiency of 99.3%);
- 9.3 pence when using the BATS/EMCF/EUI and Chi-X/EMCF/EUI channels (compared with post-trading costs of 4.3 pence based on a netting efficiency of 99.0%).

The differences in costs between these two types of user are driven by increased settlement and netting costs. There are no differences in trading-level costs.

Overall, although changes in netting efficiency within plausible levels do affect the costs at CSD and CCP level, they do not affect the main conclusions in relation to the distribution of costs across trading platforms, CCPs and CSDs, or in relation to the relative costs of the three channels considered in this study.

²³ The relative level of trading and post-trading costs associated with transactions traded on a given trading platform and cleared through a given CCP is, in a similar way, affected by the proportion of activity that a given user chooses to settle on a net basis. Although, in general, settling on a net basis is more cost-efficient, there are circumstances in which users prefer to settle a proportion of their activity on a gross basis (eg, due to particular arrangements with clients that make it difficult to settle trades on a net basis).

Table 5.1 Trading and post-trading costs, lower netting efficiency (pence per transaction)

	LSE, LCH.Clearnet, EUI	BATS, EMCF (and settlement agent), EUI	Chi-X, EMCF (and settlement agent), EUI
Trading platforms			
Transaction fee	23.8	3.0	3.0
CCPs			
CCP fee	3.8	2.6	2.6
Fail management fee	–	0.5	0.5
Netting fee (service provided and charged for by EUI)	1.0	–	–
CCP clearing fee (pass-through from EUI)	0.8	–	–
CCP settlement fee (pass-through from EUI)	0.7	–	–
CCP settlement fee (pass-through from settlement agent)	–	4.6	4.6
CSDs			
Settlement fee	1.5	1.5	1.5
Stamp assessment fee	0.3	–	–
Non-settling own account transfer fee (stamp-related)	–	0.03	0.03
Direct input	0.03	0.03	0.03
Total trading and post-trading costs	31.9	12.3	12.3

Source: Oxera.

5.2 Size of trading activity

Although this study focuses on large users, it is informative to consider the level of costs facing users with less trading activity. Overall, smaller users are likely to incur higher trading and post-trading costs per transaction. However, this ‘size effect’ is limited to the infrastructure providers that currently have a sliding-scale tariff structure (ie, LSE, LCH.Clearnet, and EUI).

For medium-sized users that have trading activity that is 75% of the user profile modelled in section 4 (ie, assuming an average daily number of trades of 82,500 compared with 110,000, and an average daily total number of settlements of 7,500 compared with 10,000):

- total trading and post-trading costs associated with the LSE/LCH.Clearnet/EUI channel would be 31.8 pence (Table 5.2) compared with 28.5 pence for a large user. This increase is driven mainly by the increase in trading and CCP fees;
- the increase in costs associated with the other two channels is smaller (see Table 5.2). Therefore, for medium-sized users, the difference between the costs of trading through the LSE/LCH.Clearnet/EUI channel and the other two channels considered in this study is more pronounced than for a large user.

For small users with trading activity that is 50% of the user profile modelled in section 4, the increase in costs is more pronounced than in the case of a medium-sized user (see Table 5.3).

Table 5.2 Trading and post-trading costs, '75% of a large user' (pence per transaction)

	LSE, LCH.Clearnet, EUI	BATS, EMCF (and settlement agent), EUI	Chi-X, EMCF (and settlement agent), EUI
Trading platforms			
Transaction fee	26.1	3.0	3.0
CCPs			
CCP fee	4.6	2.6	2.6
Fail management fee	–	0.1	0.1
Netting fee (service provided and charged for by EUI)	0.2	–	–
CCP clearing fee (pass-through from EUI)	0.1	–	–
CCP settlement fee (pass-through from EUI)	0.1	–	–
CCP settlement fee (pass-through from settlement agent)	–	1.1	1.1
CSDs			
Settlement fee	0.3	0.4	0.4
Stamp assessment fee	0.3	–	–
Non-settling own account transfer fee (stamp-related)	–	0.03	0.03
Direct input	0.03	0.03	0.03
Total trading and post-trading costs	31.8	7.3	7.3

Source: Oxera.

