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ACADEMIC GOOGLE HIRSCH INDEX: 15

I-10 Index : 19

I-100 Index: 2

JOURNAL PUBLICATIONS, PEER REVIEWED (and others)

Top Forty selected works by order of importance, starting at number 1 where the importance should be seen as an index with an exponential decline curve; e.g. the first article is about twice as important as the fourth article, the second article is about twice as important as the fifth article etc. as for example where $\text{Index} = \text{Exp}[5 - (\text{Ordinal Rank}/4.25)]$:

_____ (2016). "Farm Labor Monopsony: Farm Business and The Child Hierarchical Model Of Fertility," *Journal of Business & Economics Research*, Volume 14, Number 1, First Quarter, 2016, pp. 19-32.

_____ (1994a). "Energy Grades and Economic Growth," *Journal of Energy and Development*, Volume 19, Number 2, Spring 1994, pp. 245-264.

_____ (2000a). "Energy Utilization Chain: Determining Viable Oil Alternative Technology," *Energy Sources*, Volume 22, Number 3, April, pp. 215-226.

_____ (1998b). "Entropy Subsidies," *Energy Policy*, February, Volume 26, Number 2, pp. 113-118.

_____ (1999c). "Entropy and Diminishing Elasticity of Substitution," *Resources Policy*, March, Volume 25, Number 1, pp. 51-58, 25th Anniversary Volume.

* _____ (2014c). "The Marginal Energy Return On (Energy) Investment (MEROI)," *IAEE Energy Forum*, Fourth Quarter, 2014, pp. 17 – 20. *—Editorially Reviewed—

* _____ (2015a). "Economic Growth and Marginal Energy Return Ratios (MERR)," *USAEE Dialogue*, Volume 23, No. 1 (January 2015). *—Editorially Reviewed—

* _____ (2019c). “Energy Macroeconomics,” *IAEE Energy Forum*, Fourth Quarter, 2019, pp. 21 – 23. *—Editorially Reviewed—

_____ (2005). “The Economics of Oil Definitions: The Case of Canada’s Oil Sands” *OPEC Review*., Volume 29, Number 1, March, pp. 51-73.

_____ (2000c) “The Case for Conserving Oil Resources: The Fundamentals of Supply and Demand,” *OPEC Review*, June, Volume 24, Number 2, pp. 71-86.

_____ (2001a). “Oil Exploration Game with Incomplete Information: An Experimental Study,” *Energy Sources*, Volume 23, Number 6, July, pp. 571-578.

_____ (1999a). “The Mineral Economy: How Prices and Costs Can Falsely Signal Decreasing Scarcity,” *Ecological Economics*, Volume 31, Number 1, pp. 155-166.
[141 citations]

_____ and Yuanyuan Zhao (2007b). "The Hubbert Curve and Institutional Changes: How Regulations in Alaska Created a U.S. Multi-Cycle Hubbert Curve," in *The Journal of Energy and Development*, Volume 32, Number 2, Spring 2007, pp. 159-186.

_____ and Maduabuchi Pascal Umekwe (2019). “Shale-Oil Development Prospects: The Role of Shale-Gas in Developing Shale-Oil,” *Energies* 2019, 12(17), 3331; doi:10.3390/en12173331.

_____ (2014a). “World oil production trend: Comparing Hubbert multi-cycle curves,” *Ecological Economics*, Volume 98 (2014) pp. 62–71.

_____ and Marek Kolodziej, (2009a). “North American Natural Gas Supply Forecast: The Hubbert Method Including the Effects of Institutions,” *Energies* 2009, 2(2), 269-306; doi:10.3390/en20200269

* _____ (1999b). “Oil Scarcity Should Be a Concern,” *USAEE Dialogue*, Volume 7, number 1, pp. 12-13, *—Editorially Reviewed—

* _____ (2019b). “A Tale of Two Peaks,” *IAEE Energy Forum*, Second Quarter, 2019, pp. 5 – 7. *—Editorially Reviewed—

_____ (2002c). “Using Non-Time Series to Determine Supply Elasticity: How far do prices change the Hubbert Curve?” *OPEC Review*, Volume 24, Number 2, June, pp. 147-167.

