单方错误与算法交易

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新加坡的错误原则

新加坡关于单方错误的法律由*Chwee Kin Keong v Digilandmall*案确立。上诉庭在该案中裁定：如一方当事人明知另一方对合同的基本条款存在错误，该合同在普通法上无效；如无错误一方对该错误具有推定知悉，且其行为有违良知，则该合同可在衡平法上予以撤销。[1]Quoine主张，B2C2以市场价格250倍成交的交易正是此类错误的产物。难点在于，在订立合同的那一刻，双方都没有人的意识参与。双方均通过确定性算法进行交易，这些算法在无人干预的情况下执行其预设程序。

上诉庭多数意见认为，在此情形下，相关的主观状态是程序员的主观状态，评估时段从编写程序之时起至合同成立之时止。问题在于：程序员在编写算法时，是否知道或应当知道，以相关价格发出的要约只可能被处于错误之中的一方接受。第二个问题是，该算法是否被设计用于利用此类错误。[2]B2C2的程序员设定了每个以太币兑10个比特币的深度"失效保护"价格，以确保在市场数据失灵时，其算法绝不会以近乎零的价格卖出。他并不知道Quoine的平台会以一种使这些订单得以成交的方式发生故障。因此，错误抗辩在普通法上因缺乏实际知悉而不成立，在衡平法上则因缺乏推定知悉和有违良知的

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行为而不成立。[3]Mance IJ（国际法官）在此问题上持异议。他认为，法律应当考察的是，一个处于当事人地位的合理人在合同成立时会如何理解。按此思路，在平台明显故障的情况下以市场价格250倍成交的交易，因错误而归于无效。[4]

对平台和交易者的影响

多数意见即为新加坡的现行法律，由此产生三项后果。第一，除非平台条款以明确措辞赋予其该项权利并已纳入合同，平台不得以价格荒谬为由撤销已执行的交易。第二，交易者的算法因另一方故障而获利的，除非该算法是为利用错误而编写，否则交易者可保留所获利润。第三，程序员的设计选择，包括有记录的失效保护价格，会成为诉讼中的证据。因此，在撰写代码注释和设计文件时应考虑到这种可能性。*Quoine*案之后，各平台纷纷参照传统交易所的做法，引入明确的“错误交易”或“明显错误交易”政策：凡成交价超出参考价格一定区间的交易，可在短时间窗口内予以取消。此类条款如已妥善纳入合同，即可执行。这类条款将故障风险从平台转移至故障交易的对手方。交易者在选择交易场所时应了解这一点。

示例

一家新加坡自营交易公司在一家持牌交易所运行做市算法。新加坡时间03:14，该交易所的价格数据源中断九十秒。该公司的算法按照其失效保护逻辑，以市场价格0.1%的价格从一名零售客户处买入400个以太币；该零售客户的止损单在订单簿急剧崩塌时被触发。该交易所的条款在开户时已获接受且未经修改，其中一项条款允许在三十分钟内取消成交价偏离参考价格20%以上的交易。交易所取消了该交易，该公司无权索赔。如果条款中没有此类条款，根据*Quoine*案，该公司有权保留这些以太币，除非零售客户能够证明该公司的程序员设计算法的目的就是利用数据源故障。零售客户的救济途径是：就交易所在运营止损机制时违反其自身义务的行为，向交易所追究责任。

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注释

1. *Chwee Kin Keong v Digilandmall.com Pte Ltd* [2005] SGCA 2 第[30]–[80]段，即激光打印机标错价格案。 ↩
2. *Quoine* [2020] SGCA(I) 02 第[97]–[99]段及第[103]–[109]段。 ↩
3. *Quoine* [2020] SGCA(I) 02 第[128]段。 ↩
4. *Quoine* [2020] SGCA(I) 02，Jonathan Mance IJ就错误问题发表的异议判决。 ↩

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