

The Allocation of Primary Gas Capacity
“Economic Market-based Allocation”

The Allocation of Primary Gas Capacity

“Economic Market-based Allocation”

EFET recommends that the implementation of market-based allocation of primary gas capacity should include:

- A range of processes to cover long-term through to short-term capacity allocations
- Development of consistent economic models across Europe to increase the visibility and co-ordination of transmission system investment decision
- Pricing based on investment costs for long-term allocations and on market value for shorter-term sales

As Europe moves towards combined grid operation with larger market areas the current problems of capacity allocation should reduce. The approach for existing and new capacity suggested in this paper will however still be needed, at least at the major interfaces between the larger trading zones. For practical purposes, implementation of ‘Economic Market-based Allocation’ could first be applied at Europe’s major cross-border locations.

INTRODUCTION AND RATIONALE

A single EU gas market requires improved harmonisation and coordination of transmission capacity allocation, especially for the provision of firm capacity where shippers are seeking to manage activities in a number of systems and across a number of borders. Restricted access to markets and a lack of market integration cannot be resolved whilst there remains a lack of firm cross border capacity.

Whilst entry-exit capacity contracts have now been widely established, and have helped create more competitive conditions within individual areas, the efficient allocation of capacity from one pipeline system to another has not yet been addressed. In addition, regional integration requires improved harmonisation of capacity allocation mechanisms.

Efficient primary allocations reduce the pressure on ‘second best’ measures such as anti-hoarding rules and reliance on the secondary markets to deliver significant amounts of capacity to system users (particularly new entrants). While such rules are useful they should not be a substitute for well functioning primary allocation. Over-reliance on secondary measures to make capacity available is unlikely to increase sustainable competition, and may also introduce unnecessary risk for primary capacity holders.

EFET is seeking to contribute to a wider debate on primary allocation by highlighting broad objectives for capacity provision and some guiding principles for capacity allocation beyond the issue of ‘Open Seasons’.¹ In this paper we propose ideas both for the allocation of existing primary capacity and for allocation of new capacity. Issues on pricing and TSO revenue are also discussed as these raise a number of important and difficult policy questions, but they are not the focus of this paper.

The issues facing different TSOs vary and the paper does not, therefore, recommend the detailed implementation of a single approach. We make our preferences clear, but all steps towards efficient and user-friendly harmonisation of the EU gas capacity regimes would be welcomed.

¹ EFET has already published concerns about the use of open seasons as a method of selling primary capacity (see *Open Season Position Paper, Response for ERGEG*, at <http://www.efet.org/default.asp?Menu=283>). The aborted open seasons and ridiculous outcomes during 2008 further demonstrated the problems that can arise in poorly structured processes.

The fundamental requirement

The main objective for capacity provision is to **ensure that all reasonable demands for primary capacity are met where it is economic, and efficient to do so**. This implies that the existing system should be used to its maximum physical capacity and that demands are met with timely additional investment. The provision of any investment must be done in a way that ensures a TSO can earn a reasonable return on assets for a given level of risk.

How can this be done?

There are a number of guiding principles to be considered for the allocation of primary capacity:

- Connected TSOs should be required to maximise the regular release of capacity within the defined safe operating margins of their combined systems.
- Where demand for capacity exceeds current physical capacity, TSOs should invest in new capacity where it is economic. In this regard, the financing of investments will be helped by the agreement with regulators of a broad economic test for investments.
- Allocation procedures should follow market-based principles, which means that capacity should be allocated to those who value it most.
- Primary capacity holders should have clear enforceable rights to capacity.
- Firm capacity holders should have the right to use capacity whenever required, and rights (such as market² compensation) in the event that the TSO fails to deliver the capacity that it has contracted to release save for force majeure.
- Notwithstanding the rights of firm capacity holders, there should be measures in place to prevent hoarding of capacity in order to reduce contractual congestion where there is no physical congestion.
- Interruptible capacity holders should have clarity of all rights and obligations e.g. under what circumstances interruption will be called and the probability of curtailment.
- All directly involved TSOs and regulators should cooperate to ensure efficient and timely sales of and investment in cross-border capacity. There should be common definitions, standard presentation of information by TSOs and proper responses to shipper information requests.
- Capacity should be tradable without any undue restrictions, and TSOs should facilitate this with systems that enable changes in title to be tracked and for trades to be recognised within short time periods in line with commodity trading requirements.

