

Economics IN ACTION

WORLD OIL PRODUCTION INCREASED
33% BETWEEN 1937 AND 2012 – BUT HOW LONG CAN WE KEEP THIS UP?

EXHAUSTIBLE RESOURCES & ECONOMIC GROWTH

by James D. Hamilton, Ph.D.

Chair's Corner

Welcome to *Economics in Action*.



Alumni Spotlight

Ali Almufti, C.F.A.
Triton Makes Waves in High Finance

ISSUE 7 : NOVEMBER 15, 2012

[Alumni Spotlight](#)
[Chair's Corner](#)

[FACULTY SPOTLIGHT](#)
[Jeffrey Clemens](#)

[DEPARTMENT AWARDS](#)
[Undergraduate Awards](#)
[Graduate Awards](#)
[Faculty Awards](#)

[FEATURE ARTICLES](#)
[Exhaustible Resources and Economic Growth](#)
[Remembering Hal White](#)
[Rising Leaders Program Enters Its Second Year](#)

[Past Issues](#)

[SUBSCRIBE](#)

Name:

Email:

[give now](#)

[Events](#) [FULL CALENDAR](#)

Nov 16 Founders' Celebration

Nov 18 Downtown with David Sedaris

Jan

Faculty Spotlight

Jeffrey Clemens

[Meet the department's newest faculty member.](#)

Remembering Hal White

In remembrance of Halbert L. White, Jr. (1950-2012)

Rising Leaders Program Enters Its Second Year

Announcement of the 2012-13 recipients and report on the 2011-12 program

Faculty in the News

- [Charting a better course](#)
- [Smartphone snaps help deter election fraud](#)
- [Distortions of Asymptotic Confidence Size in Locally Misspecified Moment Inequality Models](#)
- [GEL statistics under weak identification](#)
- [On the Asymptotic Size Distortion of Tests When Instruments Locally Violate the Exogeneity Assumption](#)
- [The Good Newt](#)
- [Who's afraid of the dragon?](#)
- [More Foreign Investment Wanted, Marketplace, National Public Radio](#)
- [On the Economy](#)
- [The Economic Reality Of Tough Immigration Laws](#)
- [Research War on Affirmative Action](#)
- [Natural Experiments Show Media's Effect on Families](#)

Department Awards

This year's awards honor graduate students, undergrads and faculty.



[Undergraduate Student Recipients »](#)

[Graduate Student Recipients »](#)

[Faculty Recipients »](#)

Movie Theater Shootings
The Real Cause of High Oil Prices - An Interview with
James Hamilton

2013 ASSA Conference

4-6

June Alumni Weekend 2013
6-9



Stay Connected
with LinkedIn

Published by the **Department of Economics** faculty and staff.
Designed by **UC San Diego Creative Services and Publications**
Questions, comments, complaints? Have a story idea? [Email us!](#)



Economics in Action is produced with the
support of UCSD Alumni.

UC San Diego, 9500 Gilman Dr., La Jolla, CA 92093 (858) 534-2230

Copyright © 2008 Regents of the University of California. All rights reserved.

[Terms & Conditions](#) | [Feedback](#)



Ali Almufti, B.A., C.F.A. '04

Triton Makes Waves in High Finance

By Jenelle Dean

After graduating from UC San Diego in 2004 with a bachelor's degree in economics, Ali Almufti knew he had a future in the financial industry. Experiences both in and out of the classroom ignited his passion for investment and paved the way for his present career and professional achievements. Currently, Almufti is vice president and portfolio manager of scientific active equity at BlackRock. He was recently a guest speaker at the inaugural Bay Area Financial Professionals Network Reception held at the BlackRock offices in San Francisco.



What were your experiences like in the economics department? Which faculty made an impact on you?

After getting through the intro micro and macro courses, I found the more specific classes really enjoyable. The two that I remember most were financial investments and applied econometrics – both very relevant to what I am doing today. Financial investments was basically the only course focused on capital markets at the time, and Professor Michael Willoughby did a great job of introducing us to equity and bond valuation. Although he may not know it, he was instrumental in my decision to participate in the C.F.A. program.

Applied econometrics was an upper-division class with less than ten people. Nobel Prize-winning economist Clive Granger was our professor and he was excellent. We experimented with forecasting models to predict asset valuations. After taking that class, I had a much better understanding of my interests and decided to pursue active asset management.

What was your career trajectory? What are your future professional goals?

After graduation, I told myself if I didn't find a job in San Francisco, I would move to New York, the center of finance. I was able to find a role in San Francisco three months after graduating, doing hedge-fund accounting and basically valuing all the assets in the portfolio – stocks, bonds, derivatives, etc. There I worked with a handful of clients and learned which investment strategies worked and which didn't. That was a time when hedge funds were still gaining assets, so it was easy for two people to form a company, raise \$10 million by selling investors on their strategy and call it a hedge fund. You can imagine that a lot of these funds didn't last very long, as their performance ended up much worse than what was promised.

There were, however, a number of funds that were run by savvy portfolio managers with stronger, more consistent track records. One of my clients was a large established institutional asset manager, and I knew that's where I wanted to end up. One day, I asked my contact there if they had any job openings, and after a couple days of interviews, I was able to get the job.

I've been at the same company ever since. I love what I do and hope to continue along this path for the foreseeable future.

What are some of your favorite things about UC San Diego?

