

# Dynamic Risk Solutions

*Our track record speaks for itself. We have consistently delivered world-class solutions improving our clients' business performance and operational effectiveness.*

Dynamic Risk Solutions is a Moore Stephens' Consulting service that provides far greater insight into business planning than is available with conventional techniques.

Business planning involves making decisions now that could influence the future, or safeguard against factors out of your control. You might be interested in projected profits in the future, or perhaps cash flow, the level of finance to raise, the level of claims reserves to hold, whether or not to undertake a specific project, or the number of new employees to take on.

## The current method

Business planning is, by its very nature, forward looking and needs to forecast the future against a background of uncertainty and risk. Conventionally, business planning involves building a model to assess the results of an outcome, such as profits, finance requirements or perhaps the level of claims reserves. In that model assumptions are made about the future, for example sales levels, overheads, or interest rates. Having made likely assessments of each of these uncertain areas, the model will calculate the results that would arise if this combination of assumptions – the most likely scenario – were to occur.

But, because the future is uncertain, these assumptions may not be accurate. You therefore recalculate a number of scenarios. Each time you apply a new set of assumptions to the model, the result changes, producing a number of possible results, each derived from manually generated scenarios.

The problem is that although you have a range of possible outcomes, including a best and worst likely outcome, you have no idea either how valid any one scenario is, in terms of its combination of parameters (e.g. very high interest rates and very low investment returns), nor of the relative likelihood of any of the outcomes you have generated. The information on which you base your business decisions may therefore be inaccurate or misleading.

## Dynamic Risk Solutions

Dynamic Risk Solutions addresses these problems by using advanced statistical software to convert a conventional Excel spreadsheet into a dynamic, "living" model, into which uncertainty can be built.

Throughout the model, each element of risk or uncertainty is represented by a statistical distribution. A statistical distribution is a mathematical function, often highly complex, that represents a state of uncertainty. The distribution represents the full range of possible values as well as the likelihood of any given value occurring.

A distribution could, for example, be used to represent interest rates. This could be based on expert predictions of the future, an analysis of historic rates or a combination of the two methods. Distributions, different both in terms of shape and parameters, could be selected for each element of uncertainty within a model, and there is theoretically no restriction on the number of distributions that can be incorporated into each model. There will be occasions where the output of one distribution forms an input to (or parameter for) another distribution. Importantly, where you believe that there is a relationship between any two or more variables, for example interest rates and investment returns, or the weather and the number of umbrellas sold, you are able to build correlation factors into the model which reflect your assessment of the relationship, whether negative or positive and the strength of the relationship. For example, there may be a weak positive correlation between the amount of rainfall in a year and the number of car accidents (meaning that as rainfall increases, so car accidents tend to increase), or a strong negative correlation between interest rates and house purchases (as interest rates rise, the number of house purchases falls).

Once the model is in place, each distribution (or variable) is assigned a value, randomly generated according to its specified distribution, and taking into consideration any correlations or relationships which have been identified. This combination of newly generated values is comparable to a manually generated set of uncertain values, though it is not subject to human bias, and produces a bottom line result, say profits, which is a theoretically feasible outcome, based on a theoretically feasible set of variables (a scenario). A single result has the limitation, however, that it fails to indicate how likely the outcome is.

Dynamic Risk Solutions is therefore able to generate a large number of scenarios, say ten thousand. It is possible to indicate which outcomes you wish to monitor and then run the simulation. Ten thousand new sets of variables are generated, and the results of each, say profit, is monitored. This therefore produces ten thousand possible values for profit.

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### About Moore Stephens Consulting

Moore Stephens Consulting Limited is a leading provider of technology-driven business solutions and consulting services encompassing Enterprise and Extended enterprise (mobile) systems development, Business Performance Management solutions, portal development, technical architecture design and systems support.

Moore Stephens Consulting brings together significant business acumen and industry expertise with world class technology skills, working with organisations to provide real-world business benefit through appropriate and effective use of industry standard technology platforms.

Our track record speaks for itself. We have consistently delivered world-class solutions improving our client's business performance and operational effectiveness. Those clients are some of the biggest names in the financial services, insurance, media, retail/CPG, shipping and government markets and those organisations they can testify to the tangible benefits that our relationship has realised.

### Results from Dynamic Risk Solutions

In this way Dynamic Risk Solutions can produce a large number of values for profit, each calculated from a randomly generated scenario. Converting this data into meaningful statistics and graphs, you are able to see not only the average and most likely results, but the extreme results, the likelihood of any given result, the likelihood of the result falling in a given range, the value you have only a five percent chance of exceeding and so on.

Also produced is an analysis of the influence that each variable had on the results. This helps because it indicates which distributions have the greatest impact on, say, profit and if these distributions are within your control, it allows you to influence them.

### Decision-making and negotiation

The Dynamic Risk Solutions team can produce meaningful statistics, graphs and reports from the results generated, tailored to a client's specific needs. They can provide explanations so that you have a full understanding of the results, without a requirement for any knowledge of statistics. You will then have accurate, easily understood information about what might happen in the future, which will make decision – making an easier, more scientific process, and which will also enable you to know where best to divert attention and resources.

In situations where you are in negotiation, perhaps in trying to raise finance or to negotiate a reinsurance

premium, a well thought out model together with carefully selected distributions provides a very strong case. As long as the assumptions upon which the model is based are realistic, the results cannot be disputed, unlike traditional "What-If?" modelling where satisfying the other party that you've considered all likely outcomes can be a sticking point.

### Case studies

Moore Stephens Consulting has used Dynamic Risk Solutions to help a number of clients with risk analysis and business planning projects. Studies undertaken to date include an unconventional claims reserving exercise for an insurer entering run-off, looking at various claims types, particularly those of high value and low frequency. Using Moore Stephens Consulting's statistical model, the client was able to negotiate a \$4million reduction in reinsurance premiums.

Another client used Dynamic Risk Solutions to assess its exposure to industrial action, and another to decide which of several potential property development projects to undertake. More recently, Dynamic Risk Solutions has proved useful in capital adequacy modelling, budgeting and cash flow analysis.

Dynamic Risk Solutions will help wherever capital adequacy is an element of risk or uncertainty about what the future might hold, so if you have either a general or specific business planning issue to resolve which would benefit from enhanced forecasting and risk analysis, we are confident that Dynamic Risk Solutions will be of genuine value.

### What is it?

- Excel based software means your model is readily understood
- Avoids current "What-If?" approach by allowing uncertainty to be incorporated into a model through use of statistical distributions
- Unknowns can be correlated to represent interrelationships
- Random values generate valid scenarios
- Simulation generates many valid scenarios
- Area(s) of interest monitored
- Automated analysis and graphing.

### Benefits

- Shows all possible results & likelihoods, as well as:
  - likelihood of each outcome
  - impact of individual uncertainties on outcomes
- Informed decision making / management information tool

- Very strong negotiation tool with lenders / contractors etc.

### Applications

- Supporting bank loan applications
- Supporting requests to investors for extra capital
- General decision-making and negotiation
- Negotiation with reinsurers and others
- Setting claims reserves / finance requirements
- Understanding risk – you can actually see how changes in unknown elements of your business affect the output on which you're basing your decisions.

### The service

- Our understanding of client's business
- Assisting with assumptions
- Design and running of model
- Reporting results