What do shippers need to know?

Transparency of available capacity is very important for valuation purposes. In this regard, TSOs should publish the “baseline”³ level of firm capacity that it is required to offer at each

² Market compensation means that the interrupted capacity owner will be covered for the financial loss occurring due to the curtailment; e.g. if he has to buy gas at the hub in order to replace imports, and he has to sell the gas on the balancing market on the export region, then TSO will compensate for the losses. The compensation could be based on a shipper's specific cost or based on a general calculation of the market spreads post curtailment.

³ The ‘baseline’ capacity refers to an agreed minimum amount of firm capacity that a TSO must offer to the market. Typically the baseline might be 85-95% of the maximum technical capacity. The calculation and agreement on this baseline can vary depending on the level of risk being shared between shippers and TSOs, the commercial capacity arrangements in place, the impact of security reserves (if any), and seasonal factors. A low baseline may indicate that short-term firm, or near firm interruptible services could be available, whereas a high baseline may indicate that additional primary capacity closer to the day may be more

relevant entry and/or exit point. These baselines should be subject to regulatory scrutiny (or agreement) to ensure that TSOs are releasing the maximum level of capacity compatible with defined levels of safe and efficient combined operation of the system.

In addition to publication of baselines, TSOs should publish regularly, information on the levels of capacity already contracted, levels of capacity still available, and levels of actual utilisation of capacity. This will enable shippers to gauge availability of firm capacity, and the likelihood of interruption for interruptible capacity (see also EFET Gas Transparency Requirements <http://www.efet.org/default.asp?Menu=283>).

The following sections explain our recommended consistent approach for existing capacity sales and for new capacity.

METHOD OF SALE – EXISTING CAPACITY

TSOs should be required and encouraged to continue to sell capacity up to the baseline level until the period of use. Where baseline capacity is sold out, the TSO will need to consider whether it is necessary to offer new capacity.

Offering a variety of capacity contracts is beneficial because shippers are better able to manage their needs through the primary allocation. TSOs should sell capacity in a variety of products, for example annual, quarterly, monthly, daily, and within day. Shippers should also be able to buy capacity up to several years ahead.

The rules for capacity sales mechanisms including method of allocation, timing of sales, rules in the event of over-subscription of capacity, credit requirements etc. should be clear and transparent.

Table 1 outlines a process for existing capacity.

Period	Features	Associated events	Pricing
Long term capacity sales of firm capacity	One or more sales of firm capacity at regulated prices* up to several years ahead. Reserve capacity for short term sales i.e. <=1year (up to 20 per cent of the baseline plus any unsold long term capacity) ⁴	Sale of capacity of up to 80% of the baseline. If demand exceeds baseline TSO considers investment in additional capacity (see Section on allocation of new capacity)	Reserve price for new capacity based on the long run marginal cost (LRMC) of investment
Short term - Annual sales of firm capacity	Auction of firm capacity (< 20% of the baseline) not offered in the long term process plus any unsold capacity for the specific year	Capacity calculated based on latest information, but no less than agreed baselines	Reserve price no more than LRMC used for new capacity. Cleared price auction
Short term - Monthly sales of	Auction of firm capacity reserved for short term	Capacity calculated again as conditions	As above

difficult to obtain and the risk of interruption may be higher. Whichever approach is taken, it is important to be transparent so that shippers and TSOs can understand and manage risks.

⁴ The percentage of capacity withheld for shorter term sales may vary depending on the nature and maturity of the particular market. In less mature markets a larger percentage may be appropriate to encourage new entry.

firm capacity	sales (< 20% of the baseline) plus any relevant unsold capacity plus any capacity recycled through measures discussed in appendix A	are better known, but no less than agreed baselines	
Short term – Month ahead sales of interruptible capacity	Auction of interruptible capacity.	Capacity calculated on basis of baseline less expected flows.	Zero reserve (to ensure that TSOs are better rewarded for selling firm capacity rather than getting a free option when selling lots of interruptible at firm prices) Cleared price auction
Short term - Day ahead sales of firm capacity	Auction of unsold firm capacity to be offered in daily market.	Capacity calculated again to assess the possibility of further firm sales.	Zero reserve price Cleared price auction.
Short term - Day ahead sales of interruptible capacity	Auction of interruptible capacity to prevent hoarding of firm capacity	Calculated on basis of baseline less expected flows. Shippers able to gauge attractiveness of product based on information on flows and capacity booking levels published by TSO.	Zero reserve price Cleared price auction.
Short term - Intra-day	Allow a booking approach for administrative simplicity	Calculation of capacity available based on flows and unsold capacity.	Fixed price based on recent short term pricing?

