

## **1 EXECUTIVE SUMMARY**

### **Introduction**

- 1 The London Metal Exchange (LME) commissioned Europe Economics to “Prepare an independent assessment for the LME of whether the current requirements in the LME warehouse contract for rates of physical delivery out are satisfactory.” The Steering Committee for the project comprised LME Chief Executive Martin Abbott, Deputy Chief Executive Diarmuid O’Hegarty, and Head of Physical Operations Robert Hall.
- 2 Current LME regulations require approved Warehouses to be able to deliver out a minimum tonnage per day, which is 1,500 tonnes per day for Warehouses with space of 7,500 square metres or more (currently all but three Warehouses), 1,200 tonnes for 5,000 square metres and 800 tonnes for 2,500 square metres. In 2010 there were a number of complaints regarding delays to the delivery out of metal and the loading out process more generally.
- 3 This report covers the background to the emergence of long queues and the context of current regulations, in addition to an analysis of the problems that long queues cause and potential solutions. Broader issues surrounding allegations of manipulation and the entrance of large financial players are beyond the scope of this report.
- 4 The foundation of the study was information gathered in a programme of 46 interviews, including visits to 12 Warehouses in Europe, Asia and North America. The focus of the study is the aluminium market.

### **Background**

- 5 Between March 2009 and August 2010 18 complaints were made to the LME about delays in loading out. Ten informal complaints were made in the period between March and April 2009 concerning Warehouses in South East Asia. Of these, only four related directly to delivery out and none was indicative of any systemic problem.
- 6 Eight complaints, one of which was made formally, related to Warehouses in the United States and, with the exception of one informal complaint in July 2009, were made in the period from February to June 2010. Three of the informal complaints concerned the performance of the Warehouse delivery out system as a whole. The formal complaint alleged that a Warehouse in Baltimore was not scheduling deliveries sufficient to achieve the 1,500 tonne per day minimum.
- 7 In the course of our consultation, stakeholders generally agreed that some queues were an inevitable part of the system, and that short queues did not pose an important systemic problem. Long queues were regarded as damaging, on the grounds that they inhibited arbitrage between the LME and the physical market, increased physical premiums and damaged the reputation of the LME.

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- 8 There was a general belief that the loading out obligation could and should be increased, though this was resisted by warehousemen. It was widely acknowledged that the loading-out rate should be considered in relation to the level of stocks in a Warehouse.
- 9 Although there was some interest in the idea of rent rebates, they were not seen as in themselves an effective way of reducing queues or of addressing their effect on the price discovery mechanism.

## **Problem Analysis**

- 10 The longest queues that occurred in 2010 were of an unprecedented length, but were confined to limited to a small number of warehouses. Nevertheless, due to the large number of stocks in particular locations these queues affected approximately one fifth of the LME's aluminium warrants.
- 11 Queues may inhibit the LME's price discovery process by preventing arbitrage. Queues make arbitrage more costly because rent must be paid while metal is in the queue, because the length of queue is uncertain, and because of other uncosted inconvenience. In effect, this lowers the value of warranted metal in relation to the value of physically delivered metal.
- 12 This may be damaging to the price discovery process because this reduction in value is a result of warrant cancellations and LME loading out requirements, rather than a result of developments in the physical market. Changes in the LME price will then be related to changes in queue lengths, as well as to physical supply and demand.
- 13 While the effects of a short queue are likely to be trivial, long queues may have a significant impact on the value of warranted metal. This is of particular concern because any warrants whose value is significantly lowered will be used to settle Exchange contracts, and thereby set the LME price.
- 14 It is for this reason that persistently long queues are especially concerning. With sufficiently large stocks, which need only leave the Warehouse at a rate of 1,500 tonnes per day, the Warehouse's revenue may allow it to pay high enough incentives to maintain or increase its stocks, and these warrants, being both the most numerous and the least valuable, will come to dominate the settlement of contracts on the Exchange.
- 15 These arguments are supported by empirical evidence, which shows that premiums have increased in conjunction with the emergence of long queues, and that spreads have moved in conjunction with changes in the length of queues. They are also supported by the observations of some stakeholders that premium levels are greatly in excess of the cost of arbitraging between locations.
- 16 The origins of the current situation can be traced to macroeconomic developments. The collapse in demand that followed the financial crisis of 2008 resulted in a large surplus of physical metal and a consequent expansion in the LME's stocks. In response to the demand contraction monetary policymakers lowered interest rates.