_____ (2000b). “Soviet Economic Decline: Did an Oil Crisis Cause the Transition in the Soviet Union,” *Journal of Energy and Development*, Volume 24, Number 1, pp. 65-82.

* _____ (1994b). “Oil Supply Dynamics: Russian Oil Production and Market Reforms, A Comparison of the U.S. and Russian Oil Markets,” *The World Oil and Gas Industries In the 21st Century*, Conference Proceedings of the 16th Annual North American Conference of the

International Association of Energy Economics (IAEE), November 6-9, 1994, Dallas, Texas, U.S.A., pp. 106-115, *—Editorially Reviewed—

_____ and Marek Kolodziej, (2008a). “Former Soviet Union Oil Production and GDP Decline: Granger Causality and the Multi-Cycle Hubbert Curve” *Energy Economics*. Volume 30, pp. 271-289. [119 citations]

_____ (2013a). “Uncertainty in Exhaustible Natural Resource Economics: The Irreversible Sunk Costs of Hotelling,” *Resources Policy*, number 38, pp. 532-541

_____ and Jungho Baek (2012b). “Much Ado about Hotelling: Beware the Ides of Hubbert,” *Energy Economics*, 34 (2012), pp. 162-170.

* _____ (2018a). “Carbon Regulations: Can Economic Science Determine Carbon Costs,” *IAEE Energy Forum*, Second Quarter 2018, p. 9 *—Editorially Reviewed—

_____, Jacob Joseph, Reuben Sherwood (2009f). “Risky Shift versus Cautious Shift: Determining differences in risk taking between private and public management decision-making,” in *The Journal of Business & Economics Research*, January 2009, volume 7 number 1. [58 citations]

_____ and Marek Kolodziej. (2007a). “Institutions and The Supply of Oil: A Case Study of Russia” *Energy Policy*, Volume 35, pp. 939-949.

_____ (1999d). “Modeling OPEC Behavior: Theories of Risk Aversion for Oil Producer Decisions,” *Energy Policy*, Volume 27, pp. 901-912.

_____ and Michael K. Pippenger (2010a). “OPEC and Venezuelan oil production: Evidence against a cartel hypothesis,” *Energy Policy*, 38, 6045-6055.

* _____ (2011d). “What is OPEC? It is Saudi Arabia,” in *OPEC at 50: Its Past, Present and Future in a Carbon-constrained World*, March, 2011, conference proceedings, National Energy Policy Institute, The University of Tulsa, *—Editorially Reviewed—

* _____, (2020). “Legal Evidence of an Oil Supply Monopsony: The U.S. and Saudi Arabia before 1974,” in *Oil, Gas & Energy Law (OGEL)*, Maris - ISSN 1875-418X, www.ogel.org, OGEL 1 (2020), January, Volume 18, Number 1. *—Editorially Reviewed—

* _____ (2009b). “Contracts and the Great Stagflation.” *OGEL* 4, 2009, October, in *Contract Management, International Petroleum Contracts*, *—Editorially Reviewed—

* _____ (2016). “The Future of Proven Oil Reserves,” *USAEE Feeds*, <http://www.usaee.org/feeds.aspx>; *—Editorially Reviewed—

* _____ (2016). “Is China in Recession? A cursory Look At Its Energy Statistics,” *IAEE Energy Forum*, Fourth Quarter 2016, p. 9 *—Editorially Reviewed—

_____ ; Jim Collins, & Xiaoqi Han, (2012a). “Micro-District Coal Heating Case Study,” *International Research Journal of Applied Finance, Case Studies*, http://www.irjaf.com/Case_Studies.html.

_____ (2016). “Deep Knowledge: A Strategy For University Budgetary Cuts,” *Contemporary Issues in Education Research*, Fourth Quarter, Volume 9, Number 4, pp. 145-158.

_____ (2014b). “The New Oil to Natural Gas Price Ratio Paradigm,” *Journal of Energy Challenges and Mechanics*, <http://www.nscj.co.uk/JECM/>, Volume 1 (2014) issue 1, article 8.

_____ (1998c) “Oil Exploration in Transitional Economies: What is Happening with Kazakstan’s On-Shore Proven Oil Reserves,” *OPEC Review*, March, Volume 21, Number 1, pp. 31-40.

