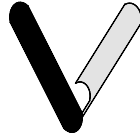


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POW! Version 1.20 Summary of New Features

0. Introduction

We are pleased to announce the release of the new version of POW!. As well as introducing several new modules, and a large number of enhancements, we have devoted a great deal of time to tracking down bugs in our own system and working around difficulties imposed by the operating environment, with a view to ensuring that the new POW! is as reliable as possible.

With the same thought in mind, and to enable us to handle any remaining bugs as quickly as possible, we will be replacing the installation files on our website with new builds as frequently as required and normally without notice. To enable the user to take advantage of this with minimal disruption and effort, we have completely overhauled the installation process, so that it can now be conducted in a few minutes - see section 2 below.

Such new *builds* will NOT incorporate enhancements. The latter will only appear in new *versions*, which will always be flagged as such and notified to subscribers. The file currently on the website is POW1.20.3; 1.20 is the version, 3 the build.

To further speed up the process, POW! documentation and examples will be installed via a separate file.

For more information, please see the installation instructions InstallingPOW1.20.pdf which are being sent to you separately, or contact us on:

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or office@occamsrazor.com

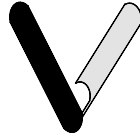
1. Modules available

The following Modules are now available and their new features are described in further detail below:

Frontier	Markowitz optimisation
Toolbox	Risk matrix calculations
Bayes	Reverse optimisation, Black-Litterman and other Bayesian techniques
Robust	Bootstrapped optimisation and other advanced features
Risk	Customised portfolio risk/return analysis and reporting
Empirical	Analysis of time-varying risk, return and other moments + portfolio simulation
Mandate	Simultaneous optimisation and risk analysis of multiple portfolios
NEW! Backtest	Backtest Markowitz and Bootstrap portfolio strategies (beta-testing)
NEW! Capture	Capture data from online/other sources for use in POW! (under construction)
FREE! VarPf	Calculate portfolio risk statistics using custom Excel functions
FREE! Directory	Create and use a directory structure for Excel worksheets similar to that provided by Windows Explorer for files (beta-testing)
+NEW!	

A final section covers three categories - **System, Testing and Utilities** - which are not modules but are used for grouping functions.

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2. All modules

Security	To address heightened sensitivity to security issues, POW! is now digitally signed by Verisign.
Installation	The installation process has been greatly streamlined and now takes only a minute or two. More information on this and the new security arrangements is available in InstallingPOW1.20.pdf
New Menu	All POW! software is now handled through a common menu structure, with icons for the most commonly used actions
Functions	Over 100 of POW!'s "bridge functions" are now available in appropriate categories via the main menu, Insert Functions. These cover areas such as risk calculation, Black-Litterman, optimisation and backtest results, and principal components. More detailed documentation will be available shortly.

3. Universe

Stand-alone	The universe and portfolio construction process is now handled by what is effectively a separate sub-module shared by POW! Frontier, POW! Risk and their respective offshoots
Resize	Assets, factors and constant groups can now be added to and removed from universes at the click of a button
Reinitialise	Universes can now be reinitialised to remove old data - useful when your universe may vary in size from one month to the next, and you wish to ensure that old data is cleaned up.
Round lots	See Robust
Linear Risk	See Robust
Time-series	Sheets may now be inserted for any combination of weights, total, factor and residual observations. Double-click handling has been enhanced to facilitate changes
Periodicity	More detailed handling of periodicity is now possible - see Frontier below
U.Specific)	Multiple risk and return columns can now be added, eg one for historic, one for forecasts. Reference columns, skewness and kurtosis can also be included
U.Factor)	

4. Frontier

Periodicity	The following frequencies are now distinguished:
Model	at which the risk model is recorded in U.Main as having been constructed, and at which it should therefore be reassembled (typically monthly or weekly)
Universe	at which the returns and risks are displayed (typically annual)
Rebalancing	at which the portfolio is rebalanced. Especially important in the context of transaction costs. (typically monthly or quarterly)
Output	at which the results are displayed in a particular template (the portfolio counterpart of universe periodicity) (typically annual)
Shortfall	at which shortfall return is expressed (typically annual)
Target	at which an upside target is expressed (may be 3 years or more)

See also under Backtest.