Table 5.3 Trading and post-trading costs, '50% of a large user' (pence per transaction)

	LSE, LCH.Clearnet, EUI	BATS, EMCF (and settlement agent), EUI	Chi-X, EMCF (and settlement agent), EUI
Trading platforms			
Transaction fee	30.6	3.0	3.0
CCPs			
CCP fee	5.7	2.6	2.6
Fail management fee	–	0.1	0.1
Netting fee (service provided and charged for by EUI)	0.2	–	–
CCP clearing fee (pass-through from EUI)	0.1	–	–
CCP settlement fee (pass-through from EUI)	0.1	–	–
CCP settlement fee (pass-through from settlement agent)	–	1.1	1.1
CSDs			
Settlement fee	0.3	0.4	0.4
Stamp assessment fee	0.3	–	–
Non-settling own account transfer fee (stamp-related)	–	0.03	0.03
Direct input	0.03	0.03	0.03
Total trading and post-trading costs	37.2	7.3	7.3

Source: Oxera.

5.3 Average trade size

All else being equal, a smaller trade size increases the proportion of trading-level costs compared with the post-trading level costs. This is because trading-level services tend to be charged on an ad valorem basis (with some exceptions, such as order management fees, which can be charged for per order management event), while post-trading services tend to be charged on a per (gross or net) transaction basis. To illustrate, assuming that the average trade size of a given user is £4,000 (compared with £8,000 for a large user on the LSE, and £6,000 for a large user on BATS and Chi-X assumed in the user profile in section 4), total trading costs (per transaction) decline significantly (Table 5.4). For the LSE/LCH.Clearnet/EUI channel, trading fees decline from 23.8 to 15.3 pence per transaction. For the other two channels, the costs decline from 3.0 to 2.0 pence per transaction. Under these assumptions the post-trading costs remain unchanged since the number of transactions does not change.

For a user with this average trade size, the difference in trading and post-trading costs between the LSE/LCH.Clearnet/EUI and the other two channels is considerably smaller than that observed for a large user.

Table 5.4 Trading and post-trading costs, small trade size (pence per transaction)

	LSE, LCH.Clearnet, EUI	BATS, EMCF (and settlement agent), EUI	Chi-X, EMCF (and settlement agent), EUI
Trading platforms			
Transaction fee	15.3	2.0	2.0
CCPs			
CCP fee	3.8	2.6	2.6
Fail management fee	–	0.1	0.1
Netting fee (service provided and charged for by EUI)	0.2	–	–
CCP clearing fee (pass-through from EUI)	0.1	–	–
CCP settlement fee (pass-through from EUI)	0.1	–	–
CCP settlement fee (pass-through from settlement agent)	–	1.1	1.1
CSDs			
Settlement fee	0.3	0.4	0.4
Stamp assessment fee	0.3	–	–
Non-settling own account transfer fee (stamp-related)	–	0.03	0.03
Direct input	0.03	0.03	0.03
Total trading and post-trading costs	20.0	6.3	6.3

Source: Oxera.

5.4 Users with aggressive/passive bias

Multilateral trading facilities, such as BATS and Chi-X, have introduced new charging structures whereby users receive rebates on their passive trades and are charged for their aggressive trades. Therefore, the costs incurred on these platforms depend on a user's mix of aggressive and passive trades. For users with a high proportion of passive trades (effectively, liquidity providers on a given platform), the costs of trading on these platforms can be considerably lower than those of users that predominantly execute aggressive trades.

