PREDICTING THE NEXT PRESIDENT
THE RAY FAIR FORMULA

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On the cover: 30 Hillhouse Ave.
Table of contents: Faculty Lounge, 30 Hillhouse Ave.
Welcome to our first quarterly newsletter

When I was first tasked to produce a quarterly newsletter for the Cowles Foundation, I was honored. My flattery, however, soon turned to optimistic angst as I began to think of all the things that go into the publication. How will I format the pages? Will the pieces interest readers? Will I have enough content? And, of course, will I catch all those dreaded typos. Low and behold, the issue came together; I have a format, content, and pictures. For now, I can breath a sigh of relief (at least until the next issue).

I would like to thank Cowles research staff members, Professor Ray Fair and Johannes Horner, who volunteered their time to answers questions for the pieces on the following pages. I would also like to thank Mike Cummings for his contributing article on Mark Rosenzweig.

It is my hope that this inaugural issue will be the first of many to bring insight about the Cowles Foundation and its Research Staff to our readers. Please enjoy the next few pages and stay tuned for future issues. And remember to visit the Cowles website regularly for updates and new discussion paper postings, Follow us on Twitter, and like us on Facebook.

Matthew Regan
Communications Manager, Cowles Foundation
With Nicola’s Vieille, and Xiaosheng Mu (a former Yale undergrad!), I am currently working on truth telling and liespotting. Mark Twain once said that if you tell the truth, you don’t have to remember anything. If you lie, however, you must have a good memory, because you are bound by your past claims, and consistency in consecutive claims is important for the lie to remain undetected. For instance, you might have thought that it was clever of you to pretend you liked ballet when you first met that young and attractive person, but keep in mind that you might end up having to go to ballet every week for the next forty years, if you want your lie to remain unnoticed.

We are exploring what kind of patterns in reports one should pay attention to, and, as a strategic person, how sophisticated lying strategies have to be. These questions are important for the economics of information, where we try to understand how to best elicit the private information of agents.

**WHAT ARE YOU CURRENTLY RESEARCHING?**

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**CONGRATULATIONS ON BEING NAMED EDITOR OF THE AMERICAN ECONOMIC JOURNAL: MICROECONOMICS! WHAT DOES THE POSITION MEAN TO YOU, AND WHAT DO YOU LOOK FOR IN A PAPER FOR PUBLICATION?**

Being an editor is an honor, a duty and an opportunity. It’s an honor, to the extent that it means that my peers trust my judgment and my dedication. It’s a duty, because as an author, I have benefited countless times from the advice and help from editors and referees; taking such a position is a way to pay back. Most importantly, it’s an opportunity to try my hand at contributing to a young but already established journal. Running a journal is a very special business: you have to attract as many submissions as possible, yet the more you attract, the more you end up rejecting. To meet this challenge, you have to be fair to the authors, and add value to the papers, even those that are rejected. This is a job done by the referees and the editorial board, and the editor merely tries to coordinate their efforts.

**CAN WE EXPECT TO SEE ONE OF YOUR PAPERS IN THE AEA OR ANOTHER JOURNAL IN THE NEAR FUTURE?**

I sure hope so! But it is probably best to not submit to one’s “own”
journal, and the decision ultimately belongs to other editors. I have worked with Yeon-Koo Che (Columbia) on spamming that we hope to see published soon, perhaps at the Quarterly Journal of Economics.

WHAT IS YOUR FAVORITE CLASS TO TEACH AND WHY?

Clearly, this has to be mathematical game theory, the undergraduate course in game theory that I teach at Yale. As every undergrad knows, this is a very hard course, but it is fun and challenging!

WHAT ADVICE DO YOU HAVE FOR UNDERGRADUATES PURSUING A DEGREE IN ECONOMICS?

Take courses that you enjoy and challenge you. It's not about memorizing facts and methods. It's about discovering what works for you, how you learn best and what gets you excited. But I guess that applies to lots of fields!