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Relativity	In Pf.Cov the user may inspect the benchmark-relative correlation/covariance matrix as well as the absolute. He may also elect in Pf. Constraints Settings Optimisation to use the relative covariance matrix (with absolute weights) for "TBM" optimisation in addition to RBM optimisation (relative weights with absolute covariances) ¹ .
Gross/Net	Frontier results are now available gross or net of transaction costs (and linear risks if any - see Robust). Where the output periodicity (eg annual) does not match the rebalancing periodicity (eg 4x pa), returns etc may be calculated as for example: quarterly return net of costs, all annualised ("constant proportion") gross return annualised, net of costs (buy and hold)
User points	Additional hypothetical portfolios can now be inserted in a results template or chart for comparison with the frontier. Also useful for plotting individual assets against the frontier.
Resize	Results templates and charts can now be resized manually or automatically to reflect changes in Pf.Holdings

6. Toolbox

Large models	Multiple sheets can now be handled where models are too big to fit on a single sheet
Time-series	U.ATS and similar frontier sheets are now automatically revised by Toolbox when time-series are output.
Input formats	Handling of data in reverse order and rows has been enhanced
Functions	Along with other modules, Toolbox is now partly accessible in Excel function form (see 2 above) ² .

7. Bayes

No major	changes in this version, but a version permitting combined Bayes and Bootstrap models is being tested. It is also now possible to combine Bayes with Backtest.
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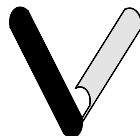
8. Robust

BS Types	In addition to the balanced bootstrap, with or without weighting, regular and jack-knife are now available
Nebula	For those keen to inspect individual bootstrap results, a nebula class (analogous to a slice in Backtest, qv) can be made available. However the memory requirements are considerable, and more work needs to be done before this can be released in the ordinary way
Round lots)	Robust users can add a linear risk column and 1 or more round lot columns to
Linear risk)	the Universe in U.TX. The linear risk term can be used in conjunction with round lots to permit more realistic portfolio construction at the asset class level - useful where lot sizes are large (eg property) and/or portfolios are small (eg private client portfolios) ¹ ; a line showing portfolio linear risk can be inserted in results templates. Round lots will have further applications in due course.

¹ These concepts are discussed in greater detail in Robert Rice's paper "Realistic Portfolio Analysis and Construction in the Absence of Detailed Stock Level Data", available on request.

² Those who do not subscribe to Toolbox should note that for technical reasons it has not been possible to prevent some of these functions appearing when Insert | Function is selected, even though they are not in fact available to them.

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9. Risk

Titles	Report as well as column titles are now available
Hidden cols	Columns can now be hidden; useful for tailoring reports to audiences and hiding intermediate workings etc
Charts	Improved layout for (multiple) embedded charts Improved handling of complex charts
Assets	Individual assets (and subtotals) can now included independently of nesting
User sheets	Free format user design (.dsu) sheets can now be appended to 1 or more .dsg sheets to generate free format .wrk reports linked to .wrk sheets. This allows users an even greater degree of report customisation.
Actions	Perform multiple actions at a click of a button (create /print/ save/close many specified reports). Reports may be dynamic (.wrk), value (.val) or fully frozen (.fzn).
Error checks	Improved information on source of errors (eg illegal characters in asset names)
Periodicity	Note that in the present release, POW! Risk does not handle exactly the impact on return of some permutations of periodicity now available in Frontier and operators used by it in factor model construction; indeed in some cases no exact mapping is possible, due to cross-products. In general the numbers will correspond exactly to those produced by an additive model with annual periodicity, and will provide a good approximation for others. This issue will be addressed (to the extent possible) in the next release. Numbers for risk and other moments are not affected.

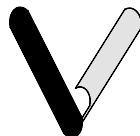
10. Empirical

Simulation	Can now exactly replicate the bootstrap samples used for Robust Optimisation
Types	All the methods available in Robust are now available in Empirical plus Jumbled, Cycled, Jackknife Cycled and Jackknife Jumbled.
Drawdown	Maximum drawdown is now available in any depth, with associated run-up if required, for 3 permutations: /I Individual The maximum drawdown for each asset, subtotal and total calculated individually. In this case the numbers will not "add up" /T Total The maximum drawdown for the assets are added up to give the subtotals, which in turn are added up to give the portfolio total, as if they all coincided - a "worst case" scenario. /P Portfolio The maximum drawdown is calculated for the portfolio as a whole, and the numbers shown for the individual assets and subtotals are those for the same period that went to make up the portfolio figure. The numbers will therefore add up, but are not the maximum drawdowns for the individual assets.
EVar	Empirical VaR can be calculated on 3 bases similar to drawdown - see above.