ALUMNI SPOTLIGHT

ISSUE 7 : NOVEMBER 15, 2012

[Alumni Spotlight
Chair's Corner](#)

[FACULTY SPOTLIGHT
Jeffrey Clemens](#)

[DEPARTMENT AWARDS
Undergraduate Awards
Graduate Awards
Faculty Awards](#)

[FEATURE ARTICLES
Exhaustible Resources and Economic
Growth
Remembering Hal White
Rising Leaders Program Enters Its
Second Year](#)

[Past Issues](#)

[SUBSCRIBE](#)

Name:

Email:

[give now](#)

Events

[FULL CALENDAR](#)

Nov 16 [Founders' Celebration](#)

Nov 18 [Downtown with David Sedaris](#)

Jan 4-6 [2013 ASSA Conference](#)

June 6-9 [Alumni Weekend 2013](#)



Stay Connected
with LinkedIn

Naps on the beach, surfing and California burritos from Roberto's Del Mar. You can't beat the location of that campus – soak it in!

Any advice for economics students?

Try and find internships that have something – anything – to do with what you're interested in. It's tough in San Diego, but they are out there. Don't stress about finding one that's perfect; you'll get a better sense of what you really want to do by doing something you don't end up liking. Make sure econ is not your life. Try different things, but stay focused and enjoy your lack of responsibility, because it doesn't last very long. I took a lot of photography classes when I was at UC San Diego and loved every second. Stay creative – it will help in any career you pursue.

UC San Diego, 9500 Gilman Dr., La Jolla, CA 92093 (858) 534-2230

Copyright © 2008 Regents of the University of California. All rights reserved.

[Terms & Conditions](#) | [Feedback](#)



Economics

IN ACTION

Chair's Corner

CHAIR'S CORNER



Welcome to this edition of *Economics in Action*. We have an exciting lineup of articles. The headline article by [James Hamilton](#) explains why we haven't run out of oil yet, but why we might worry about the future. Faculty members [Graham Elliott](#) and [Allan Timmermann](#) write a wonderful tribute to our colleague [Hal White](#), who passed away last March. Our faculty spotlight showcases [Jeffrey Clemens](#), who is our newest member of the faculty. Jeff earned his doctorate at Harvard and spent last year as a postdoc at Stanford. We shine our alumni spotlight on [Ali Almufti](#), who graduated with a bachelor's degree in economics in 2004 and now is a portfolio manager at BlackRock.

Kudos

Congratulations to the many successes our students and faculty members have achieved over the last six months! [Dallas Dotter](#), a doctoral candidate anticipating graduation this year, won a National Academy of Education Spencer Dissertation Fellowship for his work on the effects of school breakfast programs. The fellowship gives him a \$25,000 stipend for completing his dissertation. Doctoral student [Tamara Sheldon](#) is a recipient of the National Science Foundation Integrative Graduate Education and Research Traineeship (IGERT) starting in fall of 2012. The interdisciplinary project is a cross-departmental doctoral program that includes faculty from UC San Diego as well as adjunct faculty from other partner universities, nongovernmental organizations and government agencies. Junior faculty members [Paul Niehaus](#) and [Irina Telyukova](#) were named 2012-13 UC San Diego Hellman Faculty Fellows, and Prashant Bharadwaj was granted a UC San Diego Faculty Career Development Award. Emeritus Professor Vincent Crawford was elected a Fellow of the British Academy for Humanities and Social Sciences in 2012.

Graduate Program

Last May the department underwent an external review of its graduate program, an event that occurs every ten years or so. The review committee consisted of professors from Princeton, Columbia and UCLA. The official report included the following praise for the department: "The Economics Department at UCSD has developed into a very high-quality department (ranked among the top 15 economics departments nationally) with strength in a substantial number of sub-fields ... The goals set in the 10-year plan have largely been met ... [T]his is a truly astounding progression that has no parallel in other economics departments ... The morale and esprit de corps in the Department is unusually good. There is a level of collegiality and interaction across groups and between younger and older faculty that is rare ... The Department is a happy place to be." We were delighted to receive such glowing praise for the atmosphere and accomplishments of our department.

Undergraduate Program

Our majors are becoming even more popular. This fall we had the highest number of entering freshmen who intend to choose our department for their major. One reason for the increase is that 23 percent of entering nonresident students choose a major in our department.

Why do so many students want to major in the "dismal science"? Perhaps the popularization of economics by books such as *Freakonomics* has revealed the "fun" side of economics. Students are also realizing that the economics major is a great preparation for many possible career paths. For example, economics majors rank highly not only in starting salaries but also salary growth. Economics majors are also in the top-scoring group on both the LSAT and the GMAT. (The other top majors are physics, philosophy, mathematics and engineering.) In addition, *The New York Times* reports that economics majors are second only to premed majors in the percent who ultimately wind up in the top 1 percent of the income distribution.

ISSUE 7 : NOVEMBER 15, 2012

[Alumni Spotlight](#)
[Chair's Corner](#)

FACULTY SPOTLIGHT
[Jeffrey Clemens](#)

DEPARTMENT AWARDS
[Undergraduate Awards](#)
[Graduate Awards](#)
[Faculty Awards](#)

FEATURE ARTICLES
[Exhaustible Resources and Economic Growth](#)
[Remembering Hal White](#)
[Rising Leaders Program Enters Its Second Year](#)

[Past Issues](#)

SUBSCRIBE

Name:

Email:

[give now](#)

Events

[FULL CALENDAR](#)

Nov 16 [Founders' Celebration](#)

Nov 18 [Downtown with David Sedaris](#)

Jan 4-6 [2013 ASSA Conference](#)

June 6-9 [Alumni Weekend 2013](#)



Stay Connected
with LinkedIn

Outreach and Alumni

The Allied Social Sciences Associations conference will be held in San Diego January 4-6, 2013. We look forward to seeing many of our doctoral alumni there – especially at our cocktail party, which will be held on Saturday, January 5, from 6:30 to 8:30 p.m. at the Manchester Grand Hyatt.

Sincerely,



Valerie Ramey, Chair

UC San Diego, 9500 Gilman Dr., La Jolla, CA 92093 (858) 534-2230

Copyright © 2008 Regents of the University of California. All rights reserved.

