SOCIOECONOMIC STRAIN, CRIME AND ECONOMIC GROWTH: EVIDENCE FROM NIGERIA

ADENUGA FABIAN ADEKOYA

DOCTOR OF PHILOSOPHY
UNIVERSITI UTARA MALAYSIA
March 2017

SOCIOECONOMIC STRAIN, CRIME AND ECONOMIC GROWTH: EVIDENCE FROM NIGERIA

By

ADENUGA FABIAN ADEKOYA
(95735)

Thesis Submitted to
School of Economics, Finance and Banking,
Universiti Utara Malaysia,
in Fulifillment of the Requirement for the Degree of Doctor of philosophy

PERMISSION TO USE

In presenting this thesis in fulfilment of the requirements for a postgraduate degree from Universiti Utara Malaysia, I agree that the Universiti Library may make it freely available for inspection. I further agree that permission for the copying of this thesis in any manner, in whole or in part, for the scholarly purpose may be granted by my supervisor(s) or, in their absence, by the Dean of School of Economics, Finance and Banking. It is understood that any copying or publication or use of this thesis or parts thereof for financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me and to Universiti Utara Malaysia for any scholarly use which may be made of any material from my thesis.

Requests for permission to copy or to make other use of materials in this thesis, in whole or in part, should be addressed to:

Dean of School of Economics, Finance and Banking
Universiti Utara Malaysia
06010 UUM Sintok
Kedah Darul Aman Malaysia

ABSTRACT

Owing to the challenges posed by crime in Nigeria on citizenry and government financial plans and the implementation, this study explores criminal activities with the aim of seeing how the crime rate can be minimised in the country. Previous studies on crime in Nigeria have made a tremendous contribution to the crime literature, but they have not examined the association between socioeconomic strain and crime and the effect of crime on economic growth statistically. Thus, this study examines how socioeconomic strain factors contribute to the development of crime, and how crimes affect economic growth in Nigeria. Based on previous research, the link between socioeconomic strain, crime, and economic growth was explained via strain theory and rational choice theory. In testing the proposition of the theory, data from 1970 to 2013 were analysed with an autoregressive distributed lag (ARDL) model to examine the relationship while the modified Wald test approach to Granger causality was used to provide the causality direction. The results showed that socioeconomic strain affects crime positively, and crime affects economic growth negatively. Besides, the causality ran from socioeconomic strain to crime and from economic growth to crime against person. Based on the results, this study suggests that socioeconomic strain should be monitored and controlled, deterrence institutions should be strengthened, and vigorous policies for various investments should be well planned and implemented to reduce crime in Nigeria. This study believes that the policy that would check and reduce crime would improve economic growth.

Keywords: Socioeconomic strain, crime, economic growth, autoregressive distributed lag model

ABSTRAK

Ekoran daripada cabaran-cabaran yang diakibatkan oleh jenayah terhadap penduduk dan pelan kewangan serta pelaksanaannya di Nigeria, kajian ini meneliti aktiviti jenayah dengan tujuan untuk melihat bagaimana kadar jenayah di negara ini dapat diminimumkan. Kajian terdahulu tentang jenayah di Nigeria telah memberi sumbangan yang besar terhadap literatur jenayah, namun begitu ia tidak meneliti hubungan statistik antara ketegangan sosioekonomi dengan jenayah dan kesannya terhadap pertumbuhan ekonomi. Oleh itu, kajian ini meneliti bagaimana faktor ketegangan sosioekonomi menyumbang kepada perkembangan jenayah, dan bagaimana jenayah mempengaruhi pertumbuhan ekonomi di Nigeria. Berdasarkan kajian lalu, hubungan antara ketegangan sosioekonomi, jenayah, dan pertumbuhan ekonomi dijelaskan melalui teori ketegangan dan teori pilihan rasional. Dalam menguji cadangan teori berkenaan, data dari tahun 1970 hingga 2013 dianalisis dengan menggunakan model autoregresi lat tertabur (ARDL) untuk memeriksa hubungan tersebut manakala pendekatan ujian Wald yang diubahsuai untuk kausaliti Granger telah digunakan untuk memberikan arah sebab-akibat. Keputusan kajian menunjukkan bahawa ketegangan sosioekonomi mempengaruhi jenayah secara positif dan jenayah mempengaruhi pertumbuhan ekonomi secara negatif. Selain itu, kaitan sebab-akibat berlaku daripada ketegangan sosioekonomi kepada jenayah dan daripada pertumbuhan ekonomi kepada jenayah terhadap individu. Berdasarkan dapatan tersebut, kajian ini mencadangkan agar ketegangan sosioekonomi hendaklah dipantau dan dikawal, institusi pencegahan harus diperkuatkan, dan dasar yang kukuh untuk pelbagai pelaburan perlu dirancang dan dilaksanakan dengan baik bagi mengurangkan jenayah di Nigeria. Kajian ini percaya bahawa dasar yang boleh mengawal dan mengurangkan jenayah akan meningkatkan pertumbuhan ekonomi.

Kata kunci: Ketegangan sosioekonomi, jenayah, pertumbuhan ekonomi, model autoregresi lat tertabur.

ACKNOWLEDGEMENT

With sheer joy, much-unreserved gratitude, delight and appreciation to God Almighty for His wonderful blessings, protection and guidance throughout this programme.

Special thanks and appreciation are extended to Associate Professor Dr Nor Azam Abdul Razak for his careful assessment and supervision of this thesis at the appropriate time. Also, appreciation goes to other lecturers in the Department of Economics, School of Economics, Finance and Banking for their valuable guidance.

Much appreciation goes to the unquantifiable assistance provided by Olori Oluwaremilekun Sarah Adekoya — my lovely wife and my children, Beloved, Michael, Emmanuel and Hephzibah for your understanding; may Almighty God bless your entire endeavours (Amen). Likewise, thanks to my father and siblings, Pa Joseph Adeije Adekoya, Cosmas, Pius and Felix for their support during the programme. To my caring late mother Olori Regina Olanlege-Adekoya, mama, may she rest in peace (Amen).

Thank are extended to my colleagues for their cooperation during the programme — Ibrahim Ayuba, Nosakharie Osazuwa, Lukumon Afolabi, Oluwatoyese Oyetade, Wakila Balogun and others. Likewise, thanks go to Dr Olajide Raji, Afeez Ibikunle, Dr Kazeem Ajape, Mrs Modupeola Odusanya-Daramola, Mr Olufemi Hundogan. Also, to the Management and staff members of the Michael Otedola College of Primary Education Noforija-Epe, Lagos State, Nigeria for your amiable support.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF ABBREVIATIONS

ADF	Augmented Dickey-Fuller Unit Root Test
ARDL	Autoregressive Distributive Lag Model
ARDL OLS	Autoregressive Distributive Lag Model Ordinary Least Squares
ARDL IV	Autoregressive Distributive Lag Model Instrumental Variables
CBN	Central Bank of Nigeria
ECM	Error Correction Model
EFCC	Economic and Financial Crimes Commission
GMM	Generalised Method Moment
GDP	Gross Domestic Product
IV	Instrumental Variable
JICA	Japan International Cooperation Agency
MDG	Millennium Development Goals
MLPA	Money Laundering Prohibition Act
MWALD	Modified Wald Test
NBS	Nigeria Bureau of Statistics
NOPRIN	Network on Police Reform in Nigeria
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Squares
PP	Philip-Perron Unit Root Test
UNDP	United Nation Development Programme
UNODC	United Nations Office on Drugs and Crime
VAR	Vector Autoregressive Model
VECM	Vector Error Correction Model

CHAPTER ONE

INTRODUCTION

1.1 Background

Crime-related issues have been identified as a threat to budget actualisation by the Nigeria Government (Federal Ministry of Finance of Nigeria, 2014). This threat of crime is manifested in the form of violence, arson, false pretence/cheating, unlawful possession, robbery, assault, murder, theft, destruction, fraud and corruption in the country. In the 2014 budget presentation, fraud in pension administration, corruption, destruction of property and theft were seen as the reasons for the increased costs of governance over time (Federal Ministry of Finance of Nigeria, 2014). In addition to the direct costs of these various crimes, the government also bore the social costs of crime including arrests, prosecution and fixing of properties. In turn, increased costs of governance may jeopardise development objectives like the drive for economic growth, improving income inequality and alleviating poverty. That is because the business and economic outlook in a crime-prone environment may not promote economic development due to the emigration of investors (National Planning Commission, 2010).