Yale Daily News
December 16, 1954

The announcement of the Cowles Commission move to Yale from the University of Chicago made the front page of the Yale Daily News on December 16, 1954, naming future Nobel Laureate Tjalling C. Koopmans and his colleague Jacob Marschak as accompanying members. The article states that James Tobin will become the director. Like Koopmans before him, Tobin also went on to receive a Nobel Prize in Economics.
PREDICTING THE NEXT PRESIDENT
The Ray Fair Formula
By Matthew Regan

With the 2016 presidential elections behind us (for better or worse), most media organizations and pundits predicted the outcome incorrectly. One economist, however, did make the correct call. In fact, Cowles Research Staff Member and John M. Musser Professor of Economics, Ray Fair, has quite the track record for predicting the presidential outcome with his voting formula.

It is human nature to speculate what the future holds and many people like to make predictions. What's more, there are about as many formulas arriving at a prediction as there are predictions. Some may be based on scientific and analytical data, while some may be purely speculation on other factors.

Take for example sporting events; people are always trying to pick which team will win the Super Bowl, World Series, or World Cup. The same holds true of the stock market: Will it be bearish or bullish? And elections are no exception when it comes to predicting the outcome; people instinctively want to know who will be their next leader.

The 2016 presidential election results proved to be surprising to many people, however, particularly pundits. According to the Pew Research Center, pollsters predicted Hillary Clinton's chances of winning to be at a whopping 70-99%! As it turns out, the actual poll numbers according to research by Theodore de Maceo Soares, show a 2.4% margin of discrepancy between exit polls in favor of Donald Trump, not the expected 3.2% margin favoring Clinton.

While political scientists and pollsters were left scratching their heads and will continue to pour over data develop case studies, Professor Ray Fair is once again relishing in a correct prediction using his own model which he developed nearly 40 years ago.

Fair's method looks at fundamental forces driving people's voting behavior rather than asking people who they plan to vote for, or how and why they came to make their decisions. Simply stated, his approach, "tries to explain what motivates people to vote the way they do." He elaborates in his paper "Econometrics and Presidential Elections" by writing, "The general theory behind the model is that a voter evaluates the past economic performances of the competing parties and votes for the party that provides the highest expected future utility."

Rather than relying on typical exit poll questioning, Fair uses four conditions to determine voter preferences: if a president is seeking a second term; the duration a party has controlled the White House; a persistent bias (albeit slight) in favor of the Republican Party; the state of the economy, particularly the rate of growth of output (GDP) and the inflation rate of the previous 15 quarters leading up to the election.

Each condition can be broken down for further clarification. His model states that nominees running for a second term tend to have a better chance of winning. If one party has controlled the White House for a long duration (e.g., two terms), this is seen as less favorable for the incumbent party. Fair's research also shows voters tend to lean in favor of the Republican Party which he equates into his model.

And lastly, he looks at the state of the economy during the first three quarters of the election year to see where output growth and inflation stand.

As it turns out, the first three criteria were not in Hillary Clinton's favor. As for the last condition, while inflation was low in 2016, the GDP was historically weak despite a slight up-tick in the last quarter. Thus, the conditions pointed to a Trump victory.

Although Fair predicted the Democrats would receive less votes, his results were not as close as anticipated. Since November 2014, his model had favored the Republicans, predicting the Democrats to receive 44 percent of the two-party vote. Clinton, however, ended up receiving a lot more votes, which was actually closer to 51.1 percent. That's an error of 7.1 percentage points. More surprising, this was nearly twice the error average Fair saw over the last 9 elections which averaged 3.53 percent points.

Fair cannot say with certainty why he had such a swing in the error, but he attributes the discrepancy to Trump's personality. "Had the Republicans nominated a more main stream candidate, they may have done much better---much closer to what the equation was predicting," says Fair. "The election was theirs to lose because of the economy and the duration effect, and they almost lost it!"
Fair says he became interested in voter behavior in the early 1970's while teaching at Princeton University with Orley Ashenfelter who was looking for an econometrics problem assignment for his students. According to Fair, "the subject matter is interesting, the voting equation is easy to understand, and the econometrics offers practical problems." While Fair is not aware of his model used for other elections, e.g., gubernatorial races, he is not alone in developing presidential prediction formulas. In fact, American University History Professor Allan Lichtman, created the Keys System and has successfully predicted nine presidents since 1984.