**See Section on pricing of capacity.*

The approach demonstrates EFET strong preference for market-based allocation through the use of auctions for a variety of product terms.

With existing capacity the issue is not just about the amount of unsold capacity that the TSO can put to the market, but also the efficient use of capacity that has already been sold. While the latter is not the focus on this paper Appendix A provides some of our recent thinking on possible measures.

METHOD OF SALE - NEW CAPACITY

Selling firm capacity above the existing baseline of the system creates a range of policy and risk issues for all market participants. The broad challenges include discovering the demand for capacity, deciding on the investment plan and pricing the new capacity.

EFET considers that TSOs should publish clear methodologies detailing how they will decide to invest in new capacity. This should include unambiguous mechanisms for how shippers can trigger investment in new capacity, and how regulators will interact with the TSO in developing an economic investment model and the circumstances where additional approvals will be required. A well-defined published economic model will reduce ambiguity and require less detailed regulatory oversight.

As foreseen in the 3rd EU Internal Energy Market proposals, TSOs should also consult and publish clear long-term plans of their local and international new capacity investments, which

should be updated on a regular basis. This will enable shippers to see how baseline levels of capacity that the TSO will release will change over time.

TSOs will receive signals for new investment in capacity in a variety of ways including from the results of the long-term sales of existing capacity if demand exceeds supply; from analysis of future supply and demand and long-term planning exercises; and from shippers with new projects requiring capacity (e.g. LNG terminals, power stations etc.).

There are three main ways in which TSOs can respond to new demand for capacity:

The first is through investment in new capacity according to plans approved by the regulator or meeting an agreed economic test (see Box 1). Such capacity will be included in the TSOs asset base and baselines. It can be offered through a long-term sales process for existing capacity where the demand for such capacity would be assessed against published criteria before being released to bidding shippers where the economic test and regulatory approvals are met. Regular sales processes can be based on a regional approach if all of the investment conditions are transparent to TSOs and shippers. Sales of capacity could be run on a harmonised timetable and platform, further improving regional integration and reducing current shipper risks of having to stitch together different bits of capacity through ad-hoc open season processes.

Having agreed tests and approvals for investments reduces the requirements to constantly iterate results with Regulators and can allow the publication of better indicative pricing ahead of an auction.

The second way new capacity can be agreed is through investment in new capacity in response to direct request by shippers with new projects. Such capacity will need to be approved by the regulator and will be included in the TSO asset base. The demand for this capacity could be revealed in the long-term sales process if these are held on a regular basis, but consideration could also be given to specific large project mechanisms.

A third way to offer capacity is through “open season” type processes where the TSO has a transparent process for soliciting offers to buy new capacity and builds capacity in response to the offers it receives subject to an agreed economic test or the approval of the regulator. EFET position paper on open seasons provided some criteria for a well-run process, and notes that these are best suited to investment that is of a significant but uncertain size, rather than incremental system investment that is best handled through a more flexible long-term allocation process.

BOX 1 – An economic test for investment in new capacity

An economic test is an agreement between the TSO and the regulator on when it is viable to undertake additional capacity investment. This is common in current investment decisions for regulated gas assets, but the negotiations are not transparent and provide no way for shippers to react to the investment rules.

The idea of a published test is such that bidding shippers can see how their actions may lead to investment, as only marginal decisions would require negotiation with regulators on what goes into the regulated asset base.

Publishing a test also reduces some political interference in processes and allows the market to assess the performance of regulators in allowing sufficient investment.