Zhenhua Rui; Paul A Metz; **Douglas B Reynolds**; Gang Chen; Xiyu Zhou, (2011f). “Regression models estimate pipeline construction costs,” *Oil & Gas Journal*; Jul 4, 2011; 109, 14; ABI/INFORM Global, pg. 120.

Rui, Zhenhua, Paul Metz, Gang Chen, Xiyu Zhou, Xioqing Wang and **Douglas B. Reynolds**, (2013b), “Inaccuracy in Pipeline Compressor Station Construction-Cost estimation,” *Oil and Gas Facilities*, October 2013, pp. 71-79.

Other Works by date:

Erovie-Oghene U. Afieroho, Shirish L.Patil, Abhijit Dandekar, Robert Perkins, **Douglas Reynolds** (2017). “From declared asset retirement obligations to a decommissioning cost estimate for onshore crude oil fields in Nigeria,” *Journal of Environmental Management*, Volume 204, Part 1, 15 December 2017, Pages 207-220.

Ibironke, A. , Patil, S. , Chukwu, G. , **Reynolds, D.** , Dandekar, A. and Khataniar, S.(2011e) “A Probabilistic Economic Analysis of the Transportation of GTL Blends Through TAPS,” *Energy Sources, Part B: Economics, Planning, and Policy*, 6: 1, 12-19.

S. Howe, Patil, S.L., Dandekar, A.Y., Nanchary, N., Ogbe, D.O., Hunter, R.B., Chukwu, G.A. and **Reynolds, D.** (2009c). “Production Modeling and Economic Analysis of a Potential Methane Hydrate Accumulation on the North Slope of Alaska.” *Petroleum Science and Technology*. 1532-2459, Volume 27, Issue 9, 2009, Pages 923-932.

Ejiofor, N., Patil, S. L., Chukwu, G. A., **Reynolds, D.**, Khataniar, S. and Dandekar, A. Y. (2008b) “Economic Appraisal of Transporting Gas-to-Liquids Products through the Trans-Alaska Pipeline System (TAPS),” *Energy Sources, Part B: Economics, Planning, and Policy*, 3:2, 196-202.

BOOKS AND CHAPTERS (in order of importance)

_____ (2011a) *Energy Civilization: The Zenith of Man*, sole author self-published academic monograph, Alaska Chena, 440 pages.

There are two causes to the decline of a civilization: loss of energy and loss of energy quality. These two dimensions of energy are what determine the ultimate survival of a nation, empire, or way of life. Where are the United States and the rest of the developed world today along the energy dimension continuum? This book helps explain how to alter lifestyles not only to best save the planet from environmental disaster, overpopulation, or food crises, but to help people adapt to a changing energy market. Know your history, know energy, and know your future. Don't be fooled: the barbarian's of energy scarcity are not at the gate, they are a Trojan Horse already within the fortress walls.

_____ (2002a) *Scarcity and Growth Considering Oil and Energy: An Alternative Neo-Classical View*, sole author academic monograph, The Edwin Mellen Press, 240 pages.
[48 citations]

This book looks at the oil and energy markets and how our society's economic growth greatly depends on oil and energy. Evidence is presented that oil prices will soon increase substantially due to OPEC market power and will severely affect our economy, potentially causing a deep recession. Included in the book is evidence on how the scarcity of oil supplies within the Soviet Union's closed economic system led to its collapse.

_____ (2016) *Cold War Energy: The Rise and Fall of the Soviet Union*, sole author self-published academic monograph, Alaska Chena, 120 pages. Reviewed in <http://www.resilience.org/stories/2017-01-11/the-peak-oil-president/>. (January 11, 2017)

A fundamental problem for the economies of Eastern Europe and the Soviet Union was the decline in Russian oil production. Russia was the main oil producer for the communist countries, and its production decline starting in 1988 pushed the economies of the Soviet Empire over the brink of disaster, and into collapse. What is more, the oil production decline did not stop with the break up but continued until 1996, exacerbating the economic problems of Russia and the former states. Certainly much of Soviet economic stagnation in the 1970's and 1980's was caused by a lack of innovation. Possibly military defense spending played a role in furthering the economic collapse, and Gorbechev and his policy of glasnost were a big factor in changing Soviet society since this allowed people to feel freer to react politically and express their desire to change communist rule. However, the straw that broke the camels back and that ultimately caused of the decline and fall of the Soviet Union was an oil shortage.