A more complete explanation of Professor Fair's model along with his data from past presidential elections can be found on his personal website (https://fairmodel.econ.yale.edu/).
The Economic Growth Center, a research division of Yale’s Department of Economics, is one of the oldest institutions in the United States dedicated to studying economic growth in the developing world. It was founded in 1961 to promote understanding of the issues and forces affecting development in low-income countries.

Research performed through the center covers a wide array of topics. Projects range from a study of how rainfall forecasts affect agricultural wages, to a randomized experiment assessing the effect of microloans, to an analysis of environmental regulation in a particular country.

Mark Rosenzweig, the Frank Altschul Professor of Economics, has directed the center since 2006 and was recently reappointed to the role. He spoke with YaleNews about the center and his work. An edited and condensed version of the conversation follows.

WHAT ARE THE CENTER’S PRIORITIES?

The center has two missions: One is the study of economic development and growth. The second is to train graduate students to perform this work. We create an intellectual environment in which these things can occur. The center is composed of independent researchers, and their work is our primary output. They have research projects taking place in many countries around the world using a variety of statistical methods and many types of data. As director, my job is to make sure the researchers get the resources they need to do this work.

WHAT FUNDAMENTAL QUESTIONS DO YOU SEEK TO ANSWER?

A fundamental question in studying development is: “How come India isn’t like California?” Its people are just as smart. It’s a democracy. So what are the barriers? You start to break it down: How come they don’t manufacture anything? Your smartphone wasn’t made in India. We hear that one of the reasons they’re made in China is because the wages are low there. Well, they’re lower in India, so why aren’t they made there? Is it governance? Is health or education too low? Why are health and education low? Is it access? Is it because people underestimate their value? It’s easy to come up with the questions. You start down a path of asking questions, just like the kid who asked, “Why is the sky blue?”

Countries often change public policies. We can study the effects of those policy shifts. For example, Indonesia had a school building program in the 1970s — the biggest in world history over a five-year period. We can evaluate it. It turned out that the amount of schooling among the population increased 0.3 years. So maybe access to education isn’t the full picture of what’s happening.

The center has a program on economic history, so we’re also committed to looking at things over the long term. A lot of the western world has developed over time, so we should be able to learn something from that by studying the countries that have developed and those that didn’t.

THE GROWTH CENTER DEVOTES A PORTION OF ITS RESOURCES TO COLLECTING DATA IN-developing COUNTRIES. CAN YOU TALK ABOUT THAT WORK?

We run two long-term panel surveys — one in Ghana and one in the Tamil Nadu state in India. The center has an endowment, and we take advantage of those resources to initiate these long-term surveys so we can document and quantify growth and development in these places over time. It provides a public good.

(continued on page 9)
The Ghana survey has completed two rounds. We’re talking about 8,000 households — urban and rural. It has no specific focus but is intended to get as much information as possible from each household that seems relevant.

We hope that within the span of time that a grad student is here, there is a survey being done in the field. They can get field experience and use the data. The data is proprietary for two years, and then we release it broadly. Anyone in the world can download the datasets from the first two rounds.

We visit the households. Some of these questionnaires can take four to five hours to complete. One of the advantages of studying developing countries is that it’s cheap to collect data and the response rates are much higher than in the United States. I’ve helped lead a survey in the U.S. of 8,500 households — it cost $23 million. In India, where the questionnaire is probably eight times longer, the total cost is about $750,000.

HOW DO YOU COLLECT THE DATA?

A lot of the work involves data collection or using data from other countries. That’s what’s exciting. You can get good new data from these countries to try to find out what’s going on. It continues over years so then you can ask dynamic questions, like: How have things changed over time?

For our Ghana and India surveys, we collect an enormous amount of data. If those being surveyed are farmers, you get inputs and outputs. You get the loans they’re taking and their savings. You give them aptitude tests. You get their height and weight. You’re going to learn about irrigation. You’ll learn about migration or temporary migration. Think of anything you’d want to know, we want it in that survey. That’s why it takes four or five hours.