The United Nations Office on Drug and Crime (UNODC) (2005) asserted that crime is threatening the economic performance of African countries. This is because various crimes are pervasive across the continent including homicide, harassment and assault, bribery and corruption, and other crimes like armed robbery, fraud and money laundering. Even the rates of suicide are high in Africa. Indeed, the suicide rate in low and medium-income countries in the African region increased by 38% (% change in

The contents of the thesis is for internal user only

REFERENCES

Abdullah, H., Mustafa, M. M., & Habibullah, M. S. (2009). An investigation on trade openness, fiscal policy and economic growth in Malaysia: Using an ARDL bounds testing approach. *International Journal of Management Studies*, *16*(2), 177-197.

Aborisade, S. (March 5, 2014).CBN approves liquidation of 83 Microfinance Banks – NDIC. *Punch Newspaper.*

Abu, N., & Abdullah, U. (2010). Government Expenditure and Economic Growth in Nigeria, 1970–2008: A Disaggregated Analysis. *Business and Economic Journal*, 4 (3), 237-330.

Adams, F. G. (2003). Can Information Technology Revive Economic Development in East Asia? The Role of Human and Technical Resource Policy. *International Journal of Business,* 8(2), 105-119.

Adebayo, A. A. (2013). Youths' Unemployment and crime in Nigeria: A nexus and implications for national development. International Journal of Sociology and Anthropology, 5(8), 350-357.

Adekoya, A. F., & Abdul Razak, N. A. (2016). Crime Dependency on Punishment: Evidence on Economic Growth in Nigeria. *Journal of Economics and Development Studies*, 4(2), 219-228.

Adekoya A.F., & Abdul Razak N. A. (2016). The link between economic growth, crime and deterrence measures in Nigeria. *Studia Universitatis-Vasile Goldis Arad Economics Series,* 26 (4): 24- 40.

Ahmed, H. (2007). Effects of Poverty on Child Health and Paediatric Practice in Nigeria: An Overview. Annals of African Medicine, 6(4): 142-156.

Ahmed, Z. (2013). The impact of oil theft and bunkering on the environment, global supply and security: A paper by the Executive Secretary, Nigeria Extractive Industries Transparency Initiative (NEITI) at the 10th Regional meeting of the ACP-EU Joint Parliamentary Assembly, Abuja, Nigeria on Wednesday 17th July.

Agbiboa, D. E. (2012). Between Corruption and Development: The political economy of state robbery in Nigeria. *Journal of Business Ethics*, 108,325–345.

African Economic Outlook, (2012). Nigeria 2012. www.africaeconomicoutlook.org. pp 12-14.

African Economic Outlook (2014). Global value chains and Africa's industrialisation. http://dx.doi.org/10.1787/aeo-2014-en, pp 310-311.

Aigbokhan, B. E. (2008). Growth, Inequality and Poverty in Nigeria, Economic Commission for Africa, ACGS/MPAMS Discussion Paper No.3, pp 1-39.

Aiyedogbon, J. O., & Ohwofasa, B. O. (2012). Poverty and youth Unemployment in Nigeria, 1987-2011. *International Journal of Business and Social Science*, 3(20), 269-279.

Akerele, D., Momoh, S., Adewuyi, S. A., Phillip, B. B., & Ashaolu, O. F. (2012). Socioeconomic determinants of poverty among urban households in South-West Nigeria. *International Journal of Social Economics*, 39(3), 168-181.

Akinlo, A. E. (2009). Electricity consumption and economic growth in Nigeria: Evidence from cointegration and co-feature analysis. *Journal of Policy Modeling,* 31, 681–693.

Akinbobola, T. O. (2012). The dynamics of money supply, exchange rate and inflation in Nigeria. *Journal of Applied Finance & Banking*, 2 (4), 117-141.

Akpotu, N. E., Omotor, D. G., & Onoyase, D. (2007). Family Size and Parents' Socio-economic Variables as Predictors of Investment in Children Education in South-West Nigeria. *Studies on Home and Community Science*, 1(2), 127-132.

Alabi, R. A., & Admas, O. O. (2014). Who Benefits from Spending on Water and Electricity in Nigeria? A Benefit Incidence Analysis. *The Journal of Developing Areas*, 48 (1), 177-197.

Albertson, K. and Fox, C. (2012). *Crime and economics: an introduction*. Routledge, New York. 1st edition.

Alfano, C. A., Lau, S., Balderas, J., Bunnell, B. E., & Beidel, D.C. (2016). The impact of military deployment on children: Placing developmental risk in context. *Clinical Psychology Review,* 43, 17–29.

Alemika, E. E. O. (1993). Trends and conditions of imprisonment in Nigeria. *International Journal of Offender Therapy and Comparative Criminology*, 37(2), 147-162.

Alemu, Z. G. (2015). The Challenge of Job Creation in Nigeria. *Africa Economic Brief*, Vol. 6 (8): 1-16.

Allen, R. C. (1996). Socioeconomic Conditions and Property Crime: A Comprehensive Review and Test of the Professional Literature. *American Journal of Economics and Sociology*, 55 (3), 293-308.

Aliyu, S. U. R., & Elijah, A. O. (2008). Corruption and Economic Growth in Nigeria: 1986 - 2007. *Munich Personal RePEc Archive*, http://mpra.ub.uni- muechen.de/ 12504.

Altindag, D.T. (2012). Crime and unemployment: Evidence from Europe. *International Review of Law and Economics*, 32, 145– 157.

Alwin, D., Converse, P., & Martin, S. (1985). Living arrangements and social integration. *Journal of Marriage and Family*, 47, 319-344.

Ameh, J. (2013, May 1). Corruption delaying criminal justice in Nigeria–CJ. *Punch.*

Amin, S. (1972). Underdevelopment and dependence in Black Africa-origin and contemporary forms. *The journal of modern African studies*, 10 (4), 503-524.

Amzat, I. H. (2010). The Effect of Poverty on Education in Nigeria: Obstacles and solutions. *OIDA International Journal of Sustainable Development*, 1(4), 55-72.

Anyanwu, J. C. (2012). Accounting for Poverty in Africa: Illustration with Survey Data from Nigeria, Working Paper Series N° 149, African Development Bank, Tunis, Tunisia.

Anyanwu, J. C. (2013). Determining the Correlates of Poverty for Inclusive Growth in Africa. Working Paper Series No. 181 African Development Bank, Tunis, Tunisia.

Anyanwu, J. C. (2014). Marital Status, Household Size and Poverty in Nigeria: Evidence from the 2009/2010 Survey Data. *African Development Review*, 26 (1), 118–137.

Apergis, N., & Payne, J. E. (2011). A dynamic panel study of economic development and the electricity consumption-growth nexus. *Energy Economics,* 33, 770–781.

Arowesegbe, J. (2009). Violence and National Development in Nigeria: The Political Economy of Youth Restiveness in the Niger Delta. *Review of African Political Economy*, 36 (122), 575-594.

Atseye F. A., Takon, S. M., & Ogar, O. A. (2014). Impact of National Minimum Wage on Low Income Workers in Calabar Municipality, Nigeria. *Developing Country Studies.* 4 (26), 28-36.

Ayodele, J. O. (2015). Crime-Reporting Practices among Market Women in Oyo, Nigeria. SAGE Open, April-June, 1–11.

Badiora, A. I., Okunola, O.H., & Ojewale, O. S. (2014). Crime statistics in a Nigerian Traditional City: A Geographic Analysis. *Journal of Asian and African Studies*, 1–15.

Baharom, A. H., Habibullah, M. S., & Noor, Z. M. (2013). Crime and its socio-macroeconomics determinants: a panel-error-correction cointegration analysis. *Jurnal Ekonomi Malaysia*, 47 (2), 13-24.

Bakare A. (2012). Measuring the Income Inequality in Nigeria: the Lorenz Curve and Gini Co- efficient Approach. *American Journal of Economics*, 2 (1), 47-52.

Balogun, A. D. (2015). The Effects of Public Sector Corruption on Educational Development in Nigeria: Challenges and Alternative Measures. *Research on Humanities and Social Sciences*, 5 (9), 136-157.

Bankole, A. S., & Odularu, G. O. (2009). Urbanization and Economic Growth in West Africa: A Panel Data Approach. *Journal of population and social studies*, 17 (2), 151-168.

