



Comment

Patenting Black Scholes – views from the edge of a black hole

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Peter Langley, CEO at intellectual property consulting firm Origin, and consultant to Sidley & Austin, London, argues that in the future the owners of patents to financial products will control financial services

Innovative financial products, implemented on computer, are now regarded as patentable in the US. Almost any commercially useful financial innovation, be it new trading system functionality, new financial analysis algorithms, new risk management software, in fact any of the computer implemented features or systems that are the key drivers for competitive advantage in finance, can probably now be patented in the US. As an example, if the Black-Scholes option pricing model was being developed today, its originators could probably patent a computer programmed with the model. That would for all practical purposes give them ownership and control of whenever that model was used on a computer, with the potential for realising extravagant commercial gains through licensing and litigation settlements. Importantly, patents enable their owners to prevent competitors using the same innovations, even when independently developed by those competitors and even if those competitors knew nothing about the patents when developing their own products.

IT specialists, economists, financial analysts, and banking lawyers will be faced with many complex issues to resolve as a matter of priority (as though Y2K was not enough). Just how do financial institutions exploit and defend against a potential paradigm shift in power? For example, will now small, but potentially high growth entities that can generate and exploit finance patents own future key finance sectors, appropriating power from financial institutions? Should financial institutions start investing in their own patent portfolios? Should major financial institutions put in place broad patent cross-licensing structures with other major financial institutions? What lessons can be learnt from the experience of other industries recently exposed to patents, such as the software industry?

The law has been clarified because of a judgement by the US Court of Appeals for the Federal Circuit on 23 July 1998. The litigation related to the patenting of a financial product in many ways as potent as the hypothetical proposal of patenting the Black-Scholes model. It involved Signature Financial Group's patent to a computer system (given the trade mark Hub and Spoke) that is one of the most significant innovations (perhaps the most significant innovation) in the multi-billion dollar US mutual fund scene. The Hub and Spoke system, in the language of Judge Giles Rich: "essentially allows several mutual funds, or 'Spokes', to pool their investment funds into a single portfolio, or 'Hub,' allowing for consolidation of, inter alia, the costs of administering the fund combined with the tax advantages of a partnership. In particular, this system

provides means for a daily allocation of assets for two or more Spokes that are invested in the same Hub. The system determines the percentage share that each Spoke maintains in the Hub, while taking into consideration daily changes both in the value of the Hub's investment securities and in the concomitant amount of each Spoke's assets. In determining daily changes, the system also allows for the allocation among the Spokes of the Hub's daily income, expenses, and net realised and unrealised gain or loss, calculating each day's total investments based on the concept of a book capital account. This enables the determination of a true asset value of each Spoke and accurate calculation of allocation ratios between or among the Spokes. The system additionally tracks all the relevant data determined on a daily basis for the Hub and each Spoke, so that aggregate year end income, expenses, and capital gain or loss can be determined for accounting and for tax purposes for the Hub and, as a result, for each publicly traded Spoke."

It is a significant business innovation, but not rocket science. State Street Bank & Trust Co., holding over 40% of the US custodian market for multi-tiered partnership fund financial services, failed to license the Signature patent to Hub and Spoke and opted to seek to have the patent declared invalid. Although they won at first instance, they lost on appeal.

Traditionally, banks invest heavily in innovation, and protect it through trade secret laws. Competitors would gradually (sometimes rapidly) erode the competitive advantage by replicating the innovations. Patents are potentially so useful to financial institutions because they can entrench competitive advantages gained through expensive innovations. Some US banks, notably Citibank, already have well established patenting programmes. But they are in the minority.

UK and European law is in many ways not as permissive as the US, but for practical purposes, what happens in the US courts shapes the global financial industries, not simply because of the size of the US markets, but because significant innovations will almost invariably be implemented by financial institutions in some form in the US, opening them up to US patent litigation and the new standards that are now being applied there. And US damages awards in patent litigation can be punishing — US\$100million in damages is not uncommon. The losers in this new era of intellectual property are likely to be those who ignore the dangers of patent litigation or fail to devise effective defensive strategies. But there will be some dramatic winners. ■

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