_____ (2009d) Chapter 1, "Oil Supply Dynamics: Hubbert, Risk And Institutions," In: Pitt, Edward R. and Christopher N. Leung, Editors, *OPEC, Oil Prices And LNG*, ISBN:978-1-60692-897-4, ©2009 Nova Science Publishers, Inc.

In order to be able to predict the price of oil, the first thing needed is to forecast the supply of oil. The economics of non-renewable resources, and specifically non-renewable resource exploration, determines what is going on with supply. This paper goes through the important concepts of resource exploration economics, including the Hotelling principle, that give rise to the economics of the Hubbert curve. The Hubbert curve is one of the most important concepts in all of energy economics and non-renewable natural resource supply. Additionally, institutional economics and the concept of risk aversion are brought into the discussion in order to fine tune Hubbert trends. Based on these

concepts a true worldwide oil supply forecast can be made. Peak oil is shown to have occurred already in 2005. A brief discussion of alternative energy solutions including the concept of Energy Return on Investment (EROI) suggest that worldwide oil prices will be very high in the 21st century compared to what they were in the 20th century. The result of high oil prices will parallel what the Former Soviet Union endured where its economy suffered decline.

_____ (2018b) Chapter 4, “Institutions and The Supply of Oil,” In: *Handbook of Energy Politics*, Edited by Jennifer I. Considine, University of Dundee and Keun-Wook Paik, Energy, Environment and Development Programme, Chatham House, UK. Publication Date: 2018, ISBN: 978 1 78471 229 7, Edward Elgar Press.

Institutional economic theory suggests that the variance in institutions across countries can explain differences in cross-country output per capita. When considering the supply of oil, institutions may also explain how much oil, hydrocarbon producing countries provide. For example in the early 1970’s, as nominal world oil prices increased from \$3 per barrel to \$11 per barrel, a number of OPEC oil producers changed their internal institutional environment by nationalizing oil production and putting all petroleum-related capital and infrastructure under government control. This affected oil supplies. Similar institutional changes may be happening again in this century now that oil prices are more volatile. This chapter considers the relationship between institutions and the supply of oil.

_____ (2003) *Alaska and North Slope Natural Gas: Development Issues and U.S. and Canadian Implications*, sole author self-published issue analysis, Alaska Chena, 231 pages.

This book looks at how Alaska’s North Slope natural gas will get to market as well as the future of natural gas markets in general. Evidence is presented that the U.S. will need Alaskan natural gas. The option of having Alaska own a natural gas pipeline is also addressed as well as how Alaska will negotiate with the oil companies over tax incentives and access.

_____ (2016). “Chapter 24: Oil and Gas Issues and Policies: The Risks and Rewards of Being an Energy Producing State,” in Thomas, Clive S. Editor, with Laura Savatgy, Anthony T. Nakazawa and Kristina Klimovich, *Alaska Politics and Public Policy: The Dynamics of Beliefs, Institutions, Personalities and Power*. University of Chicago Press and University of Alaska Press.

Politics in Alaska have changed significantly since the last major book on the subject was published more than twenty years ago, with the rise and fall of Sarah Palin and the rise and fall of oil prices being but two of the many developments to alter the political landscape. This book, the most comprehensive on the subject to date, focuses on the question of how beliefs, institutions, personalities, and power interact to shape Alaska politics and public policy. Drawing on these interactions, the contributors explain how and why certain issues get dealt with successfully and others unsuccessfully, and why some issues are taken up quickly while others are not addressed at all. This comprehensive guide to the political climate of Alaska will be essential to anyone studying the politics of America’s largest—and in some ways most unusual—state.

_____ (2020). “Chapter 8, Sovereign Wealth Fund in Alaska;” “Chapter 20, Local Content Issues in Alaska;” “Chapter 31, Corporate Social Responsibility in Alaska;” in *Experiences of Managing Wealth, CSR and Local Content Policy: Sustainable Development Of Extractive Resources Industries*, Springer.

