

## PROGRAM MERCHANT

Merchants and businessmen often make money by buying a commodity cheaply in one location and selling at a higher price in another location. According to Adam Smith, author of *The Wealth of Nations*, this practice serves to help bring prices closer to their “true value.” Assuming that the market price of goods is known everywhere and that the cost of transport from one region to another is able to be calculated, it should be possible to see if a commodity could be bought, moved and sold profitably in advance. The formula is based on the price of the commodity in the target location minus the price of the goods in the source location minus the cost of transport. If necessary parameters are known, it would be simple enough to compute automatically where goods should be bought and sold for the highest profit. That is what we attempted to do.

The first task was to acquire the prices for several different physical goods in regionally separate locations. That was done via using the ACCRA city Cost of Living Index for one year. It provided 38 suitable goods for analysis in 310 different cities.

The next task was to find shipping costs for bulk goods from one city to another. This was accomplished by using the online less-than-truckload freight calculator provided by UPS (with the rate estimated using shipments of 10,000 lbs). Rates were retrieved from the site using the iMacros program.

The last step was to compute the potential profits for each good using the formula above via Open Office and analyze the results.

The program succeeded in its primary goal of finding profitable city pairs. All of the items studied yielded at least one profitable city pair. In some cases the profits were negligible, but in others the potential profit proved considerable. The single most profitable pair was buying Lipitor for \$102.95 in Hays, Kansas and shipping it to Providence, Rhode Island selling it for \$142.09.

The study showed that while the concept has promise, it is not without considerable practical problems. It was difficult to find proper regional price data that the Merchant program needs to run. It was also a major problem to find proper shipping information, as most freight companies hold their shipping calculation algorithm to be a business secret. Lastly, the final computations took over four days running on three computers simultaneously (handling over three million entries). The first two problems could prove formidable, but it may be possible that the latter could be reduced using a compiled coding language rather than Open Office Macros.

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