

DOUGLAS MUGABE CV

Resource Economics and Management,
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EDUCATION

PhD, Natural Resource Economics	West Virginia University, US	Expected 2020
Cert, Machine Learning	Coursera, Online	Expected 2020
PgDip ¹ , University Teaching	Midlands State University, ZW	2015
MSc, Agricultural and Applied Economics	University of Zimbabwe, ZW	2011
BSc, Agricultural Economics and Extension	University of Zimbabwe, ZW	2007

RESEARCH INTERESTS

Energy and Resource Economics; Environmental Policy and Analysis; Climate Change; Agriculture and Productivity Analysis

PEER REVIEWED PUBLICATIONS

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- All the DUCs in a Row: Natural Gas Production in the US. (*The Energy Journal*, Revised and Resubmitted). **(Job Market Paper)** (With Elbakidze L., and Carr T.)
- Elasticity of Substitution and Technical Efficiency: Evidence from the US Electricity Generation. *Applied Economics* (2019). <https://doi.org/10.1080/00036846.2019.1678733>. (With Elbakidze L., and Zaynutdinova G.)
- How Efficient is Maize Production Among Smallholder Farmers in Zimbabwe? A Comparison of Semiparametric and Parametric Frontier Efficiency Analyses. *Applied Economics*, 1-17. (2018). (With Etienne X., and Ferrara G.)
- Estimation of Optimal Land Use Allocation Among Small Holder (A1) Farmer Households in Zimbabwe. A Case Study of Long Croft Farm, in Mazowe District. *Canadian Journal of Agricultural Science*, 6(2), 170. (2014). (With Chipunza N., Mupaso N., Munyati V., and Makarudze F.)
- Characterization of Smallholder Irrigation Schemes in Chirumanzu District, Zimbabwe. *Canadian Journal of Agricultural Science*, 6(2), 189. (2014). (With Mupaso N., Nyamutowa C., Masunda S., and Chipunza N.)

¹ PgDip (Post-graduate diploma) in Tertiary Education is a University Teaching Qualification.

TEACHING EXPERIENCE

West Virginia University, Resource Economics and Management (TA/Instructor)	2017-2020
Environmental and Resource Economics, Spring 2020	
Energy Resource Economics, Spring 2018	
Resource Economics, Spring 2018	
Agribusiness Management, Fall 2017	
Agriculture and Natural Resources Law, Fall 2017	
Midlands State University, Agricultural Economics and Development (Lecturer ²)	2012-2015
Microeconomics I, Semester 2 (2013, 2014 and 2015)	
Microeconomics II, Semester 1 (2013, 2014 and 2015)	
Econometrics I, Semester 2 (2014 and 2015)	
Project Management, Semester 1 (2012, 2013 and 2014)	
NGO Management and Development, Semester 1 (2012, 2013 and 2014)	
Production Economics, Semester 2 (2014 and 2015)	
Rio Tinto College of Agriculture, Farm and Agribusiness Management (Lecturer)	2008-2008
Principles of Microeconomics, Term 1 and Term 2 (2008)	
Ministry of Education, Zimbabwe (High School Teacher)	2004-2007
Mathematics, Biology and Chemistry	

PROFESSIONAL EXPERIENCE

West Virginia University (WVU), US	
Researcher, Regional Research Institute,	Current
Graduate Research Assistant, Resource Economics and Management	2015-2019
Midlands State University (MSU), Zimbabwe	
Fulltime Lecturer	2013-2015
Visiting Lecturer	2012-2013
International Relief and Development, Zimbabwe	
Agri-Trade Officer, US-AID funded ZIM-AIED Project	2011-2013
Research Assistant, Willingness to Pay for Rain Water Harvesting Project	2010-2010
LEAD Trust, Zimbabwe	
Researcher, Drought Tolerance Crops Program	2010-2010
Center for Applied Social Sciences, Zimbabwe	
Research Assistant, Oils Seeds Value Chain Project	2009-2009
Government of Zimbabwe	
Economist, Department of Irrigation	2008-2009

AWARDS AND HONORS

Thomas F. Torries ARE Student Actualization Endowment Grant (<i>twice</i>)	2019
Dean's Outstanding Doctoral Student, Davis College, WVU	2018
Gamma Sigma Delta, National Honor Society of Agriculture, WVU	2018
Honor Society of Phi Kappa Phi, WVU Chapter	2017
Fulbright Scholarship, PhD, WVU	2015

² Lecturer is equivalent to Assistant Professor.