A split of 50/50 between aggressive and passive trades was assumed for the user profile in section 4. Assuming that a user executes 75% of its trades on a passive basis, the rebates it

would receive from BATS and Chi-X actually exceed the costs associated with the user's aggressive trades (see Table 5.5). At the same time, for a user that executes 75% of trades on an aggressive basis, trading on BATS and Chi-X becomes comparatively more expensive than for users with an equal proportion of aggressive and passive trades (see Table 4.1). The proportion of aggressive and passive trades does not affect trading costs on the LSE.

Overall, given that there are differences in charging between aggressive and passive trades on BATS and Chi-X, an increase in the proportion of passive trades reduces the costs of the BATS/EMCF/EUI and Chi-X/EMCF/EUI channels relative to the LSE/LCH.Clearnet/EUI channel; and an increase in the proportion of active trades increases the cost of the BATS/EMCF/EUI and Chi-X/EMCF/EUI channels relative to the LSE/LCH.Clearnet/EUI channel.

Table 5.5 Trading and post-trading costs, 'predominantly passive' user (pence per transaction)

	LSE, LCH.Clearnet, EUI	BATS, EMCF (and settlement agent), EUI	Chi-X, EMCF (and settlement agent), EUI
Trading platforms			
Transaction fee	23.8	-3.9	-4.5
CCPs			
CCP fee	3.8	2.6	2.6
Fail management fee	-	0.1	0.1
Netting fee (service provided and charged for by EUI)	0.2	-	-
CCP clearing fee (pass-through from EUI)	0.1	-	-
CCP settlement fee (pass-through from EUI)	0.1	-	-
CCP settlement fee (pass-through from settlement agent)	-	1.1	1.1
CSDs			
Settlement fee	0.3	0.4	0.4
Stamp assessment fee	0.3	-	-
Non-settling own account transfer fee (stamp-related)	-	0.03	0.03
Direct input	0.03	0.03	0.03
Total trading and post-trading costs	28.5	0.4	-0.2

Source: Oxera.

Table 5.6 Trading and post-trading costs, ‘predominantly aggressive’ user (pence per transaction)

	LSE, LCH.Clearnet, EUI	BATS, EMCF (and settlement agent), EUI	Chi-X, EMCF (and settlement agent), EUI
Trading platforms			
Transaction fee	23.8	9.9	10.5
CCPs			
CCP fee	3.8	2.6	2.6
Fail management fee	–	0.1	0.1
Netting fee (service provided and charged for by EUI)	0.2	–	–
CCP clearing fee (pass-through from EUI)	0.1	–	–
CCP settlement fee (pass-through from EUI)	0.1	–	–
CCP settlement fee (pass-through from settlement agent)	–	1.1	1.1
CSDs			
Settlement fee	0.3	0.4	0.4
Stamp assessment fee	0.3	–	–
Non-settling own account transfer fee (stamp-related)	–	0.03	0.03
Direct input	0.03	0.03	0.03
Total trading and post-trading costs	28.5	14.2	14.8

Source: Oxera.

A1 Tariffs and user profiles

A1.1 Tariffs

LSE 'Trading Services Price List', February 2010,

<http://www.londonstockexchange.com/traders-and-brokers/products-services/pricespolicies/trading-services-pricelist-01-02-10.pdf>

Chi-X 'Trading Tariff and Prices', January 2010, <http://www.Chi-X.com/trading-on-Chi-X/trading-tariff-and-prices.asp>

BATS 'Pricing Schedule', Feb 2010,

http://www.batstrading.co.uk/resources/participant_resources/BATSEuro_Pricing.pdf

LCH.Clearnet 'Equityclear Fees', July 2009,

http://www.lchclearnet.com/images/equityclear_fees_from_1st_july_2009_tcm6-49880.pdf

EMCF 'EMCF Fees and Penalties' January 2010,

<http://www.euromcf.nl/editor/uploads/regulation%20fees%20and%20penalties%20100122a.pdf>

Euroclear 'UK & Ireland Tariff Brochure', January 2010,

https://www.euroclear.com/site/publishedFile?DocumentName=eui_tariff_tcm87-175277.pdf&action=dload

A1.2 User profiles

Tables A1.1–A1.3 set out the assumptions for the user profile used in this study. In addition, two further assumptions have been made:

- the GBP to euro exchange rate is 1.15;
- the average number of days per month is 21.