[Terms & Conditions](#) | [Feedback](#)



Economics

IN ACTION

Jeffrey Clemens

Real-World Research

FACULTY SPOTLIGHT



The Department of Economics is pleased to welcome Jeffrey Clemens as the first new faculty member to join our department since 2010. Jeff comes to UC San Diego after 10 years at Harvard University – interrupted by a year as a research assistant at the Council of Economic Advisors – earning both his bachelor's and doctoral degrees in economics.

Research

It wasn't until his junior year as an undergraduate at Harvard that Jeff realized his true passion for economics. Public finance and economics of education courses really sparked his interest, but it took working as a research assistant at the Council of Economic Advisors for Jeff to commit to pursuing a doctorate. Exposure to tangible, real-world research made him realize he wanted to be an academic and helped him define a research area. As he recollected, "I'd enjoyed my research experiences as an undergraduate and watching the policy process in action made me realize how little we

know about the effects and effectiveness of many policies. The policy process seemed so politically charged that it gave the possibility of studying the issues from an academic setting a lot of appeal."

Currently, Jeff's research focus is health-care legislation. He is particularly interested in health care and insurance because he believes the Affordable Care Act is at the center of the policy debate and Medicare is central to the long-run fiscal outlook. While a graduate student, Jeff found it impossible not to think about health insurance regulations and health-care financing. Now he believes that the unique construction of health-care policy provides a chance to conduct interesting research: "The markets for health care and health insurance involve so many deviations from the standard competitive framework that it seems like there's an endless supply of interesting economic issues to consider."

Outside of Academia

Outside the classroom, Jeff found interesting ways to spend his time while at Harvard. He was co-founder and an active member of the Harvard Ballooning Society (HBS). As far as he knows, HBS was the premier – indeed the only – collegiate hot-air ballooning club in the country. According to Jeff, starting the club was logical: "A college friend's dad was a commercial hot-air balloon pilot, and my friend was in the process of getting his own commercial license. We got certified as a club sport and participated in several balloon festivals in an 'official' capacity. My status in the club never moved beyond pilot in training."

After many years in Boston, Jeff is looking forward to sampling what San Diego has to offer. A self-professed "extremely amateur" backpacker, he would like to explore some of the canyons around San Diego. He also plans to join a recreational soccer league and hopes to learn how to surf.

Coming "Home"

Born and raised in Spokane, Washington, Jeff has an affinity for the West Coast. So, after eleven years on the East Coast earning his impressive education, Jeff came "home" to California.

UC San Diego was attractive for several reasons. First, Jeff's parents, who still live in Spokane, were getting awfully tired of visiting Boston in the winter. Second, the department had a lot of people who had become familiar faces. Jeff had gotten to know Julie Cullen's and Roger Gordon's work at many conferences and thought they would be excellent colleagues. Additionally, three summers ago, Jeff came to UC San Diego for a weeklong program led by Eli Berman that gave him "the sense that this was a

ISSUE 7 : NOVEMBER 15, 2012

[Alumni Spotlight](#)
[Chair's Corner](#)

FACULTY SPOTLIGHT
[Jeffrey Clemens](#)

DEPARTMENT AWARDS
[Undergraduate Awards](#)
[Graduate Awards](#)
[Faculty Awards](#)

FEATURE ARTICLES
[Exhaustible Resources and Economic Growth](#)
[Remembering Hal White](#)
[Rising Leaders Program Enters Its Second Year](#)

[Past Issues](#)

SUBSCRIBE

Name:

Email:

[give now](#)

Events

[FULL CALENDAR](#)

Nov 16 [Founders' Celebration](#)

Nov 18 [Downtown with David Sedaris](#)

Jan 4-6 [2013 ASSA Conference](#)

June 6-9 [Alumni Weekend 2013](#)



Stay Connected
with LinkedIn

great place.” He also recognized other Harvard graduates: Karthik Muralidharan, a teaching assistant from his undergraduate days; and Paul Niehaus, a teaching assistant from his first year microeconomics sequence in grad school. All of this led Jeff to conclude that UC San Diego was the right choice. He claimed, “I don’t yet have a family of my own, but San Diego seems like a great place to set down some roots.”

UC San Diego, 9500 Gilman Dr., La Jolla, CA 92093 (858) 534-2230

Copyright © 2008 Regents of the University of California. All rights reserved.

[Terms & Conditions](#) | [Feedback](#)



Department Awards

Each year the Department of Economics honors students and faculty with awards for scholarship and teaching. Please join us in congratulating the 2011-12 winners.

Undergraduate Students

The Department of Economics grants one annual award to the top graduating senior from each of our three undergraduate majors: economics, management science and joint mathematics-economics. Recipients are chosen by faculty vote from a pool of top students in the graduating class of each major. The award is mentioned at their college commencement ceremonies, and awardees receive a total cash award of \$500. For more information on these annual awards, email economics@ucsd.edu.

Seymour Harris Award for Excellence in Economics

Recipient: **Martina Di Bella**

Martina is working as a research associate for a biotech company, helping to develop a diagnostic test for cancer. She recently applied to medical school and hopes to matriculate next fall. She has applied for combined M.D./Ph.D. or M.D./M.B.A. programs. As Martina explained, "I hope to, in the future, have a career that allows me to intertwine my passion for both economics and medicine."



This award commemorates Seymour E. Harris, a prominent government advisor from the 1940s through the 1960s. He was a noted member of the Harvard University Department of Economics faculty and the founding chair of the UC San Diego's Department of Economics.

Joel Dean Award for Excellence in Management Science

Recipient: **Edmund Yan**

Edmund is currently pursuing career opportunities in corporate finance, interviewing for financial analyst and investment analyst roles in the private sector. Edmund plans to obtain some work experience and then continue his education in an M.B.A. or C.F.A. program.



