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MARKETS

Igor Tulchinsky's WorldQuant is part of the forefront of a new quantitative renaissance in investing

Igor Tulchinsky's WorldQuant

BY BRADLEY HOPE

As a 20-something computer engineer looking for a job in the 1990s, Igor Tulchinsky hit on an idea: Mail thousands of flattering letters to CEOs of companies believing one of them would land on the right desk. The tactic paid off when he scored a job as a trading strategist that set him on track to a successful career on Wall Street.

At WorldQuant LLC, a quantitative investment firm Mr. Tulchinsky founded in 2007, the same formula is at the core

WorldQuant founder Igor Tulchinsky is aiming for 100 million 'alphas.'

of the firm's DNA. In searching for patterns in torrents of data coming out of an increasingly connected world, WorldQuant aims to get the maximum number of minds working on problems at any moment. The firm is part of the forefront of a new quantitative renaissance in investing, where the ability to make sense of billions of bits of data in real time is more sought after than old-school financial analysis.

"Brilliance is very equally distributed across the world, but opportunity is not," said Mr. Tulchinsky, a 50-year-old Belarusian. "We provide the opportunity."

To do this, WorldQuant developed a model where it employs



MICHAEL BUCHER/THE WALL STREET JOURNAL

Igor Tulchinsky says his business 'comes down to turning data into ideas into investments.'

hundreds of scientists, including 125 Ph.D.s, around the world and hundreds more part-time workers to scour the noise of the economy and markets for hidden patterns. This is the heart of the firm. Mr. Tulchinsky calls it the "Alpha Factory."

That's why his Old Greenwich, Conn., firm built a web of international offices unlike any other investment firm. Apart from five offices in the U.S., WorldQuant has 15 foreign outposts in places such as Moscow, Sofia, Bangkok, Beijing, Mumbai, Hanoi, Seoul, and Ramat Gan in Israel where

researchers develop code to trade the markets.

It manages more than \$5 billion and has over 500 employees. By comparison, its competitor Two Sigma Investments LLC manages more than \$45 billion and has more than 1100 employees.

Quantitative hedge funds have been around for decades but they are becoming dominant players in the markets for their ability to parse massive data sets and trade rapidly. Amid huge outflows, traditional hedge funds are bringing aboard chief data scientists and trying to mimic quant

techniques to keep up, fund executives say.

Some critics of quants believe their strategies are overhyped and are highly susceptible to finding false patterns in the noise of data. David Leinweber, a data scientist, famously found that the data set with the highest correlation with the S&P 500 over a 10-year period in the 1990s was butter production in Bangladesh.

WorldQuant has stayed below the radar, because it has always exclusively managed money for one client, Israel Englander's \$34.6 billion hedge fund Millen-

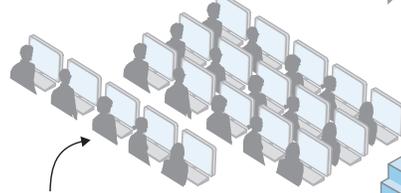
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Seeking Alpha

How WorldQuant scours global markets for hidden patterns

Researchers around the world analyze the data, coming up with 'alphas'

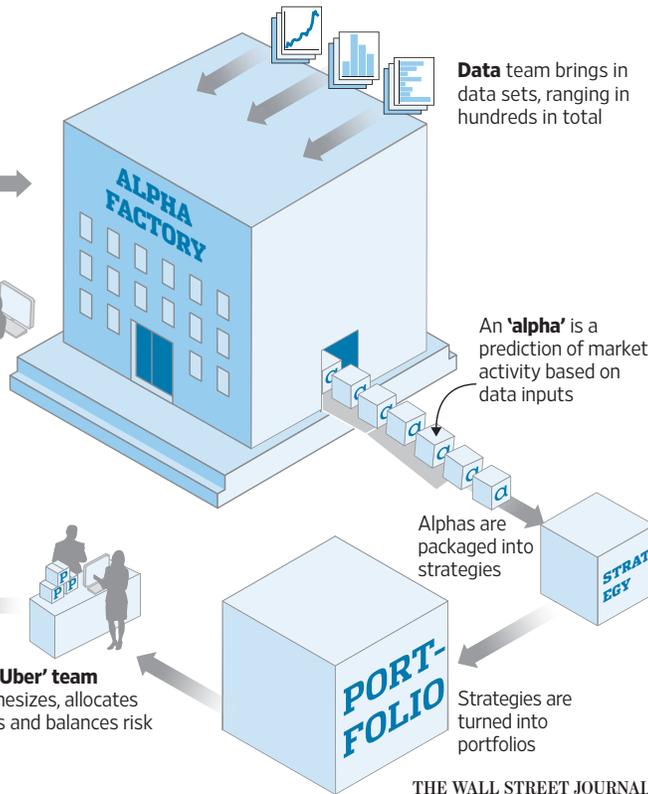


WorldQuant has five offices in the U.S. as well as 15 foreign outposts



Trade is executed

The 'Uber' team synthesizes, allocates funds and balances risk



Data team brings in data sets, ranging in hundreds in total

An 'alpha' is a prediction of market activity based on data inputs

Alphas are packaged into strategies

Strategies are turned into portfolios

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Sources: WSJ analysis; company interviews