Bardsen, G. (1989). Estimation of Long Run Coefficients in Error Correction Models. *Oxford Bulletin of Economic and Statistics,* 51(2), 345-350.

Bawa, S., & Abdullahi, I. S. (2012), Threshold Effect of Inflation on Economic Growth in Nigeria. *CBN Journal of Applied Statistics*, 3 (1), 43-63.

BBC News (February 13, 2012). From the section Africa. http://www.bbc.com/news/world-africa-17015873.

Becker, G. S. (1968). Crime and punishment: An economic approach. *Journal of Political Economy* 66 (2), 169-121.

Berk, R. A., Lenihan, K. J., & Rossi, P. H. (1980). Crime and poverty: some experimental evidence from ex-offenders. *American Sociological Review*, 45,766-786.

Bertelsmann Stiftung, BTI (2014). Nigeria country report. Gütersloh: Bertelsmann Stiftung, www.bti-project.org.

Bewley, R. (1979). The Direct Estimation of the Equilibrium Response in a Linear Dynamic Model. *Economics Letters*, 3, 357-361.

Block M. K., & Heineke J.M. (1975). A labor theoretic analysis of the criminal choice. *The American Economic Review*, 65(3), 314-325.

Bosede, A., Bamidele Abalaba, B. and Afolabi, D. (2013). Transport Infrastructure Improvement and Economic Growth in Nigeria. *International Journal of Humanities and Social Science Invention*, 2 (8), 26-31.

Brisman, A., McClanahan, W., & South, N. (2016). Water Security, Crime and Conflict. Subject: Criminology and Criminal Justice, International and Comparative Criminology. Oxford Handbooks Online. DOI: 10.1093/oxfordhb 109780199935383.013.86.

Broman, C. L., Hamilton, V. L., & Hoffman, W. S. (1996). The Impact of Unemployment on Families. Michigan Family Review, 2 (2), Winter, 83-91.

Bryceson, D. F., Bradbury, A. & Bradbury, T. (2008). Roads to Poverty Reduction? Exploring Rural Roads' Impact on Mobility in Africa and Asia. *Development Policy Review*, 26 (4), 459-482.

Buonannoa, P., & Leonida, L. (2009). Non-market effects of education on crime: Evidence from Italian regions. *Economics of Education Review*, 28, 11–17.

Bourguignon, F. (1999). Crime as a social cost of poverty and inequality: a review

focusing on developing countries. *Desarrolloy Sociedad,* 44, 61-99.

Bourguignon, F., Nunez, J., & Sanchez, F. (2003). A structural model of crime and inequality in Colombia. *Journal of the European Economic Association*, 1(2–3), 440 – 449.

Burleigh, M. (August, 8 2013). A country so corrupt it would be better to burn our aid money. The Daily Mail. http://www.dailymail.co.uk/debate/article-2387359 /Nigeria.

Burnham, R., Feinberg, R. M., & Husted, T. A. (2004). Central city crime and suburban economic growth. *Applied Economics* 36, 917–922.

Burutai, T. (May 5, 2016). Poor education leading youths into crime – Buratai. *Punch.*

Central Bank of Nigeria, (2006). Central Bank of Nigeria Annual Report. Federal Republic of Nigeria.

Central Bank of Nigeria, (2011). Central Bank of Nigeria Annual Report. Federal Republic of Nigeria.

Central Bank of Nigeria, (2012). Central Bank of Nigeria Annual Report. Federal Republic of Nigeria.

Central Bank of Nigeria, (2012). Central Bank of Nigeria Statistical Bullentin. Vol 22, Federal Republic of Nigeria.

Central Bank of Nigeria, (2013). Central Bank of Nigeria Statistical Bullentin. Vol 23, Federal Republic of Nigeria.

Central Bank of Nigeria, (2013). Supporting the development of entrepreneurship in Nigeria Keynote address by Mr Sanusi Lamido Sanusi, Governor of the Central Bank of Nigeria, at the launching of the South-South Entrepreneurship Development Centre (EDC), Calabar, 2nd of September.

Central Bank of Nigeria, (2014). Central Bank of Nigeria Annual Report. Federal Republic of Nigeria.

Chen, E., Martin, A. D., & Matthews, K. A. (2006). Socioeconomic status and health: Do gradients differ within childhood and adolescence? *Social Science and Medicine* 62, 2161–2170.

Chen, S-W, (2009). Investigating causality among unemployment, income and crime in Taiwan: evidence from the bounds test approach. *Journal of Chinese Economic and Business Studies*, 7 (1), 115-125.

Chete, L. N., Adeoti, J.O., Adeyinka, F. M., & Ogundele, O. (2016). Industrial development and growth in Nigeria: Lessons and challenge. Finland: UNU -WIDER. https://www.brookings.edu/wpcontent/uploads/2016/07/L2C_WP8_ Chete-et-al1.pdf.

Chiedozie I., Adesomoju A., & Oyeleke S. (February 22, 2013).Two judges suspended over Oyinlola, Akingbola cases. *Punch.*

Chiu, W. H., & Madden, P. (1998). Burglary and income inequality. *Journal of Public Economics* 69, 123–141.

CIA Factbook, (2017). https://www.cia.gov/library/publications/the-world-factbook/ rankorder/2054rank.html.

Cleen Foundation (2010). Nigeria Victimization, National Criminal Survey, Safety. Lagos, July pp 1-17.

Corman, H., & Mocan, H. N. (2000). A time-series analysis of crime, deterrence, and drug abuse in New York City. The American Economic Review, 90 (3), 584-604.

Cox, W. E. (1987). The role of water in socio-economic development. Report 1 of IHP- II Project CI (on heightening awareness of the socio-economic role of water). Prepared

for the International Hydrological Programme by the Working Group of Project CI (IHP-II). The United Nations Educational, Scientific and Cultural Organization, Paris, pp 11, 26-28.

Creech, S. K., Hadley, W., & Borsari, B. (2014). The Impact of Military Deployment and Reintegration on Children and Parenting: A Systematic Review. *Professional Psychology, Research and Practice*, 45(6), 452–464.

Demombynes, G., & Özler, B. (2005). Crime and local inequality in South Africa. *Journal of Development Economics*, 76(2), 265–292.

Deng, T. (2013). Impacts of Transport Infrastructure on Productivity and Economic Growth: Recent Advances and Research Challenges. *Transport Reviews*, 33(6): 686–699.

Detotto, C., & Otranto, E. (2010). Does Crime Affect Economic Growth? *Kyklos*, 63(3), 330–345.

Detotto, C., & Pulina, M. (2010). Testing the effects of crime on the Italian economy. *Economics Bulletin*, 30 (3), 2063-2074.

Detotto, C., & Pulina, M. (2012). Does more crime mean fewer jobs and less economic growth? *European Journal of Law and Economics*, 36 (1), 183–207.

Dickey, D A., & Fuller, W.A. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American Statistical Association*, 74 (366), 427-431.

Dijk, J. V. (2007). Mafia markers: assessing organized crime and its impact upon societies. *Trends Organ Crim,* 10, 39–56.

Dike, V. E. (2014). Leadership and the Nigerian economy. *SAGE Open*, 4(1), 1-10.

Dima, S. (2014). The link between globalisation, economic growth and education: an analysis in the case of Romania. *Studia Universitatis Vasile Goldis Arad Economics Series*, 24 (4): 94-103.

Doguwa, S. I. (2012). Inflation and Economic Growth in Nigeria: Detecting the Threshold Level. *CBN Journal of Applied Statistics*, 3 (2), 99-124.

Dogan, E. (2015). Revisiting the Relationship between Natural Gas Consumption and Economic Growth in Turkey, *Energy Sources, Part B: Economics, Planning, and Policy*, 10 (4), 361-370.

Domar, E. D. (1946). Capital Expansion, Rate of Growth, and Employment. *Econometrica,* 14 (2), 137-147.

Dos Sanctus, M.J., & Kassouf, A. L. (2013). A cointegration analysis of crime, economic activity, and police performance in São Paulo city. *Journal of Applied Statistics*, 40 (10), 2087–2109.

Dwivedi, D. N. (2010). *Macroeconomics: Theory and Policy*. Third edition, McGraw Hill Education (India) Private Limited, New Delhi. Page 392-401.

Easterly, W. (2007). Inequality does cause underdevelopment: Insights from a new instrument. *Journal of Development Economics,* 84, 755–776.