Table A1.4 sets out the variations in user profiles used to assess how the costs of trading and post-trading costs depend on the characteristics of the user profiles.

Table A1.1 Trading platform user profiles (average daily activity)

	LSE	BATS	Chi-X
Number of transactions	110,000	110,000	110,000
Average trade size (£)	8,000	6,000	6,000
Proportion of trades executed on passive basis	50.0%	50.0%	50.0%

Source: EUI, and Oxera analysis.

Table A1.2 CCP user profile (average daily activity)

	LSE	BATS	Chi-X
Number of transactions	126,500	110,000	110,000
Netting efficiency	99.3%	99.0%	99.0%
Settlement failure rate	1%	1%	1%
Aggregate LCH.Clearnet post-netting volume	38,600	–	–

Note: EMCF also clears for other platforms and therefore the total number of CCP transactions is higher than the sum of transactions going through BATS and Chi-X. Given that EMCF does not apply a volume discount, omitting this additional activity does not affect the results.

Source: EUI, and Oxera analysis.

Table A1.3 CSD user profile (average daily activity)

	LSE	BATS	Chi-X
Total number of settlement instructions (across all execution channels)	10,000	10,000	10,000
Volume discount for users under the previous EUI tariff (settlement and direct input services only)	25.0%	25.0%	25.0%

Source: EUI, and Oxera analysis.

Table A1.4 Variations in user profiles

	Variations
Number of transactions	75% of large user in the base case 50% of large user in the base case
Netting efficiency	96.0%
Average trade size (£)	4,000
Proportion of trades executed on passive basis	75.0% / 25.0%

Source: EUI, and Oxera analysis.

A2 Costs per value traded

The trading and post-trading costs expressed on a per-value basis are set out below. Table A2.1 compares the costs based on the existing EUI tariff and on the previous EUI tariff.

Table A2.1 Trading and post-trading costs (per value of transaction, bp)

	LSE, LCH.Clearnet, EUI	BATS, EMCF (and settlement agent), EUI	Chi-X, EMCF (and settlement agent), EUI
Existing EUI tariff			
Trading platforms			
Transaction fee	0.30	0.04	0.04
CCPs			
CCP fee	0.05	0.03	0.03
Fail management fee	–	<0.01	<0.01
Netting fee (service provided and charged for by EUI)	<0.01	–	–
CCP clearing fee (pass-through from EUI)	<0.01	–	–
CCP settlement fee (pass-through from EUI)	<0.01	–	–
CCP settlement fee (pass-through from settlement agent)	–	0.01	0.01
CSDs			
Settlement fee	<0.01	<0.01	<0.01
Stamp assessment fee	<0.01	–	–
Non-settling own account transfer fee (stamp-related)	–	<0.01	<0.01
Direct input	<0.01	<0.01	<0.01
Total trading and post-trading costs	0.35	0.09	0.09
Previous EUI tariff			
Trading platforms			
<i>Transaction fee</i>	<i>0.30</i>	<i>0.04</i>	<i>0.04</i>
CCPs			
CCP fee	0.05	0.03	0.03
Fail management fee	–	<0.01	<0.01
Netting fee (service provided and charged for by EUI)	0.02	–	–
CCP clearing fee (pass-through from EUI)	<0.01	–	–
CCP settlement fee (pass-through from EUI)	<0.01	–	–
CCP settlement fee (pass-through from settlement agent)	–	0.01	0.01
CSDs			
Settlement fee	<0.01	<0.01	<0.01
Stamp assessment fee	<0.01	–	–
Non-settling own account transfer fee (stamp-related)	–	<0.01	<0.01
Direct input	<0.01	<0.01	<0.01
Total trading and post-trading costs	0.38	0.09	0.09

Source: Oxera.