This award commemorates Joel Dean, a prominent management scientist who was also a noted faculty member of the business school at Columbia University. He was a visiting professor at UC San Diego's Department of Economics throughout the 1970s and was one of the pioneers of our management science major.

Award for Excellence in Joint Mathematics-Economics

Recipient: **Ali Palida**

Ali is working at the Federal Reserve Bank of New York as a research analyst. He assists economists in writing academic papers and conducting policy projects. His group primarily studies banking activity and finance through empirical and theoretical analysis. Ali feels his education at UC San Diego prepared him well for the position: "It is fascinating work which requires a direct application of the material that I learned at UCSD. I also believe that it is excellent preparation for graduate study in economics, which is my ultimate goal." In his spare time, Ali is taking additional math coursework at Columbia University and is enjoying exploring New York City.



This award was established in 2008 and is granted to our most outstanding joint mathematics-economics student.

ISSUE 7 : NOVEMBER 15, 2012

[Alumni Spotlight](#)
[Chair's Corner](#)

[FACULTY SPOTLIGHT](#)
[Jeffrey Clemens](#)

[DEPARTMENT AWARDS](#)
[Undergraduate Awards](#)
[Graduate Awards](#)
[Faculty Awards](#)

[FEATURE ARTICLES](#)
[Exhaustible Resources and Economic Growth](#)
[Remembering Hal White](#)
[Rising Leaders Program Enters Its Second Year](#)

[Past Issues](#)

[SUBSCRIBE](#)

Name:

Email:

[give now](#)

Events

[FULL CALENDAR](#)

Nov 16 [Founders' Celebration](#)

Nov 18 [Downtown with David Sedaris](#)

Jan 4-6 [2013 ASSA Conference](#)

June 6-9 [Alumni Weekend 2013](#)



Stay Connected
with LinkedIn

Graduate Students

Walter Heller Memorial Prize (Best Third-Year Paper)

This award is given annually in memory of [Dr. Walter Perrin Heller](#) (1942-2001). Dr. Heller was a leading 20th-century economic theorist and an early member of the UC San Diego faculty. He joined the department in 1974 and remained active until his death in 2001. This award formally recognizes our graduate students who have shown the most promise in their future careers in research.



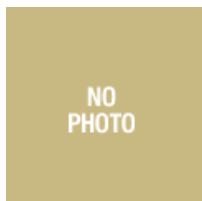
Lawrence Schmidt

“Flexible Modeling of Conditional Quantiles Without Crossing”



**Runner-up:
Fan (Dora) Xia**

“Estimating Expected Bond Yields: Restriction by Factor Construction”

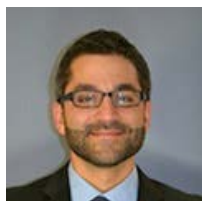


**Runner-up:
Alex Imas**

“On Prosocial Incentives”

Best Graduate Student Research Seminar Presentation

Graduate Student Research Seminars are organized by the students for the students to encourage presentation of early research in order to receive feedback from peers to keep projects on track. This award is designed to encourage graduate students to present research projects at all stages of development, but especially projects that have not yet been presented. The best presentation at the Graduate Student Research Seminars is selected annually by a committee of peers.



Sam Bazzi

“Wealth, Heterogeneity, Income Shocks, and International Migration: Theory and Evidence from Indonesia”

Teaching Assistance Excellence

Annually the department recognizes graduate students who demonstrate great efforts in their teaching, as emphasized by glowing teaching evaluations from undergraduates, graduate peers and their faculty supervisors. Nominations are solicited from the faculty and awards are made by the graduate committee. Each of these recipients for the 2011-12 academic year showed clear commitment to the teaching mission of UC San Diego.



Andrew Chamberlain

Undergraduate teaching



Jong Myun Moon

Undergraduate teaching

Shalini Nageswaran

Undergraduate teaching (commenced 2012)

Matthew Niedzwiecki

Undergraduate teaching



Tamara Sheldon

Undergraduate teaching



Igor Vaynman

Undergraduate teaching

Clive Granger Research Fellowship

Six fellowships, named after Nobel Prize winner Sir Clive Granger, are awarded each year for the most promising graduate student research.

The fellowship carries a small stipend and allows the student to make more rapid dissertation progress by minimizing work obligations for a quarter. Nominations are made by the faculty running the thesis workshops (in consultation with their colleagues) and awards are made by the Graduate Committee.



Hie Joo Ahn



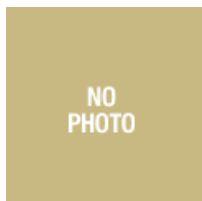
Dallas Dotter



Stephanie Fried



David Kaplan



Lindsay Rickey



Lawrence Schmidt

Faculty

Undergraduate and Graduate Teaching Awards

In recognition of faculty and graduate students who demonstrate great effort in teaching, the department awards annual prizes for the best undergraduate and graduate teaching. Awards for undergraduate teaching are given to the best faculty member(s), lecturer(s) and associate-in(s) teaching undergraduate courses. Recipients of undergraduate teaching awards are selected by a committee composed of the department chair and past faculty awardees who review undergraduate student evaluations. Awards for graduate teaching are given to the best core course instructor(s) and the best elective course instructor(s). Recipients of the graduate teaching award are selected by current doctoral students.

Herbert Newhouse, Ph.D.

Undergraduate teaching

Kate Antonovics, Ph.D.