Ebbe, Obi N. I. (1989). Crime and Delinquency in Metropolitan Lagos: A Study of "Crime and Delinquency Area" Theory. *Social Forces*, 67 (3), 751-765.

Ebohon, S. I. (2012). Nigeria: state, oil and malignant underdevelopment. *The Western Journal of Black Studies,* 36 (3), 201-219.

Economic and Financial Crimes Commission (EFCC) (2013). For the Records: 2013 Convictions. Federal Republic of Nigeria.

Edmark, K. (2005). Unemployment and Crime: Is There a Connection? *Scandinavian Journal of Economics,* 107(2), 353–373

Ehrlich I. (1973). Participation in illegitimate activities: A theoretical and empirical investigation. *The Journal of Political Economy*, 81 (3), 521-565.

Egwakhe, A. J., & Osabuohien, E.S.C. (2009). Educational Backgrounds and Youth Criminality in Nigeria. *International Forum*, 12 (1), 65-79.

Ejumudo, K. B. O. (2014). Youth Restiveness in the Niger Delta: A Critical Discourse. *SAGE Open Januray-March*, 1–12.

Enamorado,T., López-Calva, L.F., & Rodríguez-Castelán, C. (2014). Crime and growth convergence: Evidence from Mexico. *Economics Letters,* 125, 9–13.

Engle, R. F., & Granger, C. W. J. (1987). Co-Integration and error correction: representation, estimation, and testing. *Econometrica*, 55 (2), 251-276.

Engle, P. L., & Black, M. M. (2008). The effect of poverty on child development and educational outcomes. *Annals of the New York Academy of Sciences*, 1136, 243–256.

Eruygur, A., Kaynak, M., & Mert, M. (2012). Transportation–Communication Capital and Economic Growth: A VECM Analysis for Turkey. *European Planning Studies*, 20 (2), 341-363.

Fajnzylber, P., Lederman, D., & Loayza, N. (2002). Inequality and Violent Crime. *Journal of Law and Economics*, XLV, 1-40.

Fanta, F., & Upadhyay, M. P. (2009). Poverty reduction, economic growth and inequality in Africa. *Applied Economics Letters*, 16, 1791–1794.

Farhani, S., Shahbaz, M., Arouri, M., & Teulon, F. (2014). The role of natural gas consumption and trade in Tunisia's output. *Energy Policy*, 66, 677–684.

Farias, C. & Farias, G. (2010). Cycles of poverty and consumption: the sustainability dilemma. Competitiveness Review: *An International Business Journal,* 20(3): 248-257.

Federal Government of Nigeria (2012). Nigeria's Path to Sustainable Development through Green Economy. Country Report to the Rio+20 Summit. pp15-16, 37-38.

Federal Ministry of Finance, Nigeria (FMFN) (2014). Challenges of budget 2013 implementation in budget 2014 -"A Budget for Jobs and Inclusive Growth". http://www.budgetoffice.gov.ng/index.php/component/content/article/78- general-information/72-budget accessed on Tuesday, October 11, 2015.

Ferguson, H. B., Bovaird, S., & Mueller, M. P. (2007). The impact of poverty on educational outcomes for children. *Paediatrics and Child Health,* 12(8), 701-706.

Fomby, P., & Cherlin, A. J. (2007). Family Instability and Child Well-Being. *American Sociological Review,* 72(2), 181–204.

Fosu, A. K. (2013). Institutions and African Economies: An Overview. *Journal of African Economies,* 22 (4), 491–498.

Giles, D. E. (2014). Some Questions about ARDL Models. http://davegiles.blogspot.my/2014/06/some-questions-about-ardl-models.html

Goulas, E., & Zervoyianni, A. (2013). Economic growth and crime: does uncertainty matter? *Applied Economics Letters*, 20, 420–427.

Goulas, E., & Zervoyianni, A. (2015). Economic growth and crime: Is there an asymmetric relationship? *Economic Modelling,* 49, 286–295.

Gould, E. D., Weinberg, B. A. & Mustard, D. (2002), Crime Rates and Local Labor Opportunities in the United States: 1979–1995. *Review of Economics and Statistics,* 84, 45–61.

Granger, C. W. J. (1969). Investigating Causal Relations by Econometric Models and Cross-spectral Methods. *Econometrica*, 37 (3), 424-438.

Granger, C.W.J., & Newbold P. (1974). Spurious regressions in econometrics. *Journal of Econometrics*, 2, 111-120.

Greene, W. H. (2012). *Econometric Analysis.* 7th Edition. Prentice Hall.

Gujarati, D. N., & Porter, D. C. (2009). *Basic Econometrics*. 5th edition, New York: McGraw-Hill.

Gumus, E. (2004). Crime in Urban Areas: An Empirical Investigation. *Akdeniz I.I. B.F. Dergisi,* 4 (7), 98–109.

Gyimah-Brempong, K., Paddison, O., & Mitiku, W. (2006). Higher education and economic growth in Africa. *Journal of Development Studies*, 42 (3) 509–529.

Gyimah-Brempong, K. (2010). Education and economic development in Africa. Paper prepared for the 4th African Economic Conference, October 27-29, Tunis.

Habibullah, M. S., & Baharom, A. H. (2009). Crime and economic conditions in Malaysia. *International Journal of Social Economics,* 36(11), 1071–1081.

Hagemann, H. (2009). Solow's 1956 Contribution in the Context of the Harrod-Domar Model. *History of Political Economy*, 41 (Annual Supplement), 67-87.

Halicioglu, F. (2012). Temporal causality and the dynamics of crime in Turkey. *International Journal of Social Economics*, 39 (9), 704-720.

Halicioglu, F., Andrés, A. R., & Yamamura, E. (2012). Modelling crime in Japan. *Economic Modelling*, 29, 1640–1645.

Hamzah, N. Z., & Lau, E. (2013). The role of social factors in explaining crime. Theoretical and Applied Economics, XX-6(583): 99-118.

Harrod, R. F. (1939). An Essay in Dynamic Theory. *The Economic Journal*, 49 (193), 14-33.

Hartmann, D. P. *et al.* (1980). Interrupted time-series analysis and its application to behavioral data. *Journal of Applied Behavior Analysis,* 13, 543–559.

Hauner, D., Kutan, A. M., & Spivey, C. (2012). Inequality and crime: evidence from Russia's regions. *Applied Economics Letters*, 19, 1667–1671.

Holmes, R., Akinrimisi, B., Morgan, J., & Rhiannon B. (2012).Social Protection in Nigeria: Mapping Programmes and Their Effectiveness'. ODI/UNICEF Nigeria.

Huang, C-C. Laing, D., & Wang P. (2004). Crime and Poverty: A Search-Theoretic Approach. International Economic Review, 45 (3), 909-938.

Huang, J-T. (2007). Labor force participation and juvenile delinquency in Taiwan: a time series analysis. *J Fam Econ*, 28, 137–150.

Ibikunle P.O., Umeadi O.C., & Ummunah, J. O. (2012). Predictors of Burnout Syndrome among Nigerian Physiotherapists. *African Journal of Physiotherapy and Rehabilitation Sciences,* 4 (1&2), 1-7.

Inder, B. (1993). Estimating long-run relationships in economics: a comparison of different approaches. *Journal of Econometrics,* 57, 53–68.

Jamisona, E. A., Jamison, D. T. & Hanushek, E. A. (2007). The effects of education quality on income growth and mortality decline. *Economics of Education Review*, 26, 772–789.

Jerome, A. (2011). Infrastructure, Economic Growth and Poverty Reduction in Africa. *Journal of Infrastructure Development,* 3(2), 127–151.

Johansen, S., & Juselius, K. (1990). Maximum likelihood estimation and inference on cointegration- with applications to the demand for money. *Oxford Bulletin of Economics and Statistics*, 52 (2), 169-210.

Justino, P., & Verwimp, P. (2013). Poverty dynamics, violent conflict, and convergence in Rwanda. Review of Income and Wealth, series 59 (1), 66-90.

Kao, C H. C. (1965). The Factor Contribution of Agriculture to Economic Development: A Study of Taiwan. *Asian Survey*, 5(11), 558-565.

Katsouris, C., & Sayne, A. (2013). Nigeria's Criminal Crude: International Options to Combat the Export of Stolen Oil. Chatham House, London, pp 5.

Kazeem, A. (2012). Children's Work in Nigeria: Exploring the Implications of Gender, Urban–Rural Residence, and Household Socioeconomic Status. Review Black Political Economy, 39, 187–201.