A3 Trading and post-trading costs—previous EUI tariff

Estimates of the trading and post-trading costs are summarised below under different assumptions of netting efficiency, size of activity, average trade size, and proportion of aggressive and passive trades using the previous EUI tariff.

A3.1 Netting efficiency

Table A3.1 reports trading and post-trading costs under the previous EUI tariff assuming a netting efficiency on all three channels of 96%.

Table A3.1 Trading and post-trading costs, lower netting efficiency (pence per transaction)

	LSE, LCH.Clearnet, EUI	BATS, EMCF (and settlement agent), EUI	Chi-X, EMCF (and settlement agent), EUI
Trading platforms			
Transaction fee	23.8	3.0	3.0
CCPs			
CCP fee	3.8	2.6	2.6
Fail management fee	–	0.5	0.5
Netting fee (service provided and charged for by EUI)	1.8	–	–
CCP clearing fee (pass-through from EUI)	0.8	–	–
CCP settlement fee (pass-through from EUI)	0.9	–	–
CCP settlement fee (pass-through from settlement agent)	–	4.6	4.6
CSDs			
Settlement fee	1.3	1.3	1.3
Stamp assessment fee	0.3	–	–
Non-settling own account transfer fee (stamp-related)	–	0.03	0.03
Direct input	0.09	0.09	0.09
Total trading and post-trading costs	32.6	12.1	12.1

Source: Oxera.

A3.2 Size of activity

Tables A3.2 and A3.3 report trading and post-trading costs assuming that the size of activity—number of transactions (trading platform and CCP level) and total number of settlements—is 75% and 50% of that assumed in the base case.

Table A3.2 Trading and post-trading costs, ‘75% of a large user’ (pence per transaction)

	LSE, LCH.Clearnet, EUI	BATS, EMCF (and settlement agent), EUI	Chi-X, EMCF (and settlement agent), EUI
Trading platforms			
Transaction fee	26.1	3.0	3.0
CCPs			
CCP fee	4.6	2.6	2.6
Fail management fee	–	0.1	0.1
Netting fee (service provided and charged for by EUI)	1.8	–	–
CCP clearing fee (pass-through from EUI)	0.1	–	–
CCP settlement fee (pass-through from EUI)	0.2	–	–
CCP settlement fee (pass-through from settlement agent)	–	1.1	1.1
CSDs			
Settlement fee	0.2	0.3	0.3
Stamp assessment fee	0.3	–	–
Non-settling own account transfer fee (stamp-related)	–	0.03	0.03
Direct input	0.02	0.02	0.02
Total trading and post-trading costs	33.3	7.2	7.2

Source: Oxera.

Table A3.3 Trading and post-trading costs, ‘50% of a large user’ (pence per transaction)

	LSE, LCH.Clearnet, EUI	BATS, EMCF (and settlement agent), EUI	Chi-X, EMCF (and settlement agent), EUI
Trading platforms			
Transaction fee	30.6	3.0	3.0
CCPs			
CCP fee	5.7	2.6	2.6
Fail management fee	–	0.1	0.1
Netting fee (service provided and charged for by EUI)	1.8	–	–
CCP clearing fee (pass-through from EUI)	0.1	–	–
CCP settlement fee (pass-through from EUI)	0.2	–	–
CCP settlement fee (pass-through from settlement agent)	–	1.1	1.1
CSDs			
Settlement fee	0.2	0.3	0.3
Stamp assessment fee	0.3	–	–
Non-settling own account transfer fee (stamp-related)	–	0.03	0.03
Direct input	0.02	0.02	0.02
Total trading and post-trading costs	38.8	7.3	7.3

Source: Oxera.

A3.3 Average trade size

Table A3.4 reports the trading and post-trading costs assuming that an average trade size is equal to £4,000, instead of £8,000 assumed for the LSE/LCH.Clearnet/EUI, and £6,000 assumed for the BATS/EMCF/EUI and Chi-X/EMCF/EUI in the base case.