Undergraduate teaching



Lecturer



Faculty



Dallas Dotter

Undergraduate teaching
Associate-in

UC San Diego, 9500 Gilman Dr., La Jolla, CA 92093 (858) 534-2230

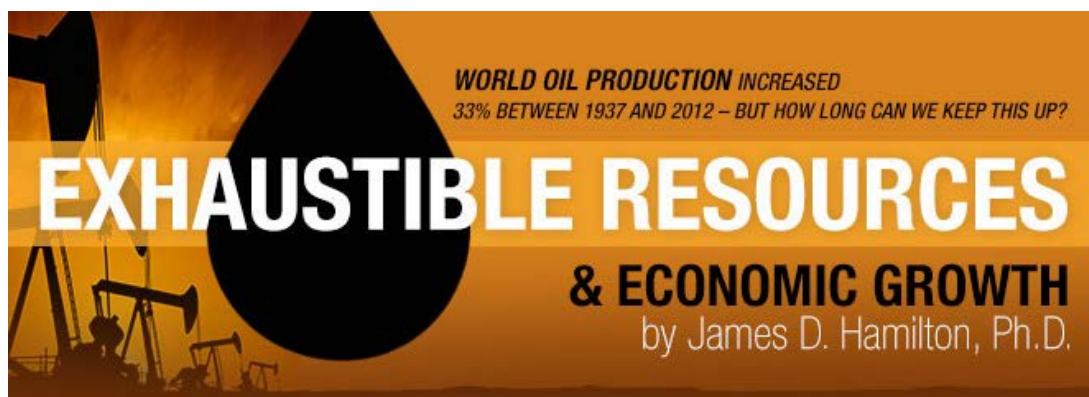
Copyright © 2008 Regents of the University of California. All rights reserved.

[Terms & Conditions](#) | [Feedback](#)



Economics

IN ACTION



By James D. Hamilton, Ph.D.

Oil is fundamentally a depletable resource – once a barrel is extracted from the ground and burned, it is gone. Nevertheless, world oil production has continued to increase steadily for the last century and a half. Most economists attribute this to technological progress. Each year our methods for finding oil become more sophisticated, and our extraction methods more efficient. Unquestionably this progress has been quite remarkable, with oil now being produced by wells that begin a mile below the surface of the sea and proceed for several more miles through rock to get to the oil-bearing formations.

Brief History of Oil Production

Technological progress is not the only reason that oil production has increased over time. The industry was born in the Oil Creek District of Pennsylvania in 1859. Figure 1 shows annual crude oil production for the states of Pennsylvania and New York since then. Production from the original Oil Creek District reached its maximum level in 1874, and total production from the two original oil states peaked in 1891. There was a resurgence of production as a result of secondary and tertiary recovery methods developed in the 1920s, though these were never enough to return production to where it had been in the 19th century.



Figure 1. Annual crude oil production (in thousands of barrels per year) from the states of Pennsylvania and New York combined, 1860-2011. Updates Figure 2 in James D. Hamilton, "Oil Prices, Exhaustible Resources, and Economic Growth," in Handbook of Energy and Climate Change (in press).

It is remarkable to me that today, with our truly impressive new technology and with a real price of oil that is five times as high as it was in 1891, we're producing less than one eighth as much from these regions as we did in 1891. Our best modern efforts are only able to match what was achieved by post-bellum roughnecks with the primitive production methods of 1868.

This, however, was not the end of the U.S. oil industry. Even as production from the original fields in Pennsylvania was on the way down, production began in neighboring Ohio, where it did not peak until 1896, and West Virginia, which peaked in 1900. When you look at production from the United States as a

ISSUE 7 : NOVEMBER 15, 2012

[Alumni Spotlight](#)
[Chair's Corner](#)

FACULTY SPOTLIGHT
[Jeffrey Clemens](#)

DEPARTMENT AWARDS
[Undergraduate Awards](#)
[Graduate Awards](#)
[Faculty Awards](#)

FEATURE ARTICLES
[Exhaustible Resources and Economic Growth](#)
[Remembering Hal White](#)
[Rising Leaders Program Enters Its Second Year](#)

[Past Issues](#)

SUBSCRIBE

Name:

Email:

[give now](#)

Events [FULL CALENDAR](#)

Nov 16 [Founders' Celebration](#)

Nov 18 [Downtown with David Sedaris](#)

Jan 4-6 [2013 ASSA Conference](#)

June 6-9 [Alumni Weekend 2013](#)



Stay Connected
with LinkedIn

whole (which in the 19th century was primarily these three states), it seemed to increase steadily from 1859 to 1900, as increases in new regions made up for declines in the original.

Despite the depletion of the Appalachian fields, U.S. production was to continue to increase as we entered the 20th century. This was achieved by a migration of the industry to new producing areas such as Illinois and Indiana (which would not peak until 1940), Kansas-Nebraska (peaked in 1957) and the four-corner states of the American Southwest (peaked in 1960), all of which proved to be far better places for obtaining oil than Appalachia. As production from these areas went into decline, even better fields were found in what ultimately proved to be the United States' four most productive states – California, Oklahoma, Texas and Louisiana – whose respective production peaks in 1985, 1927, 1972 and 1971 are seen in Figure 2.

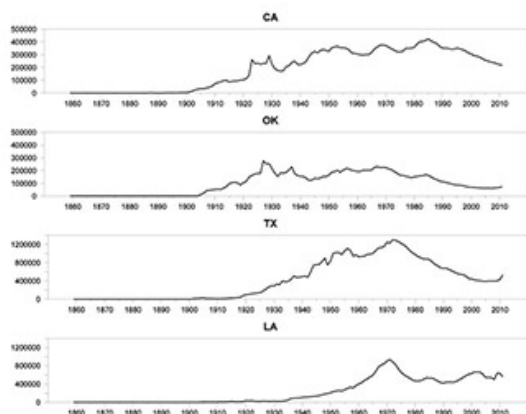


Figure 2. Annual crude oil production (in thousands of barrels per year) from four leading producing states, 1860-2011. California includes offshore and Louisiana includes all Gulf of Mexico U.S. production. Updates Figure 6 in James D. Hamilton "Oil Prices, Exhaustible Resources, and Economic Growth," in Handbook of Energy and Climate Change (in press).