The test itself would be based on a financial assessment of firm bids against investment costs. It would not necessarily have to be restricted to fully funded bids for the long-term demand as the regulator and TSO may accept that short-term sales could provide sufficient

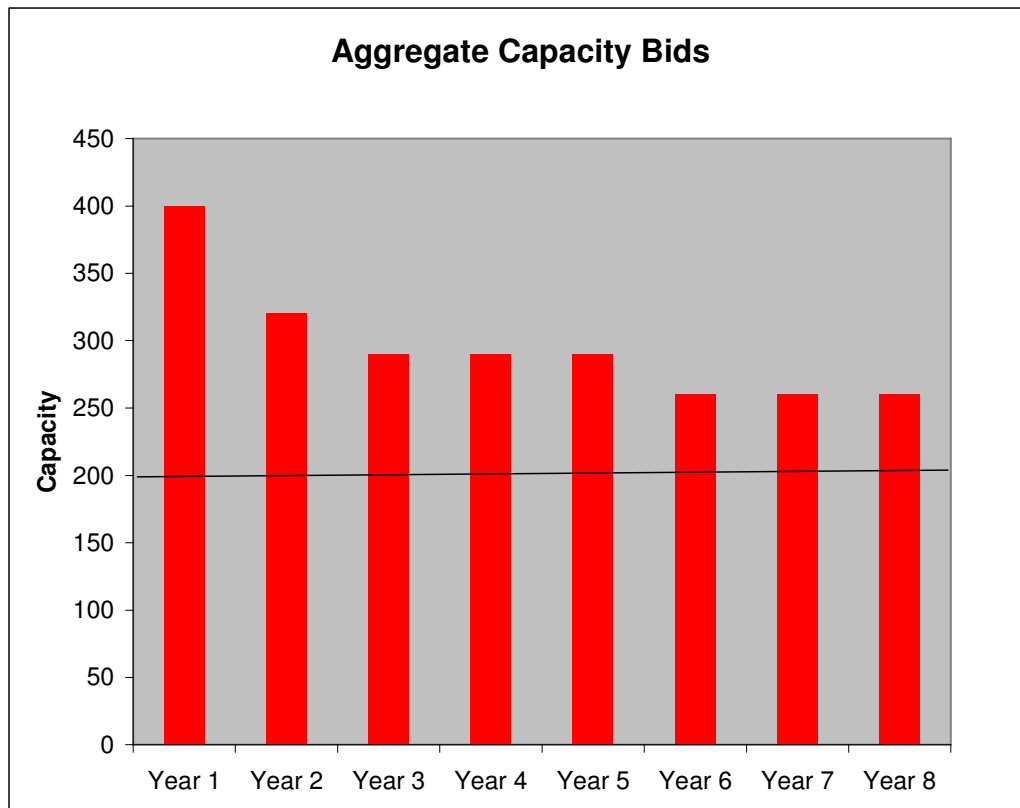
revenue in the future.

A risk in allowing investment without full upfront funding is that of stranded assets. However, there are risks of systematic underinvestment that are evident in the market now which can be attributed in part to the current approach to investment.⁵

An example

The decision to invest is based upon demand above the baseline for capacity for at least five years, where the revenue from the firm bids is sufficient to pay for 50% of the project costs on a PV basis; whereby TSO would be allowed to recover the other 50 % via a specific tariff charged to all capacity holders in case they would not sell the remainder of the capacity in the short term processes. The derivation and application of any additional charges should be transparent and regularly updated. Greater transparency on capacity sales, revenue levels and expected charges are required because shippers need to understand the risks involved in holding capacity.

At a particular system point, the baseline is 200 units. During the multi round bidding process, the following aggregate bids are received by the conclusion of the rounds. Shippers are not restricted to bidding for multi-years and the TSO should only be interested in the aggregate demand.



In this case, there are sufficient bids above the baseline for a long enough periods. The new build increments are in units of 25 with each incremental build cost being €4M NPV.

Without detailing the price schedule and discount rate, as an illustration, the revenue calculation could work out at follows.

There are 5 consecutive periods above 275 giving a build cost of €12M NPV, but let us say that the discounted revenue from these sales raises around €5.9M which is below the economic test level of the 50% NPV level i.e. €6M so there is no obligation to offer this level

⁵ Onshore congestion that results from maintaining the status quo not only prevents the development of a single market, it also carries the risk of increasing gas prices combined with supply insecurity.

of firm capacity.

There are 8 periods with capacity demand above 250, which has a build cost of €8M, and economic test of €4M, and discounted revenue of €4.4M so the investment occurs, and the allocated capacity is scaled between all shippers.

