

The Financial Mathematics and Computation Cluster (FMC) was established in 2009. FMC is funded by Science Foundation Ireland and Industry. Further details about FMC are in the appendix and <http://www.fmc-cluster.org/>



Note: Databases are located in standalone computers in the Financial Data room.

OptionMetrics Ivy DB US

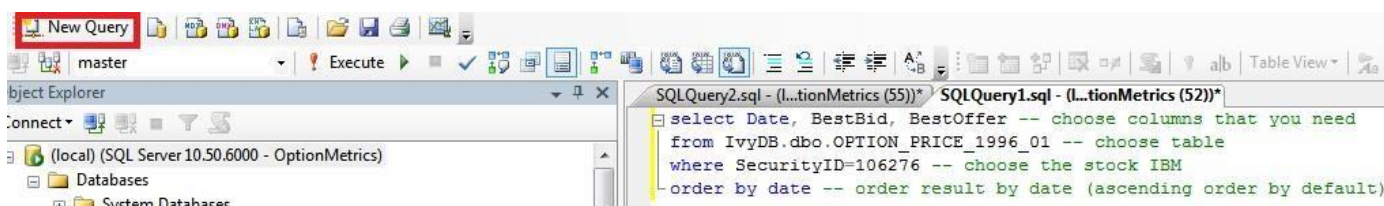
Ivy DB is a comprehensive database of historical price, implied volatility, and sensitivity information for the entire US listed index and equity options markets. The product has been designed to provide data of the highest obtainable quality, suitable for empirical and/or econometric studies of the options markets, development and testing of option trading strategies, and options research support. Ivy DB includes historical data for all US listed equities and market indices and all US listed index and equity options from 1996 till present. Ivy DB data files are updated nightly to reflect new closing prices, dividend payments or other corporate actions, and option contract expirations, new listings, or other changes.

OptionMetrics compiles the Ivy DB data from raw 3:59PM EST price information provided by Spryware, LLC. This raw data is edited and organized to facilitate its use in options market research. Interest rate curves, dividend projections, and option implied volatilities and sensitivities are calculated by OptionMetrics using our proprietary algorithms, which are based on standard market conventions.

Getting started with the Ivy DB

You can access the Ivy DB data using Microsoft SQL Server. SQL is the database management language (see 2 for SQL tutorials). The step-by-step guide:

1. Open SQL Server Management Studio
2. Choose. Server Name: DESKTOP-VHPIK75. Authentication: Windows Authentication. Then click connect
3. You can see the list of all accessible tables in the IvyDB-US2 database.
4. Now you can access or download the data that you need. The following simple example shows how to download the option data for IBM stock. Firstly, create the new query and then type this code:



The Ivy DB has its own security ID, so if you have data with tickers or CUSIP, first find the corresponding SecurityID in the Security_Name table.

You can see the result in text or grid formats. Also, you can download the result as a text file.



*Before you start working with SQL Server, you should read the Ivy DB File and Data Reference manual (see 1)

References.

1. Ivy DB File and Data Reference manual –
www.ckgsb.com/uploads/report/file/201611/02/1478069847635278.pdf
2. SQL tutorials - <https://www.w3schools.com/sql/default.asp>
3. Experimental Finance course with using the OptionMetrics Ivy DB - <https://experimental-finance.com/>



Industry

FMC² has developed successful research collaborations with international and domestic financial services companies and organisations. These help ensure the industry relevance of FMC²'s research.

FMC² works with multiple external partners including Bank of Ireland, Deloitte Ireland, Citibank Europe, The Institute of Banking, Avolon, AerCap, GECAS, SNECMA, SMBC Aviation Capital and KPMG Ireland.

The formal collaboration between this research cluster and the private sector leads creates a benefit-in-kind situation where company sponsorship creates funding for research projects. In turn the companies benefit from research expertise from FMC² members and access to a pipeline of trained quality researchers.

Who are we?

The academic principal investigators and funded investigators involved are:
John Cotter (Director, UCD)
Don Bredin (UCD)
Gregory Connor (Maynooth University)
Paolo Guasoni (DCU)
Julie Byrne (UCD)
Thomas Conlon (UCD)
Cal Muckley (UCD)
Conall O'Sullivan (UCD)
The cluster supports a research cluster manager and a team of postdoc and PhD researchers based at UCD, DCU and Maynooth University.



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FMC²
Financial Mathematics and
Computation Research Cluster



www.fmc-cluster.org





Financial Mathematics and Computation Cluster (FMC²)

FMC² is a *research collaboration* between Industry, University College Dublin, Dublin City University and Maynooth University. This research group brings together complementary expertise in *financial mathematics, financial economics and computational finance* to create a holistic research programme in asset and risk management.

In addition to providing support for the innovation activities of Irish-based international financial companies, a pivotal outcome of the activities of FMC² is the creation of a supply of highly skilled personnel, trained postdoctoral researchers and PhD graduates, with world-class quantitative modelling skills who will support the future growth of financial service exports.

The Vision

The objective of FMC² is to create a globally recognised research centre that will provide a critical underpinning for the future development of the international financial services sector in Ireland.

FMC² is funded by Science Foundation Ireland's Strategic Partnership programme. The object of this programme is to create partnerships between academia and industry in order to address crucial research questions, and to support the growth of research and development capacity in companies located in Ireland.



VAR

- Factor Modelling
- Dynamic Factor Structure of European Security Market Return
- Risk Measures, Connectivity and Impact on the Real Economy

Valuation

- Pricing Real Assets – Finalization, Policy and Market Implications
- Aircraft Finance and Leasing
- Energy prices and the Impact on Investment Decisions
- Valuation of contracts with embedded inflation linked options

Risk

- Operational Risk – Measurement and Mitigation
- Measuring and mitigating operational risks in financial institutions
- Operational Risk in LIBOR and other Benchmark Markets
- Rogue Trading and Banking