Kazeem, Y. (January 27, 2016) ―About Half of the University Graduates In Nigeria Cannot Find Jobs. http://qz.com/603967/about-half-of-theuniversity-graduates-in-nigeria-cannot-find-jobs/, Quartz Africa.

Kelly, M. (2000). Inequality and crime. *Review of Economics and Statistics,* 82 (4), 530-539.

Mesagan, E. P. & Dauda, R. O. S. (2016). Does Education matter for inclusive Growth? The Nigerian Case. *Journal of Economic and Business Research*, XXII (1), 168-189.

Minten, B., & Barett, C.B. (2007). Agricultural Technology, Productivity, and Poverty in Madagascar. *World Development,* 36 (5), 797–822.

Lau L. J., Jamison, D.T., & Louat, F.F. (1991). Education and productivity in developing countries: an aggregate production function approach. World Bank Working Paper Series No. 612, World Bank, Washington D.C.

Lee, D. Y., & Holoviak, S. J. (2006). Unemployment and crime: an empirical investigation. *Applied Economics Letters*, 13, 805–810.

Liew, V. K−S, (2004). Which Lag Length Selection Criteria Should We Employ? *Economics Bulletin*, 3 (33), 1−9.

Lin, M-J. (2008). Does unemployment increase crime? Evidence from U.S. data 1970-2000. *The Journal of Human Resources,* XLIII (2), 413-436.

Machin, S., & Meghir, C. (2004). Crime and Economic Incentives. *The Journal of Human Resources*, 39(4), 958-979.

Mankiw, N. G., Romer, D., & Weil, D. N. (1992). A Contribution to the Empirics of Economic Growth. *The Quarterly Journal of Economics*, 107 (2), 407-437.

Marenin, O., & Reisig M. (1995). A general theory of crime and patterns of crime in Nigeria: An exploration of methodological assumptions. *Journal of Criminal Justice* 23(6), 501-518.

Maitanmi, O., Ogunlere, S., Ayinde, S., & Adekunle, Y. (2013).Impact of Cyber Crimes on Nigerian Economy. *The International Journal of Engineering and Science*, Vol 2 (4), 45-51.

Masih, A. M., & Masih, R. (1996). Temporal causality and the dynamics of different categories of crime and their socioeconomic determinants: evidence from Australia. *Applied Economics*, 28, 1093–104.

Mata, F., & Bollman, R. D. (2007). An Analysis of Socio-Economic Strains and Population Gains: Urban and Rural Communities of Canada 1981-2001. *Canadian Studies in Population*, 34 (2), 191-215.

Mauro P. (1995). Corruption and growth. The Quarterly Journal of Economics, 110 (3), 681-712.

Mauro, Paolo (1998). Corruption and the composition of government Expenditure. *Journal of Public Economics* 69, 263–279.

Mauro, L., & Carmeci, G. (2007). A poverty trap of crime and unemployment. *Review of Development Economics*, 11(3), 450–462.

McKeown, J. E. (1948). Poverty, race and crime. *Journal of Criminal Law and Criminology* (1931-1951), 39 (4), 480-484.

McLoyd, V. C. (1990). The Impact of Economic Hardship on Black Families and Children: Psychological Distress, Parenting, and Socioemotional Development. *Child Development,* 61(2) Special Issue on Minority Children, 311-346.

Meloni, O. (2014). Does poverty relief spending reduce crime? Evidence from Argentina. *International Review of Law and Economics*, 39, 28–38.

Merton, R. K. (1938). Social structure and anomie. *American Sociological Review*, 3, (5), 672- 682.

Meyer, B. D., & Sullivan, J. X. (2003). Measuring the Well-Being of the Poor Using Income and Consumption. *Journal of Human Resources,* 38(Supplement), 1180-1220.

Millennium Development Goals Report (2011). Federal Republic of Nigeria.

Millennium Development Goals Report (2013). Federal Republic of Nigeria.

Miyoshi, K. (2011). Crime and local labor market opportunities for low-skilled workers: evidence using Japanese prefectural panel data. *Pacific Economic Review*,16(5), 565–576.

Mo, P. H. (2001). Corruption and Economic Growth. *Journal of Comparative Economics*, 29, 66–79.

Moghalu, K. C. (2010). On the status of microfinance banks in Nigeria. Press conference by the Deputy Governor, financial system stability (FSS), Central Bank of Nigeria. www.cenbank.org/out/2010/pressrelease.

Murphy, B., Zhang, X., & Dionne, C. (2012). Low Income in Canada: a Multi-line and Multi-index Perspective. Income Research Paper Series, Ottawa. pp 13.

Narayan, P. K. & Smyth, R. (2004). Crime rates, male youth unemployment and real income in Australia: evidence from Granger causality tests. *Applied Economics*, 36, 2079-2095.

Narayan, P. K. (2005). The saving and investment nexus for China: evidence from cointegration tests. *Applied Economics*, 2005, 37, 1979–1990.

Narayanan, S., Vicknasingam, B., & Robson, N. M. H. (2011). The transition to harm reduction: Understanding the role of non-governmental organisations in Malaysia. *International Journal of Drug Policy,* 22, 311– 317.

National Human Rights Commission (2007). A Report on the State of Human Rights in Nigeria. Abuja.

National Bureau of Statistics, (2006). Annual Abstract of Statistics. Federal Republic of Nigeria.

National Bureau of Statistics (2009). Business Survey on Crime and Corruption and Awareness of EFCC in Nigeria, 2007: Summary Report, Abuja.

National Bureau of Statistics (NBS), (2010). National manpower stock and employment generation- survey household and micro enterprise (Informal Sector)- July.

National Bureau of Statistics, (2010). Annual Abstract of Statistics. Federal Republic of Nigeria.

National Bureau of Statistics, (2011). Annual Abstract of Statistics. Federal Republic of Nigeria.

National Bureau of Statistics (2011). 2011 Annual Socio---Economic Report. An abstract on the Nigerian Unemployment Report 2011, pp 7.

National Bureau of Statistics, (2012). Annual Abstract of Statistics. Federal Republic of Nigeria.

National Bureau of Statistics, (2012). Social Statistics in Nigeria. Federal Republic of Nigeria.

National Bureau of Statistics, (2012). National Baseline Youth Survey. In collaboration with Federal Ministry of Youth Development, Federal Republic of Nigeria.

National Bureau of Statistics, (2012).The Nigeria Poverty Profile 2010 Report. Federal Republic of Nigeria.

National Bureau of Statistics, (2014). Measuring Better: Frequently Asked Questions on the Rebasing / Re-Benchmarking of Nigeria's Gross Domestic Product (GDP).

National Bureau of Statistics, (2015). Labour productivity in Nigeria (2010-2014): A short analysis. Federal Government of Nigeria, pp 4-5.

National Bureau of Statistics, (2016). Unemployment/Under-Employment Report Q2. Federal Government of Nigeria, pp 3-4, 12.

National Planning Commission, (2010). Nigeria Vision 20: 2020 Economic Transformation Blueprint. Federal Republic of Nigeria. http://1e8q3q16vyc81g8l3h3md6q5f5e.wpengine.netdna-cdn.com/wpcontent/uploads/2014/03/Nigeria-Vision-2020_0.pdf accessed on Monday, January 26, 2015, pp 29.

Naudé C.M.B, Prinsloo J.H., & Ladikos A. (2006). Experiences of crime in thirteen African countries: Results from the International Crime Victim Survey. Electronic Publication, Turin, UNICRI-UNODC. http://www.unicri.it /services /library_documentation/publications/icvs/publications/ICVS_13_African_countries.pdf accessed Monday, July 13, 2015 pp 52.

Nigeria Data Portal (2017). www. nigeria.opendataforafrica.org.

Nigeria Watch (2011). Third Report on Violence in Nigeria (2006-2011). Available from: www.nigeriawatch.org/media/html/NGA-Watch-Report 11(1).pdf.

Network on Police Reform in Nigeria, (NOPRIN) (2010). Criminal Force Torture, Abuse, and Extrajudicial Killings by the Nigeria Police Force. Open Society Institute, New York, pp 31-35 and 102-103.

Nwankwo, U. V., & James, O-O. (2016). Prevalence of Lethal and Non-lethal Crimes in Nigeria. *Journal of Advanced Research in Humanities and Social Science*, 3(1),10-25.