Of course, the TSO could decide, at its own risk to build to meet the higher demand level (e.g. 75 units) and reap the benefits of any additional sales (perhaps at an incentivised rate of return on the assets, but they cannot be covered via grid tariffs if they fail to sell the 25 non-economic units), but the main point is that shippers have the regular opportunity to make firm bids for capacity and there are rules for when this must be delivered.

PRICING

Pricing and allocation issues for sales of existing capacity

This paper is not attempting to resolve the different capacity pricing issues, but rather to put forward some general discussion on pricing that will need consideration under market-based capacity allocation. To a large extent, pricing will also be dictated by the level of integration and regional harmonisation across systems in combination with decisions on the level of pooling of entry and exit points into broader zones or specific nodal points. In addition, decisions would have to be made on how to treat legacy capacity sales if there is an underlying change in how charges related to the under or over recovery of regulated incomes are applied.

Where appropriate, prices that the TSOs charge for capacity should reflect the revenue that a TSO is allowed to earn on its asset base. With market-based allocations, matching the regulated revenues with the achieved revenues present a number of challenges, however these are not insurmountable. First, there needs to be an acceptance by regulators that **setting reserve prices above the asset based value of capacity will only act to deter purchases** and lower the amount of gas on gas competition within and between markets. With a variety of contract lengths, and less control over capacity price outcomes there will be a need to find alternative mechanisms to manage TSO revenue fluctuations.

- Over-recovery or under-recovery of regulated revenue may require a method to smooth revenue flows and return money to capacity holders in the least distortionary manner possible. Attempting to manage pricing through non-market based charges will only create distortions to market activity and reduce liquidity.

In the short term there is no opportunity to invest for additional capacity so if there is an expected shortage of capacity price becomes an important element for fair and efficient primary sales. In the absence of price as a rationing tool, there would have to be a reliance on non-market measures such as pro-rating which could lead to perverse bidding and gaming of the allocation rules.

If price is used, then the auction must be designed (in terms of information, bidding strategy, structure and revenue maximisation etc.) to achieve the correct economic value. Auctions should be based on a good understanding of the amount of available capacity, and that the bidding structure should allow shippers to react to information as it emerges.

With sufficient transparency it may be appropriate to use single round auctions in more mature markets. Where capacity auctions are new and shippers are less sure of pricing, multi-round auctions can allow some degree of price discovery and lower risks.

Similarly, capacity sales based on cleared price structures may be considered lower risk for some shippers compared with pay as bid structure.

For example, in the generally more mature electricity markets, we see that single round auctions with pay as cleared price setting function smoothly without concerns.

Reserve Prices

Reserve prices raise a number of policy issues and can create significant disagreement across the industry.

Conceptually, reserve prices are used to ensure that assets receive a fair rate of return. However, this can clash with the concept of fair economic value (i.e. the market value) where capacity may be worth more or less than the rate of return on an investment.

Regulators tread a fine line between ensuring funding for regulated businesses and ensuring that the market functions correctly.

As a trader based organisation, EFET has a natural preference for capacity to be **sold for its market value** as this provides a better indication of the scarcity or otherwise of the product. In this respect, particularly for short term sales, there is a preference for zero reserve prices for capacity.

Markets for regulated monopoly services, however, will not operate perfectly, and the funding of network assets is an important element to consider. This is particularly the case for long life assets where the commodity markets are not well matched in terms of tenure.

The EFET position is therefore that short-term yearly and monthly firm capacity auctions should carry reserve prices at the necessary rate of return on investment (see Box 2 for a discussion on such pricing in long-term sales), such that excessive demand for capacity can form a strong signal for additional investment when this can be delivered during the bid period.

For shorter term sales, EFET accepts that a reserve price for capacity should apply at a level that is sufficient to meet the regulated revenue (so ultimately based on the investment costs and allowed rate of return), **but only if there is a zero reserve price on very short term (daily) capacity sales** to reduce the risk of primary capacity being withheld from the market.

Short term capacity reserve prices (e.g. monthly auctions) should not be above longer term prices (e.g. yearly auctions). With the application of a policy of economic value (i.e. the auction outcome) for short-term sales, the price may be higher or lower than the regulated revenues but this will be a market price at a point in time. Arbitrary multiple pricing only further entrenches higher capacity requests than necessary for the longer periods because if 20 days is more costly than 1 month, preference will be to buy the month, which leads to implicit hoarding by creating a floor under previous sales values.