Table A3.4 Trading and post-trading costs, small trade size (pence per transaction)

	LSE, LCH.Clearnet, EUI	BATS, EMCF (and settlement agent), EUI	Chi-X, EMCF (and settlement agent), EUI
Trading platforms			
Transaction fee	15.3	2.0	2.0
CCPs			
CCP fee	3.8	2.6	2.6
Fail management fee	–	0.1	0.1
Netting fee (service provided and charged for by EUI)	1.8	–	–
CCP clearing fee (pass-through from EUI)	0.1	–	–
CCP settlement fee (pass-through from EUI)	0.2	–	–
CCP settlement fee (pass-through from settlement agent)	–	1.1	1.1
CSDs			
Settlement fee	0.2	0.3	0.3
Stamp assessment fee	0.3	–	–
Non-settling own account transfer fee (stamp-related)	–	0.03	0.03
Direct input	0.02	0.02	0.02
Total trading and post-trading costs	21.6	6.2	6.2

Source: Oxera.

A3.4 Users with aggressive/passive bias

Tables A3.5 and A3.6 report trading and post-trading costs assuming that the proportion of aggressive trades is 75% and 25% respectively.

Table A3.5 Trading and post-trading costs, ‘predominantly passive’ user (pence per transaction)

	LSE, LCH.Clearnet, EUI	BATS, EMCF (and settlement agent), EUI	Chi-X, EMCF (and settlement agent), EUI
Trading platforms			
Transaction fee	23.8	-3.9	-4.5
CCPs			
CCP fee	3.8	2.6	2.6
Fail management fee	-	0.1	0.1
Netting fee (service provided and charged for by EUI)	1.8	-	-
CCP clearing fee (pass-through from EUI)	0.1	-	-
CCP settlement fee (pass-through from EUI)	0.2	-	-
CCP settlement fee (pass-through from settlement agent)	-	1.1	1.1
CSDs			
Settlement fee	0.2	0.3	0.3
Stamp assessment fee	0.3	-	-
Non-settling own account transfer fee (stamp-related)	-	0.03	0.03
Direct input	0.02	0.02	0.02
Total trading and post-trading costs	30.1	0.3	-0.3

Source: Oxera.

Table A3.6 Trading and post-trading costs, ‘predominantly aggressive’ user (pence per transaction)

	LSE, LCH.Clearnet, EUI	BATS, EMCF (and settlement agent), EUI	Chi-X, EMCF (and settlement agent), EUI
Trading platforms			
Transaction fee	23.8	9.9	10.5
CCPs			
CCP fee	3.8	2.6	2.6
Fail management fee	-	0.1	0.1
Netting fee (service provided and charged for by EUI)	1.8	-	-
CCP clearing fee (pass-through from EUI)	0.1	-	-
CCP settlement fee (pass-through from EUI)	0.2	-	-
CCP settlement fee (pass-through from settlement agent)	-	1.1	1.1
CSDs			
Settlement fee	0.2	0.3	0.3
Stamp assessment fee	0.3	-	-
Non-settling own account transfer fee (stamp-related)	-	0.03	0.03
Direct input	0.02	0.02	0.02
Total trading and post-trading costs	30.1	14.1	14.7

Source: Oxera.

A4 Trading and post-trading costs—hypothetical user profile

This appendix presents estimates of the costs for the three channels based on a user with characteristics of a large user on the LSE/LCH.Clearnet/EUI channel. In other words, the same user profile is used for the three channels. This analysis is carried out using the existing and previous EUI tariff respectively.

A4.1 Existing EUI tariff

Tables A4.1 and A4.2 provide estimates of the trading and post-trading costs under the existing EUI tariff.