FIVE HOURS IS A SUBSTANTIAL COMMITMENT OF TIME, WHAT’S THE RESPONSE RATE?

Our response would be somewhere around 90%. People enjoy telling you about their stuff. I’ve studied a lot of farmers in India and they want to show you everything. They enjoy it.

People there value their time differently than we do. In most villages there are no cinemas or shopping centers there. There’s no television. They enjoy talking to people. That’s different than here. We all have better things to do than sitting down and answering silly questions over the phone, let alone allowing somebody into your house. Sitting down and talking to people is an interesting activity for these folks.

My favorite example is the guy who was doing well, and he showed me his proudest possession in his newly remodeled house. It was a Phillips TV still in its box because his village had no electricity — it was a failure of the government.

And they’re not bashful about talking about their money. In the U.S., people would rather talk to you about their sex lives than their finances. The data we get is surprisingly accurate.

HOW DID YALE BECOME A LEADER IN THIS FIELD OF RESEARCH?

There were other institutions doing development work when the Economic Growth Center started: The Food Research Institute at Stanford and the Harvard Institute for Development. Both are no longer here. They died because the faculty moved to consulting, which paid better. The Growth Center never fell into that trap.

The field of studying development had died more than 25 years ago. With the exception of Yale, there were no researchers in the field. Why? The rest of the economics profession had moved to using data. Census data became available. People started collecting survey data in the United States. Computers led to developments in econometrics: How to use the data to learn something from it.

But there were no data from low-income countries. The economists studying development had never had any data. With no facts, they didn’t need to develop econometrics skills. They basically developed grand theories of development, which we could sit here all day and discuss.

The Growth Center was one of the few surviving institutions. In the 1970s, the center hired T. Paul Schultz and Robert Evenson — what distinguished them from everyone else in development was that they were using micro data. Schultz was studying health and population using actual household data. Evenson was doing agricultural economics, which was particularly relevant because it’s the dominant occupation in most poor countries. There had always been agricultural data. You could use econometrics to analyze it. I was trained as a labor economist, and then I saw that I could study development using econometrics. That’s because of what was happening here at Yale.
CFDP 2066  Dirk Bergemann, Stephen Morris, "Belief-Free Rationalizability and Informational Robustness," (December 2016) [31 pp, abstract]

CFDP 2065  Dirk Bergemann, Benjamin Brooks, Stephen Morris, "Informationally Robust Optimal Auction Design," (December 2016) [36 pp, abstract]

CFDP 2064  Dirk Bergemann, Benjamin Brooks, Stephen Morris, "Optimal Auction Design in a Common Value Model," (December 2016) [34 pp, abstract]


CFDP 2062  Peter C. B. Phillips, Wayne Yuan Gao, "Structural Inference from Reduced Forms with Many Instruments," (December 2016) [45 pp, abstract]


CFDP 2058  Stan Hurn, Peter C. B. Phillips, Shu-Ping Shi, "Change Detection and the Causal Impact of the Yield Curve," (December 2016) [67 pp, abstract]

CFDP 2057  William D. Nordhaus, "Projections and uncertainties about climate change in an era of minimal climate policies," (December 2016) [43 pp, abstract]


CFDP 2054  Thomas W. Quan and Kevin R. Williams, "Product Variety, Across-Market Demand Heterogeneity, and the Value of Online Retail," (November 2016) [69p, abstract]

CFDP 2053  Martin Shubik and Michael R. Powers, "Cooperative and Noncooperative Solutions, and the ‘Game within a Game’" (October 2016) [35pp, abstract]

CFDP 2052  Donald J. Brown, "Aggregation of Preferences and the Structure of Decisive Sets" (October 2016) [11 pp, abstract]

CFDP 2051  Dominik Sachs, Aleh Tsyvinski, and Nicolas Werquin, "Nonlinear Tax Incidence and Optimal Taxation in General Equilibrium" (September 2016) [102pp, abstract]