OTHER PUBLICATIONS AND BOOK REVIEWS

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- Regional Industry Cluster Analysis for Metropolitan Appalachian Region. Resource Document, *Regional Research Institute*. (With Jackson R, W)
- National Energy Technology Laboratory (NETL / West Virginia University (WVU) Hybrid Econometric Input-Output model. Technical Document, *Regional Research Institute*. (With Jackson R, W., and Jarosi, P.)
- Intra-Industry Trade: Cooperation and Conflict in the Global Political Economy. *Review of Regional Studies* 47(2):224. Southern Regional Science Association Inc. (2017). 0048-749X
- Farm Management. Department of Science Education and Agricultural Science (Dipsced Agricultural Science, Module DAE 008). *Bindura University of Science Education, Zimbabwe*. (2013). (With Mafuse E., and Munyati V.T.)
- Estimation of Optimal Land Use Allocation Among Small Holder (A1) Farmer Households in Zimbabwe. A Case Study of Long Croft Farm, in Mazowe District. Master's Thesis, *University of Zimbabwe*, (2011)

PROJECTS/WORK IN PROGRESS

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- Investments of Publicly Traded versus Privately Held Firms: Evidence from Stranded Growth Options in the U.S. Shale Gas Industry. (With Elbakidze L., and Zaynutdinova G.)
- Implications of Bonding Requirements on Unconventional Oil and Gas Production: Evidence from West Virginia and Pennsylvania. (With Scarciuffolo A.)
- Impacts of Climate Change Induced Natural Disasters on Social and Environmental Values? (With Khurana., R, and Etienne, X.)
- Renewable Energy Investment and Natural Gas Production: Transition Towards Zero-Carbon Energy Systems. (With B.M Horeh)

CONFERENCE PRESENTATIONS

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- Reassessing the Truth: International Conference Organized by CIGRU; ASIL; gLAWcal.
Elasticity of Substitution and Technical Efficiency, WV, USA 2019
- Canadian Resource and Environmental Economics Annual meeting
All the DUCs in a Row: Natural Gas Production in the US. PEI, Canada 2019
- Agricultural & Applied Economics Association Annual Meeting, US
Drilled but Uncompleted Wells and Natural Gas Production. 2019
Do Climate Change Induced Natural Disasters Disrupt Legal Integrity? 2018
How Efficient is Maize Production Among Smallholder Farmers in Zimbabwe? 2016
- World Congress of Environmental and Resource Economists. Gothenburg, Sweden
Regional Adjustment Heterogeneity in Electricity Generation: Evidence from US 2018
- Annual Graduate Research and Creative Scholarship Day, West Virginia University
Drilled but Uncompleted Wells and Natural Gas Production 2019
Substitution in Electricity Generation: A State Level Analysis of Structural Change from Hydraulic Fracturing Technology 2018
How Efficient Is Maize Production Among Smallholder Farmers in Zimbabwe? 2018
A Comparison of Semiparametric and Parametric Frontier Efficiency Models

REFEREEING

<i>Applied Economics</i>	2019
<i>Scientific African</i>	2019
<i>The Review of Regional Studies</i>	2016
<i>Asian Journal of Agricultural Extension, Economics and Sociology</i>	2016

MEMBERSHIP

Association of Environmental and Resource Economists	2019-Present
African Finance and Economic Association	2019-Present
Canadian Resource and Environmental Economics Association	2019-Present
The Canadian Agricultural Economics Society	2019-Present
American Economic Association	2016-Present
Agricultural and Applied Economics Association	2016-Present
Morgantown Mountain Men Club, West Virginia	2015-Present