Table A4.1 Trading and post-trading costs (pence per transaction)

	LSE, LCH.Clearnet, EUI	BATS, EMCF (and settlement agent), EUI	Chi-X, EMCF (and settlement agent), EUI
Trading platforms			
Transaction fee	23.8	4.0	4.0
CCPs			
CCP fee	3.8	2.6	2.6
Fail management fee		0.1	0.1
Netting fee (service provided and charged for by EUI)	0.2	–	–
CCP clearing fee (pass-through from EUI)	0.1	–	–
CCP settlement fee (pass-through from EUI)	0.1	–	–
CCP settlement fee (pass-through from settlement agent)	–	0.8	0.8
CSDs			
Settlement fee	0.3	0.3	0.3
Stamp assessment fee	0.3	–	–
Non-settling own account transfer fee (stamp-related)	–	0.03	0.03
Direct input	0.03	0.03	0.03
Total trading and post-trading costs	28.5	7.8	7.8

Source: Oxera.

Table A4.2 Distribution of trading and post-trading costs (per transaction, %)

	LSE, LCH.Clearnet, EUI	BATS, EMCF (and settlement agent), EUI	Chi-X, EMCF (and settlement agent), EUI
Trading platforms			
Transaction fee	83.4	51.2	51.2
CCPs			
CCP fee	13.2	33.3	33.3
Fail management fee		1.2	1.2
Netting fee (service provided and charged for by EUI)	0.6	–	–
CCP clearing fee (pass-through from EUI)	0.5	–	–
CCP settlement fee (pass-through from EUI)	0.5	–	–
CCP settlement fee (pass-through from settlement agent)	–	10.3	10.3
CSDs			
Settlement fee	0.9	3.4	3.4
Stamp assessment fee	0.9	–	–
Non-settling own account transfer fee (stamp-related)	–	0.4	0.4
Direct input	0.1	0.3	0.3
Total trading and post-trading costs	100	100	100

Source: Oxera.

A4.2 Previous EUI tariff

Tables A4.3 and A4.4 provide estimates of the trading and post-trading costs under the previous EUI tariff.

Table A4.3 Trading and post-trading costs (pence per transaction)

	LSE, LCH.Clearnet, EUI	BATS, EMCF (and settlement agent), EUI	Chi-X, EMCF (and settlement agent), EUI
Trading platforms			
Transaction fee	23.8	4.0	4.0
CCPs			
CCP fee	3.8	2.6	2.6
Fail management fee	–	0.1	0.1
Netting fee (service provided and charged for by EUI)	1.8	–	–
CCP clearing fee (pass-through from EUI)	0.1	–	–
CCP settlement fee (pass-through from EUI)	0.2	–	–
CCP settlement fee (pass-through from settlement agent)	–	0.8	0.8
CSDs			
Settlement fee	0.2	0.2	0.2
Stamp assessment fee	0.3	–	–
Non-settling own account transfer fee (stamp-related)	–	0.03	0.03
Direct input	0.02	0.02	0.02
Total trading and post-trading costs	30.1	7.8	7.8

Source: Oxera.

Table A4.4 Distribution of trading and post-trading costs (per transaction, %)

	LSE, LCH.Clearnet, EUI	BATS, EMCF (and settlement agent), EUI	Chi-X, EMCF (and settlement agent), EUI
Trading platforms			
Transaction fee	79.1	51.5	51.5
CCPs			
CCP fee	12.5	33.5	33.5
Fail management fee	–	1.2	1.2
Netting fee (service provided and charged for by EUI)	5.8	–	–
CCP clearing fee (pass-through from EUI)	0.5	–	–
CCP settlement fee (pass-through from EUI)	0.5	–	–
CCP settlement fee (pass-through from settlement agent)	–	10.3	10.3
CSDs			
Settlement fee	0.7	2.9	2.9
Stamp assessment fee	0.8	–	–
Non-settling own account transfer fee (stamp-related)	–	0.4	0.4
Direct input	0.1	0.2	0.2
Total trading and post-trading costs	100	100	100

Source: Oxera.

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