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- 17 Although it was frequently alleged that finance deals constrained the supply of warrants and decreased liquidity on the Exchange, this argument is implausible because any shortage of warrants would result in a backwardation and either result in the creation of new warrants or induce other warrants out of rent deals. Nevertheless, finance deals do affect the distribution of cancellations among warehouses, resulting in a concentration of cancellations in those Warehouses that do not engage in finance deals.
- 18 When large amounts of metal are financed, movements of metal on and off warrant will be governed by changes in spreads, as institutions try to cut their cost of carry by moving metal off the LME during a prolonged contango, and put metal onto warrant in order to sell cash contracts during a backwardation. Given the large positions that some financial institutions can take, this had led to the large volumes of cancellations that are a necessary condition for the emergence of long queues.
- 19 However, large cancellations are not a sufficient condition for long queues. Rather, such queues result from large cancellations in particular Warehouses, each of which need not load out more than 1,500 tonnes per day. The potential for this to occur is a result of the accumulation of large stocks in individual Warehouses. The fact that the largest Warehouses can allow their Warrants to float at full rent makes such cancellations all the more likely.
- 20 Although it was argued that an increase in physical demand would reduce the size of the largest LME warehouses, thereby reducing queues, the amount of metal in the largest would take more than two and a half years to empty. Moreover, given the size of incentives that a large Warehouse can afford to pay, there is no reason to believe *a priori* that these Warehouses would not be able to maintain their stock levels. Indeed, as physical demand picked up and cancellations occurred for physical consumption, it is conceivable that queues could worsen.

## Policy Options

- 21 The LME's five main policy options to address this issue comprise: capping particular locations; increasing the loading out requirement for all Warehouses; increasing the loading out requirement for larger Warehouses, in order to eliminate the critical mass feature of current regulations; extending the current loading out table proportionately beyond 7,500 square metres; and inviting Warehouses to offer rent rebates.
- 22 The capping provision in the LME's regulations was not envisaged as a routine method of controlling stocks and on the one occasion it was used, this to address the accumulation of a large volume of metal in a location on the West coast of the United States, which was seemingly immobile due to a lack of demand. Moreover, the idea of setting an absolute limit to the level of stocks in a location goes against the principle that the LME's stocks should expand and contract freely in order to reflect the physical market.
- 23 While some stakeholders advocated an increase in the loading out requirement for all Warehouses, it was clear that this was already at the limit of what was consistently

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achievable for some small Warehouses. Indeed, 2,000 tonnes per day was seen as the limit of what most Warehouses could consistently achieve.

- 24 A 2,000 tonne per day loading out rate would not succeed in eliminating long queues and, on the basis of the observed pattern of cancellations, would still have left queues of up to 54 days in 2010. Moreover, since queues are confined to a small number of Warehouses, this option would impose an unnecessarily large operational cost (an estimated upper bound to which is \$66.4 million in 2010) on the whole Warehousing industry, which would probably be passed on to warrant holders in the form of increased rent or FOT charges.
- 25 Implementing a loading out requirement of 1,500 tonnes per 300,000 tonnes of stock would affect many fewer Warehouses than a general increase, and the upper bound to its operational cost to the whole industry is calculated as \$9.3 million for 2010. However, while it would probably succeed in eliminating indefinitely long queues, it would still leave open the possibility of long, albeit transitory, queues, when Warehouses experienced a sudden large cancellation.
- 26 As this option would make it more difficult for the largest Warehouses to maintain their stock levels while floating their metal at full rent, it is likely that it would result in a more even distribution of cancellations across Warehouses.
- 27 Eliminating all long queues would require much more stringent loading out requirements than either an increase to 2,000 tonnes per day or a requirement of 1,500 tonnes per day per 300,000 tonnes of stock. Current requirements for Warehouses whose authorised space is below 7,500 square metres constrain queues to 19 warehouse days, on the assumption that one square metre of space may store three tonnes of metal and if all warrants were cancelled. (It should be noted that only three Warehouses' space is currently less than 7,500 square metres.) Rounding this up to 20 days would imply a loading out requirement equal to stock level divided by 20.
- 28 Given current stock levels, the loading out requirements that such a regulation would imply are beyond what is physically practicable. For example, at 1,000,000 tonnes of stock (less than the current maximum) a Warehouse would have a loading out requirement of 50,000 tonnes per day. Moreover, even if such amounts were physically possible, the extra operational costs involved (estimated at a minimum of \$255 million for 2010) apply across so many Warehouses that they would result in large increases in rent and/or FOT charges, which the Warehousing system, as presently configured, might be unable to support.
- 29 Offering rent rebates equivalent to half rent for metal caught up in queues between 10 and 20 days, and zero rent beyond 20 days would cost the Warehousing industry as a whole \$14.9 million in 2010, on the assumption of 40 cents rent and the observed pattern of cancellations. However, there are some doubts about the feasibility of this option.

## **Recommendations**

- 30 We do not recommend that the LME take no action, as the present loading out regulations are permitting queues of an undesirable length.
- 31 A universal increase in loading-out requirements would impose large costs across the Warehousing industry without eliminating long queues.
- 32 Rent rebates could address some aspects of the problem, though they are subject to significant feasibility issues which could hamper their effectiveness. We therefore recommend that this option be subject to further discussion.
- 33 A loading out requirement of 1,500 tonnes per 300,000 tonnes of stock would address the most acute problem, the persistent queue in a critical mass Warehouse. Moreover, this would be done without imposing a large burden on Warehouses.
- 34 Although this option also improves on current regulations by putting an upper bound to queue lengths, at 200 days this is still longer than desirable for the LME system. It is therefore recommended that the requirement of 1,500 tonnes per 300,000 tonnes of stock be formally reviewed at intervals of 6 months, and the level of stocks to which the 1,500 tonne delivery requirement applies be reduced should persistent and lengthy queues continue.