PERSONAL COMPUTERS AND PORTFOLIO MANAGEMENT

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It is now over thirty years since the first computers were brought into operation. Much has been promised on their behalf but many would feel that little has been delivered. Many firms have had bitter experience in installing their own computers and finding them expensive, labour-increasing and ineffective. In the City now it is the bureau services, Centrefile, Datastream, Reuters, Dow Jones, Extel, etc., and the Stock Exchange itself that dominate the mainstream useage of computers.

These are visible to dealers and portfolio managers either through their office clerical services, contract notes, etc., or through their front-office information services, stock price screens and so on. However, these services tend to be specialised and expensive, geared up to the major requirements of particular large-scale users. They satisfy the requirements of brokers and institutional fund managers, but the smaller-scale user finds them too expensive and, being himself less specialised, finds also that no one service gives all the facilities he requires.

In recent years revolutionary advances in computer hardware and software technology have brought down costs to levels where it has become economically feasible for small organisations to have their own computers. Associated with the reduction in costs have come other factors making this a reasonable proposition: the machines are small, quiet, have low heat output, and may not require air-conditioning, so that they may be tucked away in the corner of a small office; display units and printers have dropped in cost and improved in quality; operational simplicity has been greatly improved so that skilled specialist computer staff are no longer required.

These new computer systems have been termed personal computers because they allow for close interaction with the end user. They have been publicised as "computers in the home", "hobbiest computers", etc., but by far the greatest impact of such machines so far has been in small businesses. The power of these machines is comparable to that of computers one hundred times their size and cost a decade ago and they are serious business tools, not toys or calculators.

Currently, the use of such machines in the City is rare because the companies who supply them do not have specialist knowledge of the requirements, and because the bureau services who have this knowledge are geared up to the use of much larger machines. Over the next few years we may expect to see dramatic changes in the pattern of use of computing in the City, however, based on these personal computers and City Computer Systems have already installed a small number of such 'personal' computers in the City of London

As an indication of the need for such systems, let us take as an example a portfolio manager for a Building Society dealing primarily in the London money market. He needs to keep track of the state of the market, current gilts prices and yields, C.D. and deposit rates, what stock is on offer and what is being bid. He will also be interested in general financial news, foreign money rates, etc. These are his information service requirements.

The portfolio manager also needs to keep track of his fund's situation and requirements. How much has he in various forms of investment, with what borrowers, at what maturities, against what potential requirements, and so on. He needs to know how individual deals will affect these balances and proportions, and also needs to keep track of the deals as he does them. These are his portfolio accounting requirements.

Periodically, he will need to value his fund for presentation to his management, and also to obtain other overall performance measures such as rate of return and average life of investments. He will require various evaluations of the fund and his performance in managing it, both for his own feedback and also again for presentation to those he represents. He will also be conscious personally of the possible effects of various market movements on individual securities and his overall portfolio. What he would like to have is some future valuations of the portfolio under different possible scenarios, e.g.interest rates slipping by half per cent or the yield curve steepening in some way. These are his portfolio evaluation requirements.

Most of these facilities are available on at least one of the bureau services although it would take access to several to cover what has been described and it would still be incomplete. However, all of them can now be provided on a single very small machine that resides locally in the portfolio manager's office with a telephone link to one or more information services.

A minicomputer with "floppy disc" data storage (magnetic discs the size of 45rpm gramophone records) can provide a complete information and portfolio management service for the whole range of activities discussed. There is virtually no limitation in either computing power or storage capacity – a single floppy disc can hold complete contract note information on some 8,000 deals – contract notes and valuations are themselves computed in the time it takes them to be printed out, from seconds for a contract to minutes for a valuation depen-dent on size of portfolio.

A typical configuration for such a personal computer would be: the computer itself, tucked away in a small box; a visual display screen and keyboard giving rapid access to data and allowing simple interaction with the computer; four floppy disc units – one holding programmes, another data on securities, another dealing transactions, and another actual portfolios; a data link allowing the machine to access information services over a telephone line by dialling up the one it required.

Such a system can offer to the portfolio manager a range of services including –

(1) Price, yield, money rates, etc., information services – obtained by the system linking into a bureau, e.g. Dow Jones or a stockbroker;

(2) Communications with brokers – by the system linking in to the brokers' computers – in this way the broker could send analytic and market information and advice to all, or selected, clients;

(3) Limit-minding based on prices and yields from the information services;

(4) Yield calculations for individual securities or lists of securities;

(5) Yield curve analysis giving deviations from a family of yield curves under different market models;

(6) Historic trend analysis based on prices, yields, price ratios and yield differences over a period, giving switch recommendations.

(7) Contract note calculations including exact buying or selling yields;

(8) Switch recording and analysis;

(9) Transaction analysis showing deals done over a period, commission paid to particular brokers, etc.,;

(10) Portfolio maintenance showing deals done in particular securities and classes of security, holdings, etc.;

(11) Portfolio valuation based on prices from information services or entered prices.;

(12) Portfolio life, rate of return, etc., evaluation;

(13) Standard document production relating to portfolios, e.g. Building Societies AR11;

(14) Future analysis of portfolios based on market movement assumptions;

(15) Analysis of hypothetical portfolios using the above and making changes in dummy portfolio.