The combined effect is that if one looks at a plot of total U.S. production, it seems to increase more or less continuously from 1859 until peaking in 1970; however, the major factor driving this is not development of new technology, but instead the exploitation of new oil-producing regions.

Oil Production Today

Right now there is considerable excitement about the potential for new horizontal fracturing methods to free oil from shale and other tight formations that traditionally had been inaccessible. This technological innovation is producing impressive production gains in places such as North Dakota and Texas; however, despite these gains, U.S. crude oil production in 2011 was still less than 60 percent of what it was in 1970. And a key unknown is how quickly production is likely to decline after the initial surge. The North Dakota Department of Mineral Resources estimates that production from a given fracking well will decline 80 percent within two years of initial production.

But despite the fact that U.S. oil production today is far below its level of 40 years ago, world oil production increased 33 percent between 1973 and 2010. Here again the story is one of development of new areas. These include the North Sea and Mexico, which went from 1 percent of world production in 1973 to 13 percent in 1999; however, the North Sea is now only producing at about half of its 1999 level, and Mexico is down 25 percent from its peak in 2004.

The Future of Oil Production

Other regions, such as central Asia, Africa, and Brazil continue to increase, and the government of Iraq is optimistic that quite substantial production gains can still be achieved there. These helped offset the North Sea and Mexican declines so that world production in 2010 was about at the same level as in 2005, and started to increase again in 2011 and 2012.

My view is that with these new fields and new technology, we'll see further increases in U.S. and world production of oil for the next several years. But, unlike many other economists, I do not expect that to continue for much beyond the next decade. We like to think that the reason we enjoy our high standard of living is because we have been so clever at figuring out how to use the world's available resources. But we should not dismiss the possibility that there may also have been a nontrivial contribution of simply having been quite lucky to have found an incredibly valuable raw material that was relatively easy to obtain for about a century and a half.

My view is that stagnant world oil production and doubling in the real price of oil over 2005-2010 put significant burdens on the oil-consuming economies. Optimists may expect the next century and a half to look like the last. But we should also consider the possibility that it will be only the next decade that looks

like the last.

UC San Diego, 9500 Gilman Dr., La Jolla, CA 92093 (858) 534-2230

Copyright © 2008 Regents of the University of California. All rights reserved.

[Terms & Conditions](#) | [Feedback](#)



Remembering Hal White

By Allan Timmerman, Ph.D., and Graham Elliott, Ph.D.



Hal White, Chancellor's Associates Distinguished Professor of Economics at UC San Diego, passed away on March 21, 2012, at the age of 61. In 1979, Hal moved from the University of Rochester to join the UC San Diego Department of Economics. He was an integral part of the department's growth and development, and he stayed for his entire career. In his more than 30-year relationship with the campus, he helped transform the department into one of the top econometrics programs in the world. This was a mutually beneficial relationship for Hal, as it allowed him to escape from the **blizzards of upstate New York**. Hal was a true contender for the **Nobel Memorial Prize in Economic Sciences**, and he left an indelible mark on students and colleagues. Hal's legacy lives on through the "UC San Diego approach" to econometric analysis he helped to shape and his immense influence on the profession.

A True Scholar

Hal began his career studying labor-market issues and was confounded by the disparity between the assumptions he needed to make to use available methods to conduct empirical analysis, and the assumptions he felt were reasonable to make. His discomfort with the conventional methods of empirical analysis led him to search for a new approach. The outcome – his paper on how to construct standard errors for regression with heteroskedasticity – is by some counts the most widely cited paper in economics. Solving a problem in a research field outside his own led not only to one of the most important papers in the field of econometrics but also transformed Hal into one of the field's leading researchers (he never did get back to labor economics).

Hal's innovation in econometrics was not a fluke. He had a unique ability to approach new and existing problems in innovative ways. An example is the area of forecast evaluation. A key issue in forecast evaluation is whether we can distinguish if one model's predictive performance improves upon that of a competing model. Often we observe sequences of forecasts from two competing models generated in such a way that the leaner model is a special case of a larger model. If we observe a very large sample of forecasts from both models, it will be impossible to distinguish between the two models under the assumption that the smaller model represents the true data generating process. This is because the larger model will eventually learn that its additional terms (those excluded by the smaller, true model) are redundant and so, in a large enough sample, will assign zero weight to such terms. This makes the two sets of forecasts identical, and so we cannot really distinguish between them.

In an ingenious **paper** co-authored with one of his students, Raffaella Giacomini, and published in *Econometrica* in 2006, Hal came up with a new solution to the forecast-evaluation problem. Rather than comparing the performance of two forecast models in large samples, he proposed comparing forecast methods, the distinction being that forecast methods include not only the underlying models but also a description of how they are implemented (e.g., how their parameters are estimated). Assuming that the parameters are estimated in a way so that estimation error would not vanish, Hal showed that a statistical procedure for conditional forecast performance could be established that would allow us to tell if one method is better or worse than another method because it produces better forecasts.

This is just one example of Hal's ability to think outside the box. There are numerous other examples (see a previous article in *Economics in Action*). Abundant innovations help explain why Hal's work is among the most heavily cited in all of economics, but he is not just known for his research in economics. Throughout his career, Hal managed to publish in an extraordinarily large range of top journals spanning econometrics, statistical analysis, finance, neural networks, medicine and legal studies.