Obadan, M. I. (2002). Poverty reduction in Nigeria: the way forward. *CBN Economic and Financial Review*, 39 (4), 1-30.

Obasa O. (2015) Low Income and Diminishing Productivity in Nigerian Public Sector. *Arts Social Science Journal*, 6(3), 1-8.

Ochsen, C. (2010). Crime and labor market policy in Europe. *International Review of Law and Economics*, 30(1), 52–61.

Odubunmi, A. S., & Agbelade, L. I. (2014). Corruption and Economic Growth in Nigeria. *Journal of Economics and Sustainable Development*, 5 (6), 45-56.

Odumosu, O. F. (1999). Social costs of poverty: the case of crime in Nigeria. *Journal of Social Development in Africa.* 14(2), 71-85.

Ogun, T. P. (2010). Infrastructure and Poverty Reduction: Implications for Urban Development in Nigeria. *Urban Forum*, 21, 249–266.

Ojedokun, U.A. (2014). Contributing factors to Police homicide in Nigeria. *Police Journal: Theory, Practice and Principles*, 87, 41–48.

Okei-Odumakin (June 26, 2011). Most violent crimes committed in Nigeria are by young adults. *Vanguard.*

Ojo, O. (2009). Impact of microfinance on entrepreneurial development: the case of Nigeria. The International Conference on Economics and Administration, University of Bucharest, Romania, 14-15th November.

Okonjo-Iweala N., & Osafo-Kwaako P. (2007). Nigeria's Economic Reforms-Progress and Challenges. Working Paper #6.The Brookings Institution.

Okenyodo, K. (2013). Public Presentation of Findings of the National Crime Victimization and Safety Survey. CLEEN Foundation, Lagos-Nigeria.

Olesin A. (April 20, 2014). Corruption: Justice Salami Slams Nigerian Judges, Lawyers. *Leadership.*

Omoniyi, T. (June, 25 2014). Budget Figures Show Nigeria Is Not Serious About Fighting Corruption. *International Centre for Investigative Reporting*.

Omotor, D. O. (2009). Socio-Economic Determinants of Crime in Nigeria. *Pakistan Journal of Social Sciences,* 6 (2), 54-59.

Omotoso F. (2013). Governance Crisis and Democracy in Nigeria, 1999-2012. *Mediterranean Journal of Social Sciences,* 4 (14), 125-134.

Onah N. G., & Okwuosa L. N. (2016). Youth Unemployment and Peace in Nigerian Society. *Mediterranean Journal of Social Sciences*, 7 (1) S1, 52-58.

Oni, O., Nkonya, E., Pender, J., Philips, D., & Kato, E. (2009). Trends and Drivers of Agricultural Productivity in Nigeria. International Food Policy Research Institute, Abuja.

Op-Ed Editor (April 25, 2016). Opinion: Violence in Nigeria; causes, effects and solutions. https://ynaija.com/violence-nigeria-cause-effects/

Oseni, M. O. (2011). An analysis of the power sector performance in Nigeria. *Renewable and Sustainable Energy Reviews*, 15, 4765- 4774.

Otu, N. (2012). Balanced policing model in the Republic of Nigeria. *The Police Journal*, 85, 235-253.

Otusanya, O. J. (2012). An investigation of the financial criminal practices of the elite in developing countries-Evidence from Nigeria. *Journal of Financial Crime*, 19 (2), 175- 206.

Ouédraogo, I. M. (2010). Electricity consumption and economic growth in Burkina Faso: A cointegration analysis. *Energy Economics,* 32, 524–531.

Ouédraogo, N. S. (2013). Energy consumption and economic growth: Evidence from the economic community of West African States (ECOWAS). *Energy Economics,*36, 637–647.

Ouimet, M. (2012). A World of Homicides: The Effect of Economic Development, Income Inequality, and Excess Infant Mortality on the Homicide Rate for 165 Countries in 2010. *Homicide Studies*, 16(3), 238–258.

Owolabi-Merus, O. & Bello, B. A. (2015). The Economic Significance of Agriculture for Sustainable Development in Nigeria. *International Journal of Management, Accounting and Economics,* 2 (9), 994-1004.

Oyakhilomen, O. & Zibah, R. G. (2014). Agricultural Production and Economic Growth in Nigeria: Implication for Rural Poverty Alleviation. *Quarterly Journal of International Agriculture,* 53(3), 207-223.

Oyekale, A. S. (2012). Linkages between Non-Income Poverty, Growth and Inequality in Nigeria: A Two Stage Least Square Approach. *Life Science Journal,* 9 (4), 3892-3901.

Pahlavani, M., Wilson, E., & Worthington, A. C. (2005). Trade-GDP Nexus in Iran: An Application of the Autoregressive Distributed Lag (ARDL) Model. *American Journal of Applied Sciences,* 2 (7): 1158-1165.

Pan, M., Widner, B., & Enomoto, C. E. (2012). Growth and Crime in Contiguous States of Mexico. *Review of Urban & Regional Development Studies*, 24 (1-2), 51–64.

Patalinghug, E. E. (2011). Crime rates and labor market opportunities in the Philippines: 1970–2008. *Economics Letters*, 113(2), 160–164.

Paul, B. P. (2010). Does corruption foster growth in Bangladesh? *International Journal of Development Issues*, 9 (3), 246–262.

Pesaran, B., & Pesaran, M., H. (2009). *Time series econometrics using microfit 5.0*. Oxford University Press, Oxford.

Pesaran, M. H., & Shin, Y. (1997). An Autoregressive Distributed Lag Modelling Approach to Cointegration Analysis. Revised paper presented at the Symposium at the Centennial of Ragnar Frisch, The Norwegian Academy of Science and Letters, Oslo, March 3-5, 1995.

Pesaran, M. H., & Shin Y. (1999). An autoregressive distributed lag modelling approach to cointegration analysis. Chapter 11 in *Econometrics and Economic Theory in the 20th Century: The Ragnar Frisch Centennial Symposium*, Strom S (ed.). Cambridge University Press: Cambridge.

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001).Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics*, 16, 289–326.

Phillips, P.C.B., & Perron, P. (1988). Testing for a unit root in time series regression. *Biometrika,* 75, 335–346.

Pink, B. (2013). Technical paper - Socio-Economic Indexes for Areas (SEIFA). Australian Bureau of Statistics, pp 6-8.

Poveda, A. C. (2012). Violence and economic development in Colombian cities : A dynamic panel data analysis. *Journal of International Development,* 24, 809–827.

Pribac, L. I., Anghelina A., & Blaga R. L. (2016). Return on investment in education. Case study on education in Romania. *Studia Universitatis Vasile Goldis Arad Economics Series,* 26 (1), 26–39.

Pyle, D., & Deadman, D. (1994). Crime and unemployment in Scotland: some further results. *Scottish Journal of Political Economy*, 41(3), 314-324.

Raheem, W. M., Oyeleye, O. I., Adeniji, M. A. & Aladekoyi, O. C. (2014). Regional Imbalances and Inequalities in Nigeria: Causes, Consequences and Remedies. *Research on Humanities and Social Sciences*, 4 (18), 163-174.

Rambaldi, A.N., & Doran, H. E. (1996). Testing for Granger non-causality in cointegrated system made easy, Working Papers in Econometrics and Applied Statistics No. 88, Department of Econometrics, University of New England, Econometrics, University of New England.

Raphael, S., & Winter-Ebmer, R. (2001). Identifying the Effect of Unemployment on Crime. *Journal of Law and Economics,* 44(1), 259-283.

Rauma, D. & Berk, R. (1987). Remuneration and recidivism: the long-term impact of unemployment compensation on ex-offenders. *Journal of Quantitative Criminology,* 3, 3-27.

Razmi, A., & Blecker, R. A. (2008). Developing Country Exports of Manufactures: Moving Up the Ladder to Escape the Fallacy of Composition? *The Journal of Development Studies*, 44 (1), 21-48.

Ribadu N. (2004). Obstacles to Effective Prosecution of Corrupt Practices and Financial Crime Cases in Nigeria. Being A Paper Presented By Chairman, Economic And

Financial Crimes Commission (EFCC) at the 1st Stakeholders Summit on Corrupt Practices And Financial Crimes in Nigeria organized by the House of Representatives Committee on Anti-Corruption, National Ethics and Values, at The International Conference Centre, Trade Fair Complex, Kaduna, 23rd – 25th November.