Note that since all these services are on his local computer the portfolio manager has no problems of security. If he removes the floppy discs and puts them in a safe no-one can access the data on them.

Finally, in presenting this glimpse of the (near) future one must answer the key questions about cost and ease of use – are such systems within reasonable budgets and can they be driven by fund managers with no specialist computer training? The answer to both is an emphatic "yes".

A system as described above costs from about £20,000 including the software packages for portfolio management. The links to information services if required would cost up to about £3,000 a year for a full range of information – substantially less for limited access to, for example, just Gilt prices.

Ease of use is the remaining key to the success of such systems. Despite what one often sees, experience over the past decade has shown that it is possible to use computers to make life simpler rather than more complex! There are a variety of common sense techniques for this, e.g. prompting for data as required and using data formats that are natural for the user rather than convenient for the programmer. One important facility is that the user should be able to type a question mark, ?, at any time and get back from the system a list of the options open to him. Figure 1 shows a user entering details of a contract into a portfolio management system and posting it to transaction and portfolio records. The user input is underlined to make it stand out – underlined blanks are where the user just pressed the RETURN key because he was satisfied with the data. Note how the system does most of the typing; prompts the user when it needs input; responds to a question mark with a list of options; and gives helpful information, e.g. in response to an error.

In conclusion, I would predict that personal computers will have a big impact in the City over the next few years. They offer the decision makers rapid personal access to tools which enable them to do their jobs more effectively. They avoid virtually all of the problems associated with the computers in the past. Particularly the need to go through computer specialists to use them. These new systems are totally under control of those who have the "need to know" and the skills to use that knowledge. This is a big step forward in the effective use of computers.

Figure 1 Interaction with a Portfolio Management System

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Portfolio Managment System VIC     Mon 9–Apr–79  09:01:11

Next working day   Tues 10–Apr–79

Income tax 34.0000     Gains tax 30.0000     VAT 8.0000

PMS:?
E  enter), R (remove), L (list)
S  (stock reference by name – number along if by number)
C  (calculate yields), D (dealing calculation)
B  (bond calculations)
F  (file backup)
K  (kill PMS – back to BAS:)
PMS:D
Action (BSIP):?
B  (buy), S (sell), I (invest)
P  (post to portfolio)
M  (money on deposit)
Action (BSIP):B
Stock(s):GAS
 38:GAS    :Gas              3    90/95    1–May
Nominal (000's):250
Price:50 1/8
Consideration: 125,312.50 :_
Date of deal: Mon 9–Apr–79 :_
Settlement day: Due 10–Apr–79 :_
Type (–XADNYSFCBP) : VS :?
Type of deal: X (xd stock), A (A stock)
D  (commission divisible), N (net bargain)
S  (stamp duty payable), V (VAT payable)
F  (free closing)
C  (continuation basis for commission), B (based on consideration for shorts)
P  (pro rata different nominal for commission)
–  before letter means 'not', e.g. –D is not divisible
Type(XADNVSFCBP) : VS :_
Dealer : FH
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Broker : LM
Code : HAL
Bought Gas 3     90/95 on Mon 9–Apr–79 Settle  Tue 10–Apr–79
    Amount = 250,000.00  Price = 50  1/8 Consideration = 125,312.50
     0.6250% on 2,000.00  =  12.50  0.2500% on 12,000.00  = 30.00
     0.125% on 111,312.50 = 139.14
    Total commision = 181.64  VAT at 8.0000%  = 14.53  Stamp = 0.60
TOTAL = 125,509.27
    Net price  =  50.203708  50.203708 (–acc)     50.203468 (–acc–stamp)
    Yield  =  8.843  (flat = 5.955  net = 6.448  at IT = 34.0000%  GT = 30.0000%
    Dealer:FH     Broker:LM     Code:HAL
OK to store this bargain ?  : Y
DEAL:Apr 79 : 1
Post to portfolio(s)  ? : Y
Portfolio:WMHG
Portfolio name 1 to 3 characters only (? for help)
Portfolio:WHM
No previous deals in GAS     for WHM OK? ; Y
Amount to post (000's) : 250.00000  :_
Consideration : 125,509.27  :_
Contract stamp : 0.60  :_
Code: HAL   :_
DEAL:GAS.WHM:1     (Apr 79:1)
    Bought on Mon 9–Apr–79 for settlement Tue 10–Apr–79
    Gas 3   90/95     250,000.00 at 50.203708     for            125,509.27
      Stamp 0.60  Commission 0.00  VAT  0.00      TOTAL      125,509.87
      Net price 50.203948  50.203948 (–acc)  50.203708  (–acc–stamp) Yield 8.842
      Dealer:FH     Broker:LM     Code:HAL
OK to post this purchase  ?:Y

PMS:
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