ISSUE 7 : NOVEMBER 15, 2012

[Alumni Spotlight](#)
[Chair's Corner](#)

[FACULTY SPOTLIGHT](#)
[Jeffrey Clemens](#)

[DEPARTMENT AWARDS](#)
[Undergraduate Awards](#)
[Graduate Awards](#)
[Faculty Awards](#)

[FEATURE ARTICLES](#)
[Exhaustible Resources and Economic Growth](#)
[Remembering Hal White](#)
[Rising Leaders Program Enters Its Second Year](#)

[Past Issues](#)

[SUBSCRIBE](#)

Name:

Email:

[give now](#)

Events

[FULL CALENDAR](#)

Nov 16 [Founders' Celebration](#)

Nov 18 [Downtown with David Sedaris](#)

Jan 4-6 [2013 ASSA Conference](#)

June 6-9 [Alumni Weekend 2013](#)



Stay Connected
with LinkedIn

Valued Mentor and Colleague

Hal was extraordinarily productive and accomplished, not only through his own research, but also through the generations of doctoral students whose committees he chaired and whose careers he helped launch. Many of Hal's students have established their own illustrious careers in academia, finance and industry. His former students can be found at universities such as Yale, Cornell, Rutgers and Michigan State; Montreal and Boston universities; and University College, London University and National Taiwan University.

Hal was a towering academic, even among extremely accomplished colleagues. His near-encyclopedic knowledge of econometrics and statistics came in handy whenever a difficult question arose. He was more than happy to generously share his prolific knowledge. When presented with a difficult technical question at the regular brown-bag econometrics lunch meetings, Hal would regularly walk up to the blackboard, formalize a question into an econometric equation, and show us all how to solve it. As a co-author, he demonstrated the same ability and generosity of time and effort.

Not only did Hal have an amazing career in academia, he also co-founded the highly successful economic consulting firm Bates White with one of his former advisees, Charles Bates. To quote from the firm's website, "The firm is distinguished by many of Dr. White's qualities – most notably intellectual and analytical rigor and creativity. [Hal] was especially gratified that Bates White became quickly known for setting new quality standards in the economic and econometric analysis of legal disputes."

Hal's unique technical skills and enthusiasm for econometric questions never dampened over the years. To the end, he was involved in numerous econometric projects and remained a cherished co-author by those who were fortunate to work with and learn from him.

On a personal level, Hal was always cheerful and supportive. He shared his hobbies generously with friends and colleagues and would entertain with trumpet songs and big band music after dinner. For Hal, econometrics, trumpet playing, teaching and research were all part of enjoying life to the fullest.

To share memories of Hal, please visit our [online memorial](#).

Rising Leaders Program Enters Its Second Year

By the Department of Economics

The goal of the **Economics Leadership Council (ELC)** – to help students obtain competitive internships and be prepared for the demands and expectations of full-time employment in private industry – is well supported by the Rising Leaders Program. Last year, we were excited to **announce the new Rising Leaders Program**, which grew out of the partnership between the ELC and the Department of Economics. The program was created in response to alumni requests for assistance in expanding our network so that markets outside the San Diego region are more aware of the academic rigor of our department, and to recognize that our alumni can be great assets to the professional business market. Students are selected for the Rising Leaders Program based upon their academic merit, professional work experience, faculty recommendations and a statement of career objectives they believe the ELC can help them achieve.

The alumni involved with the program were an enormous resource for the inaugural Rising Leaders cohort. Our alumni conducted mock interviews, provided resume advice and marketed the selected Rising Leaders for internships in a highly competitive market. This generosity of time and support that our alumni have displayed is important to our students who, upon graduation, are facing an increasingly ferocious job market where the trend among employers is to hire young employees out of their competitive summer internships.

This year the department and the ELC worked to refine the Rising Leaders Program by focusing on mentorship. Because of generous alumni donations, each Rising Leader selected for the 2012-13 cohort was given a \$1,500 scholarship. Each rising leader will work with the department, the ELC and our alumni to obtain impressive internships in the summer of 2013. We are proud to announce the 2012-13 cohort of Rising Leaders: five students determined to break into investment banking. Our Rising Leaders are impressive and, despite their common goal, come from a variety of backgrounds and experiences.

2012-13 Rising Leader Cohort



Maximillian Chua

Management Science
Max Chua has his eyes set on a bulge bracket firm, perhaps focusing on energy and pricing.



Albert Koh

Economics
Albert Koh has gleaned knowledge from his family in the enterprise software industry, and he plans to utilize this in technology, media and telecommunications (TMT).

Chris Kwok

Joint Mathematics-
Economics
Chris Kwok has experience in technology, media and telecommunications

Thomas Wilson

Management Science
Thomas Wilson's family has a long history in the defense/aerospace sector, and he'd like an internship related to

ISSUE 7 : NOVEMBER 15, 2012

[Alumni Spotlight](#)
[Chair's Corner](#)

FACULTY SPOTLIGHT
[Jeffrey Clemens](#)

DEPARTMENT AWARDS
[Undergraduate Awards](#)
[Graduate Awards](#)
[Faculty Awards](#)

FEATURE ARTICLES
[Exhaustible Resources and Economic Growth](#)
[Remembering Hal White](#)
[Rising Leaders Program Enters Its Second Year](#)

[Past Issues](#)

SUBSCRIBE

Name:

Email:

[give now](#)

Events

[FULL CALENDAR](#)

Nov 16 [Founders' Celebration](#)

Nov 18 [Downtown with David Sedaris](#)

Jan 4-6 [2013 ASSA Conference](#)

June 6-9 [Alumni Weekend 2013](#)



Stay Connected
with LinkedIn



(TMT) and is looking to expand on that.



consulting at a Fortune 500 company focused on aerospace and defense or energy, or directly with a consulting firm.



Edward Youn

Joint Mathematics-
Economics

Edward Youn looks to build on his experience as an intern at a boutique investment-banking firm in Los Angeles and at a private equity firm in La Jolla.