Rogers, M. L., & Pridemore, W. A. (2013). The effect of poverty and social protection on national homicide rates: Direct and moderating effects. *Social Science Research*, 42, 584–595.

Romer, P. (1990). Endogenous technological change. *The Journal of Political Economy*, 98 (5), 71-102.

Saridakis, G. (2011). Violent crime and incentives in the long-run: evidence from England and Wales. *Journal of Applied Statistics*, 38 (4), 647–660.

Scorzafave, L. G., & Soares, M. K. (2009). Income inequality and pecuniary crimes. *Economics Letters,* 104(1), 40–42.

Seddighi, H. R. (2012). *Introduction to Econometrics*: A Practical Approach. Routledge, New York.

Sehrawat, M., & Giri, A. K. (2016). Financial development and poverty reduction in India: an empirical investigation. *International Journal of Social Economics*, 43 (2), 106 – 122.

Shaw, C., & McKay, H. (1942). Juvenile Delinquency and Urban Areas. University of Chicago Press: Chicago.

Sidebottom, A., Ashby, M., & Johnson, S. D. (2014). Copper Cable Theft: Revisiting the Price– Theft Hypothesis. *Journal of Research in Crime and Delinquency,* 51(5), 684-700.

Sims, C. A. (1980). Macroeconomics and Reality. *Econometrica*, 48 (1), 1-48.

Sjoquist, D. L. (1973). Property crime and economic behavior : Some empirical result. *The American Economic Review*, 63(3), 439–446.

Solow, R. M. (1956). A Contribution to the Theory of Economic Growth. The Quarterly *Journal of Economics*, 70 (1), 65-94.

Speziale, N. (2014). Does unemployment increase crime? Evidence from Italian provinces. *Applied Economics Letters*, 21(15), 1083–1089.

Stansfield, R., Williams, K. R. and Parker, K. F. (2017). Economic Disadvantage and Homicide: Estimating Temporal Trends in Adolescence and Adulthood. *Homicide Studies*, 1–23.

Stewart F. (1993).War and underdevelopment: Can economic analysis help reduce the costs? *Journal of International Development,* 5 (4), 357-380.

Stigler, G. J. (1974). The optimum enforcement of laws- essays in the economics of crime and punishment. Gary S. Becker and William M. Landes, eds. National Bureau of Economic Research (pp. 55 - 67).

Stučka, T. 2004. The Effects of Exchange Rate Change on the Trade Balance in Croatia. IMF Working Paper, WP 04/65.

Sutton, C. (2007). The role of the utilities sector in expanding economic opportunity. Corporate Social Responsibility Initiative Report No. 24 Cambridge, MA: Kennedy School of Government, Harvard University.

Timæus, I. M., Simelane, S., & Letsoalo, T. (2013). Poverty, Race, and Children's Progress at School in South Africa. *Journal of Development Studies*, 49(2), 270–284.

The Economist (September 12, 2014). Falling poverty and rising income inequality in Nigeria. http://country.eiu.com/article.aspx?articleid=1432272327&Country =Nigeria &topic=Politics.

The Nigeria Police, (2013). Annual Report. Federal Republic of Nigeria.

The Nigerian Institute of Social and Economic Research (January 23, 2013). Economic growth fails to reduce poverty– NISER. https://www.thenigerianvoice.com /news/106241/economic-growth-fails-to-reduce-poverty-niser.html accessed November 13, 2014.

The Prison Service (2011 & 2012). Annual Reports. Federal Republic of Nigeria.

The World Bank (2013). Nigeria Economic Report. No. 1. Pp 8-10.

The World Bank (2014). Nigerian Economic Report No. 2, July, pp 16-18.

Toda, H. Y., & Yamamoto, T. (1995). Statistical inference in vector autoregressions with possibly integrated processes. *Journal of Econometrics,* 66, 225-250.

Todaro, M. P., & Smith, S.C. (2011). *Economic Development. Eleventh* edition, Pearson Education Limited, England.

Torruam, J. T., & Abur, C. C. (2014). The Relationship between Unemployment, Inflation and Crime: An Application of Cointegration and Causality Analysis in Nigeria. *Journal of Economics and Sustainable Development*, 5 (4), 131-137.

Trading Economics (August 14, 2014). Birth and Death Rates, accessed online from http://www.tradingeconomics.com/nigeria/birth-ratecrude-per-1-000-people-wb-data.html.

Ubhenin, O. E., & Enabunene, S. (2011). Youth Restiveness and Credible Alternatives to Violence in Nigeria. *Journal of Human Security*, 7(1), 53-67.

Umukoro, N. (2012). Socio-Economic Inequality and Health Care in Nigeria: Perception of Health Workers from the Niger Delta. *Rethinking Development and Inequality*, 1, 60-66.

Umukoro, N. (2013). Poverty and social protection in Nigeria. *Journal of Developing Societies*, 29 (3), 305–322.

UN-Habitat, (2007). Enhancing urban safety and security- Global Report on Human Settlements 2007. London, UK and Sterling, VA: Earthscan, pp. 66.

UN-HABITAT, (2011). Infrastructure for Economic Development and Poverty Reduction in Africa. United Nations Human Settlements Programme, Nairobi, pp 64.

United Nations (2017). http://data.un.org/Data.aspx? Department of Economic and Social, Statistics Division.

United Nations (2001). Economic development in Africa: performance, prospects and policy issues. United Nations Conference on Trade and Development. New York and Geneva, pp 3-7.

United Nations Office on Drugs and Crime (2005). Crime and Development in Africa. https://www.unodc.org/pdf/African_report.pdf, pp: ix-xiii.

United Nations Office on Drugs and Crime (2013). Global study on homicide. The UNODC Research and Trend Analysis Branch (RAB). Vienna, pp 122-124.

United Nations, (2014). Economic development in Africa report 2014: catalysing investment for transformative growth in Africa. United Nations Conference on Trade and Development. New York and Geneva, pp 2-3.

UNDP (2014). Human Development Report 2014. Sustaining Human Progress: Reducing Vulnerabilities and Building Resilience. The United Nations Development Programme, New York, pp 33, 49-50 & 164-167.

UNDP Nigeria, (2009). Human Development Report Nigeria 2008 – 2009: Achieving growth with equity. Published for the United Nations Development Programme (UNDP) Nigeria, http://www.ng-undp.org, pp 112.

Van Gundy, K. T., Mills, M. L., Tucker, C. J., Rebellon, C. J., Sharp, E. H., & Stracuzzi, N.F. (2015). Socioeconomic Strain, Family Ties, and Adolescent Health in a Rural Northeastern County. *Rural Sociology,* 80 (1), 60–85.

Virén, M. (2001). Modelling crime and punishment. *Applied Economics*, 33 (14), 1869-1879.

Williams, K. (2014). Nigerian Prisons, A Training Ground for Hardened Criminals – Ex-convict. https://www.channelstv.com/2014/10/15/nigerian-prisons- training-ground-hardened-criminals-ex-convict/ accessed on December 18, 2016.

Willis, K. G., Powe, N. A., & Garrod, G. D. (2005). Estimating the Value of Improved Street Lighting: A Factor Analytical Discrete Choice Approach. *Urban Studies*, 42 (12), 2289–2303.

Wolde-Rufael, Y. (2005). Energy demand and economic growth: The African experience. *Journal of Policy Modelling*, 27, 891–903.

Wong, S. K. (2007). Disorganization Precursors, the Family and Crime: A Multi-Year Analysis of Canadian Municipalities. Western Criminology Review 8(1), 48–68.

Wong, P. N. (2012). Discerning an African Post-colonial Governance Imbroglio: Colonialism, Underdevelopment and Violent Conflicts in the Democratic Republic of Congo (DRC), Liberia and Sierra Leone. *African and Asian Studies* 11, 66- 94.

World Bank (1990). World Development Report 1990: Poverty. Oxford University Press, New York, pp 25-27.

World Bank (2006). Brazil-Crime, Violence and Economic Development in Brazil: Elements for Effective Public Policy. Report No. 36525-BR. Poverty Reduction and Economic Management Sector Unit Latin America and the Caribbean Region.

World Bank Indicator. (2016). World Bank Indicator for Development. http://data.worldbank.org/data-catalog/world development-indicator accessed 25 April, 2016.