EXPERIENCE

Professor of Oil and Energy Economics, Alaska - Full Professor 2009; Associate Professor 2002 to 2009; Assistant Professor 1997 – 2002. University of Alaska Fairbanks (UAF), Fairbanks, Alaska, USA.

Economics Outreach for the North Slope Borough, Alaska – Fall 2013; 2014., 2015 and 2016, Barrow, Alaska. Analysis to address tax system alternatives for the North Slope Borough’s oil and gas sector including inflation indexation and fiscal systems analysis. Through a University of Alaska Fairbanks, School of Management, and Cooperative Extension Service contract. Also looked at North Slope Borough housing, permafrost and water and sewer issues on an extended grant.

Energy Consultant for the Alaska State Legislature and the Alaska Department of Revenue - Spring 2002; Winter 2005/2006. Northern Economic Research Associates, Juneau, Alaska, and Information Insights, Fairbanks, Alaska.

Sabbatical Lecturer, Researcher and Service Academic: Krakow, Poland AGH University, Fall 2010; Paris, France, American University of Paris, Summer 2011; Almaty, Kazakhstan, Kazakstan Institute of Management, Economics and Strategic Research (KIMEP), Fall 2017; Nanjing, China, Nanjing University of Aeronautics and Astronautics, Summer, 2017.

Assistant Professor Economics, Kazakstan - 1995 to 1997
Kazakstan Institute of Management, Economics and Strategic Research (KIMEP), Almaty, Republic of Kazakstan
This institute offers Master in Economics, Master in Public Administration, and MBA degrees and now has law degrees, undergraduate degrees and PhDs.

Mechanical Engineer - BDM Corporation, (Now within Northrop Grumman) Albuquerque, New Mexico, U.S.A. - 1985 to 1987.

EDUCATION

Ph.D. Economics, University of New Mexico, Albuquerque, New Mexico, U.S.A., 1994, Energy, Environmental and Resource Economics.

B. S. Mechanical Engineering, Colorado State University, Fort Collins, Colorado, U.S.A., 1984, Alternative Energy Technologies and Energy Conversion.

Foreign Exchange Student, Bodoe, Norway 1978-1979; University of Oslo, Oslo, Norway, 1981-1982, Norwegian and Russian Language and Literature.

OTHER ASSORTED PUBLICATIONS

_____ (2013c). “World Oil Production Trend: How U.S. Shale Oil Production Changes the World Trend,” 32nd IAEE North American Conference: Industry meets government, Anchorage, Alaska.

_____ (2011b). “Peak oil and the Fall of the Soviet Union: Lessons on the 20th Anniversary of the Collapse.” The oil drum, May 27, 2011, www.theoil drum.com/node/7878.

_____ (2010b). “Why Peak Oil is Past: Integrating Oil Supply models to show 2004 as the Hubbert Peak,” *Energy Politics*, Winter 2010, <http://www.energypolitics.org/issues/winter-2010>.

_____ (2011c). “Peak oil and the Great Stagflation: Lessons from the Fall of the Soviet Union,” *Energy Politics*, Fall 2011, <http://www.energypolitics.org/issues/fall-2011>.

_____ (2009e). “Stocks, Inflation and the Hubbert Curve,” *USAE Dialogue*, Volume 17, number 3, pp. 12-13.

_____ (2001b) “World Hubbert Curve Oil Supply Forecast and The Reserve/Production Ratio Assumption,” *2001: An Energy Odyssey?*, Conference Proceedings of the 24th Annual International Conference of the International Association of Energy Economics (IAEE), April 25-27, 2001, Houston Texas.

_____ (1998a) “Forecasting Oil Prices: A Forecasting Model Based on the Work of M. King Hubbert,” *Experimenting with Freer Markets: Lessons from the Last 20 Years and Prospects for the Future*, Conference Proceedings of the 21st Annual International Conference of the International Association of Energy Economics (IAEE), May 13-16, 1998, Quebec Canada, pp. 541 - 550.