11. Mandate

M.Holdings	Additional sheets now available when you break the 120 portfolio barrier - the sky (or your PC's memory) is the limit !
M.PfData	Store static/semi-static portfolio data for use elsewhere (eg portfolio value, manager, benchmark type, paths for reports)

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Groups	Use static portfolio data to create dynamic portfolio groups - no need to define them beforehand
M.GData	Store data for static and dynamic portfolio groups for use elsewhere - eg group paths for reports
Export Actions	Export reports to a new or existing workbook for use by those without POW! Perform multiple actions as in Risk, but add the ability to Export and to operate on groups of portfolios.
Progress bar Scheduler	Useful when you have many portfolios to process Forthcoming

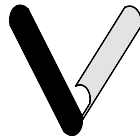
12. Backtest

Overview	Sits on top of Frontier (and Robust if required; can also be used in conjunction with Bayes); allows the testing of optimisation-based strategies over time. With Backtest you can:
Time-vary	Risks, returns and asset constraints at user-specified intervals (not necessarily regular)
Rebalance	At user-specified intervals and to user-specified weights (not necessarily regular in either case)
Reprice	Benchmark in line with the market, make arbitrary changes or keep it static at constant proportions.
View results	Period by period or cumulatively
Periodicity	In addition to the Frontier periodicities, Backtest offers: Cum. actual so 10% in period 1 and 20% in 2 shows as 1:10% and 2: 30% or 32% Cum. Standardised above shows as 1:10% 2: 15% or 14.9% Backtest frequency with which observations are made
Slice	Individual period frontiers can be viewed
Ex post	Statistics available as well as ex ante
Charts	Range available

13. Capture

Overview	The aim of this module, which is still in progress, is to allow users 1) to load or download asset price/return/other data from one or more sources such as Bloomberg, Micropal, Datastream etc setting preferences between them 2) to load portfolio holding and other data from in-house accounting systems and data bases 3) to integrate, collate and clean data from different sources, allowing for different dating methodologies etc so that is ready for use by POW! modules such as Toolbox and Mandate If you have particular needs which you would like to see addressed, please let us know.
Data	An interface has been built for testing purposes to Yahoo (a limited version of the Reuters database) and an ad hoc interface to Bloomberg, which will be systematised over the coming months. During this period, hedge fund and other databases will be added as time allows and users request - please let us know of your particular needs.
Holdings	An ad hoc interface has been built for a dump from the Pulse portfolio accounting system. Over the next few months this will be systematised. Links to additional systems will be added on request.

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Collation	A structure for collating multiple data-sources has been created as well as an ad hoc means of collating Bloomberg, IPD, EDHEC and TASS which will be brought within this structure.
Combination	Definitions and groups extracted from one data source can be used in extracting and collating data from other sources
Scheduler	Will be provided, as for Mandate

14. VarPf

Overview	This set of custom Excel functions allows the user to calculate basic portfolio risk statistics from a given risk matrix and set or sets of weights.
Availability	It has been available free of charge for a long time, to clients and non-clients alike, on www.occamsrazor.com ; for the convenience of clients we have now included it with the POW! installation.
Use	To insert a function, go to the main Excel menu and Insert Functions, then Select POW! VarPf and the function required.
Example	An example workbook (RevOpt.xls) documenting and illustrating the functions is available on our website or from us, and will be included in a future release of POW! Documentation.
Functions	RiskPf, VarPf, CovarPf, CovarAs, BetaPf, TrackPf, TrackAs

15. Directory

Overview	Create and use a directory structure for Excel <i>worksheets</i> similar to that provided by Windows Explorer for <i>workbooks</i> and other files. Currently being beta-tested and enhanced
Availability	Available free of charge to all clients and, once fully tested, to non-clients also
ToolBar	POW! Directory is accessed by a ToolBar which by default is clicked off. To enable it, right-click in the Menu/ToolBar area.
Document'n	For more information, see AN10Directory.pdf which will have been installed in your Documentation directory. <i>Installation is now handled by the standard POW! installers, so please ignore the stand-alone installation instructions given in the note, which are no longer required.</i>

16. System, Testing and Utilities

Overview	Those accessing the POW! bridge functions by selecting Insert Function from the main Excel menu will notice three extra categories which look like new modules. They are not actually modules, but are as described below:
System	Functions which POW! uses to construct POW! workbooks etc, but will not normally have any direct application by the non-technical user, and should be ignored unless you are sure you know what you are doing.
Testing	Functions which will eventually be released as part of the regular modules, but are still being tested and should therefore be used with caution. Feedback on them, as with all items being tested, will be welcomed.
Utilities	Functions written by OCCAM which perform useful tasks but are not specific to financial technology or any particular module.