SERVICE

West Virginia University	
Member, Davis College Dean's Search Committee	2019-Present
Treasurer, Graduate Resource Economics Club	2018-2019
Monongalia County Schools	
Member, Parent Liaison Group	2019-Present
Midlands State University, Zimbabwe	
Chair, Research Committee	2014-2015
Member, Website Committee	2014-2014
Salvation Army	
Member, Morgantown Mountain Men Club	2016-2017
Participant, Angel Tree Distribution	2015-2016
Youth Choir Leader, Harare, Zimbabwe	2014-2015
Kanyemba, Chikwira Zimbabwe	
Vice Chairperson, Old Students Association (Alumni Association)	2013-2015
Dawn Club, Harare, Zimbabwe	
Club Secretary	2013-2014
Rio Tinto College of Agriculture, Zimbabwe	
Acting Vice Principal	2008-2008
Head, Farm and Agribusiness	2008-2008
Chair, Marketing committee	2008-2008
Chair, Procurement committee	2008-2008
Chair, Graduation committee	2008-2008
Chair, Disciplinary committee	2008-2008
Chair, Security committee	2008-2008

REFERENCES

Dr. Levan Elbakidze, Associate
Professor, Resource
Economics and Management,
West Virginia University
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Office: +1 (304) 293-5487

Dr. Xiaoli Etienne, Associate
Professor, Resource
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Dr. Peter Schaeffer, Professor,
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Doctoral dissertation abstracts: Three essays on “Energy production and technical efficiency analyses”

All the DUCs in a Row: Natural Gas Production in the US

Using data from seven shale gas regions in the United States, we examine natural gas production in terms of drilling activity and well completion rates. Our objectives are to examine the role of well completion decisions in the US natural gas production and to examine the determinants of completion decisions in unconventional production. We observe that in recent years, the explanatory power of drilling rig count has declined. On the other hand, the number of producing wells remains a significant factor in explaining the variation in gas production. We find that an increase in the number of drilled but uncompleted (DUC) wells has a significant role in natural gas supply. The number of DUC wells depends on drilling activity and futures prices of oil and natural gas. Also, our results indicate that well completion decisions and the duration of DUC status depend on oil and gas prices, pipeline capacity, producing well type and well depth.

Elasticity of substitution and technical efficiency: evidence from the US electricity generation

The implications of national or regional energy policies for technical efficiency and environmental outcomes in electricity generation depend on fossil fuel input substitution. This study uses state level data to examine fossil fuel (coal and natural gas) substitution in electricity generation under increased availability of natural gas in the United States. We observe that changes in elasticities of substitution from pre-2009 to post-2009 differ across states suggesting that the effects of increased availability of inexpensive natural gas on electricity generation have been spatially heterogeneous. We rely on the observed heterogeneity to assess the effects of fossil fuel input substitution on technical efficiency and CO₂ emissions. The results reveal that state level elasticity of substitution between natural gas and coal has a positive effect on technical efficiency and a negative effect on CO₂ emissions. Therefore, future policy design and analyses should reflect the implications for regional elasticities of fossil fuel substitution and associated environmental outcomes.

How efficient is maize (corn) production among smallholder farmers in Zimbabwe? A comparison of semiparametric and parametric frontier efficiency analyses

The controversial Fast Track Land Reform Programme in Zimbabwe that redistributes commercially owned farmland to smallholder households has caused concerns about the efficiency of agricultural production in the country. In this paper, we estimate the efficiency of resource use among smallholder farmers in Zimbabwe when producing maize, the staple and bio-product in the country. Using both a semiparametric model and a fully parametric stochastic frontier model, we find significant production shortfalls for smallholder maize production. While labor, capital, and land all significantly affect the total output, the estimated mean efficiency score for farms with less than 10 hectares of land (A1) appears to be under 0.75, and for the entire sample it ranges between 0.595 and 0.772. There clearly exists a great potential for maize farmers to improve the technical efficiency and increase the total output. Gender and age of the household head, access to extension services, and activities of other crops significantly affect the technical efficiency of smallholder maize production in Zimbabwe. We also find that all farms operate under increasing returns to scale and that the technical efficiency score tends to increase with the level of output.