How Alumni Can Participate

Each Rising Leader is considered top of the class in his major, has prior business experience, and is deemed “business-ready” by the alumni executives on our Economics Leadership Council. To request a student’s portfolio, please contact Katie Magallanes at kmagallanes@ucsd.edu.

2011-12 Rising Leaders

Last year’s cohort of Rising Leaders had diverse interests spanning accounting, consulting, economic research and finance. Through this program, students try to find their way to crystalize their post-graduation goals. Each of them was successful at obtaining prestigious internships for the summer and had wonderful, insightful experiences to share.



Aimee Kang

Aimee Kang is working to build a career in accounting and was successful at securing an internship at Ernst & Young in assurance. She had the following to say about her experience: “My experience with Ernst & Young has been an amazing opportunity, and a step toward my career goal of being a forensic accountant. As an assurance intern, I was able to work at different client offices in different industries, and was even able to talk to clients for walk-through procedures. Throughout my internship, I was exposed to professionals from all levels, and even had my very own peer advisor, career counselor and partner mentor. Overall I had a positive internship, and am looking forward to working with the firm after graduation.” Aimee is now a senior majoring in economics.

Jayoo Song

Jayoo Song is working toward a career in management consulting and was fortunate to secure an international internship in Booz Allen Hamilton’s South Korea office as a research assistant supporting management consultants. He had this to say about his experience: “My research assistant position was a lot of fun, but also extremely challenging. From the start, I worked into the early morning hours pretty much every day. A few of the busier days I would work until 5 a.m. and leave my home at 8 a.m. Though it really depends on what kind of project you are working on, consulting generally requires you to work very



hard. You have to be mentally and physically tough.”

Jayoo did a bit of preparation that paid off: “As a research assistant, I spent most of the time researching data and categorizing them using Excel ... I memorized pretty much all the short cuts in Excel before I started to work, and it really paid off.” One thing that Jayoo learned quickly was that research is a serious task. “I thought that researching was Googling. But that was not the case. When consultants wanted me to find something, it was essential to know why they needed it, and how they were going to use that information. Once you really understand this, then it is a lot easier for you to gather data you and consultants want.”

Overall, Jayoo learned throughout his internship what the life of a consultant really is: “Being able to talk to consultants and ask questions was probably the biggest opportunity for me. Now I know how they dress, how they eat and how they communicate with others. I hope to figure out how they think and solve problems like they do one day.” Jayoo graduated last spring with a degree in economics.



Ali Palida

Ali Palida applied to the Rising Leaders program unsure of whether he wanted to move to the private sector or remain in academic research. His experience as a Rising Leader helped solidify his aspirations and, after graduating last spring from our joint mathematics and economics program, he accepted a full-time research assistant position at the Federal Reserve Bank of New York.

Ali had this to say about his experience working as a researcher: “My time spent as an RA at the Federal Reserve Bank of New York this summer has been both productive and enjoyable. Within my few months here, I have come to realize that the job of an RA is far more than mere data gathering and entry. You are expected to be an active contributor to professional economic research, both for academic and policy purposes, through assisting economists in writing papers, conducting empirical analyses and reviewing theoretical work. This requires a solid understanding, as well as direct application, of the various concepts taught in economics and mathematics classes. Such a responsibility is both challenging as well as extremely rewarding. Being an RA is also perfect preparation for graduate study. It provides you with the necessary skills required to conduct independent research, where opportunities to develop these skills in undergraduate programs are often quite limited. The scope of the research conducted here is also very wide, ranging from microeconomics to finance. Anyone interested in graduate study in economics should definitely consider first taking a stop at one of the Federal Reserve banks.”



Rebecca Wagner

Rebecca Wagner, now a senior majoring in economics, hoped that the Rising Leaders Program would provide her with exposure to the work environment and help her narrow down career options. Under the guidance of UC San Diego alumnus Jerome Fons at Kroll Bond Ratings in New York, Rebecca was able to achieve her goal. At Kroll she was assigned to support work on a corporate default model: “My days were filled with SQL queries, Excel spreadsheets and Google. It is amazing how different econometrics in school is from how it is in the ‘real world’... During the econometrics series, I was constantly warned about how data is never found exactly how you want it, but we never had experience sorting through data. Organizing data was the most time consuming part of the entire process.” A self-professed Excel expert prior to the summer, Rebecca learned about capabilities of Excel that she never knew existed and gained valuable skills using SQL.

Rebecca was also able to grow through real-life work experience. According to her, “even though the purpose of my internship was narrowly based, I learned about and worked in a variety of different areas of the business. Jerry made sure to bring me into all types of rating committees from CMBS to public finance to learn about the rating process and about all the different types of securities that are rated at KBRA. I was also assigned small tasks outside of the corporate model, I even spent some time learning

how to use a Bloomberg terminal.”

The internship was very positive: “As a whole this experience was amazing. It felt more like I was working at KBRA as a consultant than interning, since I usually imagine internships to be about getting coffee and making copies, neither of which I had to do. This internship definitely honed my technical skills on a variety of different programs. I got to learn a little bit about everything, and as someone who is still not entirely sure what she wants to do, learning is the only way to narrow it down. I think the biggest advantage one gains from an internship is learning what a job is like in the ‘real world’ and learning the different kind of jobs that are out there. While one is at college, one masters how to be a student, but college is a bubble that I believe hides the ‘real world’; especially at a research-based school like UC San Diego. While the skills I learned at UC San Diego were used repeatedly at my internship, the knowledge and skill set I gained at Kroll is completely different than what I have learned in college. Another benefit to my internship at Kroll was spending the summer in New York, which taught me a lot about who I am and what I want to do in the future.”

UC San Diego, 9500 Gilman Dr., La Jolla, CA 92093 (858) 534-2230

Copyright © 2008 Regents of the University of California. All rights reserved.

[Terms & Conditions](#) | [Feedback](#)