Pricing for new capacity

As there should be no theoretical limit on the level of new capacity that a TSO can build in response to demand for new capacity, such capacity should be sold at a regulated price compatible with the TSOs ability to meet its allowed revenue. There is no need to use price as a rationing mechanism as in sales of existing capacity discussed earlier.

The pricing should also not be limited by previous tariff levels, as the incremental build costs may be more or less expensive per unit. EFET does not believe that trying to protect the value of previous capacity sales values is economically efficient and will only create distortions in how shippers seek to acquire capacity. To be clear, the price for capacity will be set at each sale point in time, and this price is locked in for the duration of the contract with the shipper. When, at the end of a contract, long-term capacity is reoffered to the market by the TSO, the price will be the new regulated price.

BOX 2 – Non price bidding for long term capacity sales

Volume based bidding for long-term capacity rights is a legitimate way to allocate capacity.

Using the existing reserve price for existing capacity as a base, a TSO should be able to determine an investment cost for discreet increases in capacity, and these costs could form the basis of a price schedule of different expansion scenarios.

Shippers could participate in long-term sales where all shippers' bids are aggregated to calculate the clearing price against the schedule after a number of rounds or interactions.

Where demand for capacity is at or below existing capacity baseline, the clearing price is simply the existing reserve.

Where bids total above the existing capacity for a sufficient period of time (i.e. they meet the economic test for investment) all shippers pay the clearing price and the TSO has a remit to invest. The auction will have rules to dictate early closure or it could run for a prescribed number of rounds.

The process can be repeated annually, rather than on an ad-hoc basis that occurs in open season processes.

Participating shippers would see the aggregate bids against a baseline, the price schedule, indicative clearing price and their own positions.

Appendix A

The Efficient use of Capacity held by Shippers

The case for investment in new capacity is inextricably linked with the efficient use of existing capacity held by shippers. EFET has long argued for information transparency to better understand the level of contractual congestion in networks and fully supports measures that increase the efficient use of capacity, discourage anti-competitive behaviour, but also respect firm rights where there is no competition reason for interference with these rights.

Anti-hoarding and efficiency mechanisms

A key problem on many networks is the existence of contractual congestion even though there is no physical congestion, i.e. new shippers are unable to book capacity because it is already booked, but actual physical flows of gas are well within the levels of technical available capacity. Such congestion can be the result of capacity hoarding or stranding whereby shippers who have booked capacity do not release their unused capacity to the market or where restrictions exist on the secondary sale of capacity.

There are a number of ways to overcome this:

For firm capacity release

Possible measure	Revenue	Risk
UIOSI (i.e. Use it or Sell it)	Shipper	Original purchaser loses optionality, and this depends on the nomination period. Shippers with within day flexibility needs will have to buy capacity again. Best suited to short term release; and fairer than a firm "use it or lose it" model, where the shipper loses his original rights, while the TSO gains new revenue.
Release additional firm capacity above the sold out baseline	TSO	TSO risks perhaps mitigated by incentive mechanisms. This measure could be used for day-ahead sales or longer periods depending on the TSO risk appetite; in case physical congestion is reached, TSO have then to buy back rights or to deliver gas from other sources (e.g. from the balancing market)
Additional firm sales based on utilisation levels	TSO	Where there is a persistent level of low utilisation, TSOs should have incentives to offer as much capacity as possible back to the market as a firm product, rather than selling interruptible back at near firm prices.
Capacity release program	the original capacity owner	Original owner loses rights, based on competition reasons. This approach is best suited to developing markets and may allow longer term sales
Reallocation of capacity	TSO and shippers	TSO and shippers, as moving capacity between system entry points may mean less sterilised capacity, but could reduce overall capacity levels. Mechanisms may also be complex and not suited to developing markets.

For interruptible capacity release

Possible measure	Revenue	Risk
UIOLI (= Use it or Lose it)	TSO	Buying shipper subject to curtailment from operational issues or re-nomination of firm rights by firm capacity holder. Suits short term (day ahead).
Extra interruptible sales above the physical available capacity	TSO	Transparency needed. May suit short to medium term depending on risk levels.

Market response

Possible measure	Revenue	Risk
Secondary market trading	Shipper	Low if there are no unreasonable legal hurdles and if trading charges are not excessive.