nium Management LLC. It has never published performance numbers, but people briefed on the matter say the firm has never had a down year.

The firm began as a handful of traders within Millennium that Mr. Tulchinsky spun out in 2007. It is exploring handling money from other investors but hasn't finalized any products, he said.

Global outposts are just one part of the operation.

WorldQuant also draws in amateur quantitative traders through a platform called WebSim, which gives people access to data and a system to test out ideas. From there, it found more than 450 paid consultants to WorldQuant whose algorithms are added into the company's central database and often used in trading. That approach lets engineers, computer scientists and mathematicians working in any field work on quantitative investing on the side.

The "Alpha Factory" breaks up the process of investing into a quantitative trading assembly line. The inputs are data acquired by a special group that scours the

globe for interesting and new data sets, including everything from detailed market pricing data to shipping statistics to footfall in stores captured by apps on smartphones.

Researchers around the world attack the data with computing power and mathematical techniques to find patterns. They write algorithms that purport to predict similar patterns in the future, test them extensively and then add them into a central repository.

Mr. Tulchinsky said the company has four million "alphas" to date and is aiming for 100 million. Each alpha at WorldQuant is an algorithm that seeks to profit by predicting some future change in the price of a stock, futures contract or other asset.

Other groups combine alphas into strategies and strategies into bigger portfolios. The "Uber" team then works on perhaps the most crucial system of allocating funds between them and balancing the whole company's trading to weigh risk and avoid strategies cannibalizing each other. WorldQuant largely focuses on stocks.

"It comes down to turning data into ideas into investments," Mr. Tulchinsky said. "When we started out with very few alphas, we were concerned with secrecy, but now that we have millions, no one alpha is important. Our edge is putting things together, it's the implementation."

The idea is that with so many "alphas," even weak signals can be useful. If counting cars in parking lots next to big box retailers has only a tiny predictive power for those retailers' stock prices, it can still be used to enhance a bigger prediction if combined with other weak signals.

For example, an uptick in cars at Wal-Mart parking lots—itsself a relatively weak signal—could combine with similar trends captured by mobile phone apps and credit-card receipts harvested by companies that scan emails to create a more reliable prediction.

To help keep such a global operation in sync, WorldQuant brought in the consulting company of retired Gen. Stanley McChrystal for ideas. Now, every two weeks the entire firm logs in to a companywide videoconfer-

ence called the "Keystone Forum" where research is discussed among the entire research staff.

"We're like a combination between a university, the military and a trading organization," Mr. Tulchinsky said.

"There is race to find some meaning from all this noise and gain an advantage," said Chalee Asavathiratham, deputy chief research manager of WorldQuant and general manager of the Bangkok office, of the opportunities provided by oceans of new data coming out of global business and economics.

Perhaps surprisingly, Mr. Tulchinsky does not see a future of trading where computers completely unseat humans because of innovations in artificial intelligence. "AI will always be a tool," he said. "What it does is abstracts the job of a human, so instead of trying every combination by hand you can search a million possibilities more efficiently."

In hiring, WorldQuant is looking for the usual signs of past accomplishment and intelligence, but also "somebody who can take a problem and think all the time," Mr. Tulchinsky said, a lesson he said he learned from the CEO who opened one of the several thousand letters he wrote back in the 1990s, Thomas Peterffy.

Mr. Peterffy is the Hungarian-born billionaire who pioneered electronic trading of securities in the early 1980s and founded the discount brokerage Interactive Brokers Group Inc. The men remain friends.

One year at the firm, Mr. Tulchinsky asked colleagues what the dress code was for the annual holiday party, Mr. Peterffy recalled. Mr. Tulchinsky took the answer, "casual," literally and showed up in a black sweatshirt while others were wearing suits and blazers.

"Igor is a convincing example that people who are extremely talented in certain areas of life can be uniquely strange in others," Mr. Peterffy said.

—James Hookway in Bangkok contributed to this article.