_____ (1997) “Oil Production in Transitional Economies: Can Kazakhstan Sustain Oil Output,” *Energy and Economic Growth: Is Sustainable Growth Possible?*, Conference Proceedings of the 20th Annual International Conference of the International Association of Energy Economics (IAEE), January 22 -24, 1997, New Delhi, India, pp. 149-156.

_____, Robert R. Logan, H. Charles Sparks and Michael Backus, (2002b). *The Alaskan Natural Gas Transmission System: An Economic Analysis of Various Pipeline Proposals*, Report presented to the Alaska State Legislature’s Joint Committee on Natural Gas. Northern Economic Research Associates, August 19, 2002.

_____ (2013d). “Alaska Natural Gas Exports: Fiscal Stability Versus The State’s Constitution,” *32nd IAEE North American Conference: Industry meets government*, Anchorage, Alaska.

Rogers, Brian, Douglas B. Reynolds, Jana Peirce, Charles Ermer and Nadine Hargesheimer, (2006) *Economic, Fiscal and Workforce Impacts of Alaska Natural Gas Projects*, FINAL REPORT; Prepared for Alaska Department of Revenue, Juneau, Alaska; Prepared by, INFORMATION INSIGHTS, INC. Fairbanks, Alaska September 5, 2006.

_____ (2001). Macmillan Encyclopedia of Energy, Entry #1: "Import/Export Energy Market" Article; Entry #2: "Industry and Business: Energy As a Factor of Production in" Article.

_____ (2000). August, *OXFORD ENERGY FORUM*, "The Value of Oil," Short Article, pp. 9-10.

_____ (2000). August/September. Gave a series of seminars at the National Autonomous University of Mexico (UNAM) in Mexico City. UNAM is the largest university in the Western Hemisphere. These seminars were about Alaska's oil and gas situation as it relates to Mexico's oil and gas situation. Mexico is in a great state of change now that the PRI party is out of power for the first time since the Mexican revolution ended in 1917. A new more free market politics is happening in Mexico and this could cause changes in their oil industry. Explaining some of the aspects of Alaska's oil situation may help Mexico, and Mexico's market policies may help Alaska.

GRANTS AND PUBLIC WORK

North Slope Borough Contract, Point Lay Village Permafrost and Utility issues. (2014-2016) Douglas B. Reynolds and Anthony Nakazawa Co-PIs, with Alaska University Transportation Center, Institute of Northern Engineer, \$300,000.

North Slope Borough Contract, research for Payment in Lieu of Taxes (PILT) and cost of living. (2013-2014) Douglas B. Reynolds and Anthony Nakazawa Co-PIs, with Robert Logan \$200,000.

Energia Cura propane project. (2013 and ongoing) Feasibility study for a propane project to Fairbanks

Energia Cura, Fairbanks Pipeline Company natural gas pipeline. Pro bono university service; (2012 and ongoing) Financing study for a small bore natural gas pipeline to Fairbanks, Anchorage and all of central Alaska.

Coal Heating Group, (2010 to 2012) Community and University of Alaska Fairbanks collaboration to find coal heating solution to Fairbanks heating needs.

Alaska Department of Revenue. (2005-2006) *Economic, Fiscal and Workforce Impacts of Alaska Natural Gas Projects* with INFORMATION INSIGHTS, INC. Fairbanks, Alaska. \$200,000.

Flint Hills Grant. (Fall 2006) "Experimental Economics," Doug Reynolds and Joe Little PIs, \$125,000.

Craven Professorship. (Spring 2006) "Business in Alaska," Doug Reynolds, \$20,000.

Flint Hills Grant. (Fall 2005) "Energy Civilization Book," Doug Reynolds PI, \$40,000.

Alaska State Legislature's Joint Committee on Natural Gas. (2002) Collaboration of Northern Economic Research Associates (NERA) to analyze natural gas pipeline options for the State of Alaska. \$200,000.

U.S. Department of Energy. (Summer 2001). "Gas-to-Liquids (GTL) Costs of Transportation," Godwin A. Chukwu, PI, Douglas B. Reynolds, Sara Russel, \$700,000

President's Natural Resources Fund. (April 1999) "Natural Gas Demand in China," Douglas B. Reynolds PI, Lin Xia, \$11,500.