World Bank, (2016) http://databank.worldbank.org/data/download/GDP_PPP.pdf

World Health Organization (2014). Preventing suicide: a global imperative. http://apps.who.int/iris/bitstream/10665/131056/1/9789241564779_eng.pdf?ua accessed on July 13, 2015, pp 23, 80-87.

Wu, D., & Wu, Z. (2012). Crime, inequality and unemployment in England and Wales. *Applied Economics*, 44 (29), 3765–3775.

www.crimestatssa.com/national.php accessed on Sunday, July 13, 2015.

www.data.gov.gh/agency-publications/datasets-agency/Ghana/police accessed on Sunday, July 13, 2015.

Yildiz, R., Ocal, O., & Yildirim, E. (2013). The Effects of Unemployment, Income and Education on Crime: Evidence from Individual Data. *International Journal of Economic Perspectives,* 7(2), 32-40.

Yusuf, O. B., Adeoye, B. W., Oladepo, O. O., Peters, D. H. & Bishai, D. (2010). Poverty and fever vulnerability in Nigeria: a multilevel analysis. *Malaria Journal,* 9:235, 1-6.

Zapata, H. O., & Rambaldi, A. N. (1997). Monte Carlo evidence on cointegration and causation. *Oxford Bulletin of Economics and Statistics*, 59 (2), 285–298.

APPENDIX

Appendix A Results of the Unit Roots

Null Hypothesis: LCR has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		0.236669	0.9719
Test critical values:	1% level	-3.592462	
	5% level	-2.931404	
	10% level	-2.603944	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: LCR has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.344902	0.4019
Test critical values:	1% level	-4.186481	
	5% level	-3.518090	
	10% level	-3.189732	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(LCR) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.738864	0.0000
Test critical values:	1% level	-3.596616	
	5% level	-2.933158	
	10% level	-2.604867	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(LCR) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.013627	0.0000
Test critical values:	1% level	-4.192337	
	5% level	-3.520787	
	10% level	-3.191277	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: LCR has a unit root
Exogenous: Constant
Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		0.286473	0.9749
Test critical values:	1% level	-3.592462	
	5% level	-2.931404	
	10% level	-2.603944	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: LCR has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 2 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-2.325077	0.4120
Test critical values:	1% level	-4.186481	
	5% level	-3.518090	
	10% level	-3.189732	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(LCR) has a unit root
Exogenous: Constant
Bandwidth: 2 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-6.754091	0.0000
Test critical values:	1% level	-3.596616	
	5% level	-2.933158	
	10% level	-2.604867	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(LCR) has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 6 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-7.442077	0.0000
Test critical values:	1% level	-4.192337	
	5% level	-3.520787	
	10% level	-3.191277	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: LCPS has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.921721	0.0511
Test critical values:	1% level	-3.592462	
	5% level	-2.931404	
	10% level	-2.603944	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: LCPS has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.901281	0.1722
Test critical values:	1% level	-4.186481	
	5% level	-3.518090	
	10% level	-3.189732	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(LCPS) has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.374330	0.0000
Test critical values:	1% level	-3.600987	
	5% level	-2.935001	
	10% level	-2.605836	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(LCPS) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 1 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.789977	0.0000
Test critical values:	1% level	-4.198503	
	5% level	-3.523623	
	10% level	-3.192902	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: LCPS has a unit root
Exogenous: Constant
Bandwidth: 3 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-2.804626	0.0660
Test critical values:	1% level	-3.592462	
	5% level	-2.931404	
	10% level	-2.603944	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: LCPS has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 3 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-2.740203	0.2265
Test critical values:	1% level	-4.186481	
	5% level	-3.518090	
	10% level	-3.189732	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(LCPS) has a unit root
Exogenous: Constant
Bandwidth: 5 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-10.91754	0.0000
Test critical values:	1% level	-3.596616	
	5% level	-2.933158	
	10% level	-2.604867	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(LCPS) has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 9 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-13.96745	0.0000
Test critical values:	1% level	-4.192337	
	5% level	-3.520787	
	10% level	-3.191277	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: LCPR has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.662921	0.4425
Test critical values:	1% level	-3.592462	
	5% level	-2.931404	
	10% level	-2.603944	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: LCPR has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.186992	0.1005
Test critical values:	1% level	-4.186481	
	5% level	-3.518090	
	10% level	-3.189732	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(LCPR) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-8.801981	0.0000
Test critical values:	1% level	-3.596616	
	5% level	-2.933158	
	10% level	-2.604867	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(LCPR) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-8.760698	0.0000
Test critical values:	1% level	-4.192337	
	5% level	-3.520787	
	10% level	-3.191277	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: LCPR has a unit root
Exogenous: Constant
Bandwidth: 3 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-1.470707	0.5387
Test critical values:	1% level	-3.592462	
	5% level	-2.931404	
	10% level	-2.603944	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: LCPR has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 3 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-3.114690	0.1159
Test critical values:	1% level	-4.186481	
	5% level	-3.518090	
	10% level	-3.189732	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(LCPR) has a unit root
Exogenous: Constant
Bandwidth: 0 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-8.801981	0.0000
Test critical values:	1% level	-3.596616	
	5% level	-2.933158	
	10% level	-2.604867	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(LCPR) has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-8.848188	0.0000
Test critical values:	1% level	-4.192337	
	5% level	-3.520787	
	10% level	-3.191277	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: UN has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.255681	0.1906
Test critical values:	1% level	-3.592462	
	5% level	-2.931404	
	10% level	-2.603944	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: UN has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.905201	0.1710
Test critical values:	1% level	-4.186481	
	5% level	-3.518090	
	10% level	-3.189732	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(UN) has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.605361	0.0000
Test critical values:	1% level	-3.600987	
	5% level	-2.935001	
	10% level	-2.605836	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(UN) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 1 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.517855	0.0000
Test critical values:	1% level	-4.198503	
	5% level	-3.523623	
	10% level	-3.192902	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: UN has a unit root
Exogenous: Constant
Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-2.226587	0.2002
Test critical values:	1% level	-3.592462	
	5% level	-2.931404	
	10% level	-2.603944	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: UN has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 2 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-2.814636	0.2001
Test critical values:	1% level	-4.186481	
	5% level	-3.518090	
	10% level	-3.189732	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(UN) has a unit root
Exogenous: Constant
Bandwidth: 6 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-7.926509	0.0000
Test critical values:	1% level	-3.596616	
	5% level	-2.933158	
	10% level	-2.604867	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(UN) has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 6 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-7.824359	0.0000
Test critical values:	1% level	-4.192337	
	5% level	-3.520787	
	10% level	-3.191277	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: YL has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-0.201213	0.9305
Test critical values:	1% level	-3.592462	
	5% level	-2.931404	
	10% level	-2.603944	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: YL has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-0.293056	0.9884
Test critical values:	1% level	-4.186481	
	5% level	-3.518090	
	10% level	-3.189732	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(YL) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.553926	0.0000
Test critical values:	1% level	-3.596616	
	5% level	-2.933158	
	10% level	-2.604867	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(YL) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.015278	0.0001
Test critical values:	1% level	-4.192337	
	5% level	-3.520787	
	10% level	-3.191277	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: YL has a unit root
Exogenous: Constant
Bandwidth: 4 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-0.645581	0.8494
Test critical values:	1% level	-3.592462	
	5% level	-2.931404	
	10% level	-2.603944	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: YL has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 3 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-0.493253	0.9801
Test critical values:	1% level	-4.186481	
	5% level	-3.518090	
	10% level	-3.189732	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(YL) has a unit root
Exogenous: Constant
Bandwidth: 4 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-5.634397	0.0000
Test critical values:	1% level	-3.596616	
	5% level	-2.933158	
	10% level	-2.604867	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(YL) has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 2 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-6.014658	0.0001
Test critical values:	1% level	-4.192337	
	5% level	-3.520787	
	10% level	-3.191277	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: POV has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.678378	0.4348
Test critical values:	1% level	-3.592462	
	5% level	-2.931404	
	10% level	-2.603944	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: POV has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.477514	0.3371
Test critical values:	1% level	-4.186481	
	5% level	-3.518090	
	10% level	-3.189732	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(POV) has a unit root
Exogenous: Constant
Lag Length: 2 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.375413	0.0000
Test critical values:	1% level	-3.605593	
	5% level	-2.936942	
	10% level	-2.606857	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(POV) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 2 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.597191	0.0000
Test critical values:	1% level	-4.205004	
	5% level	-3.526609	
	10% level	-3.194611	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: POV has a unit root
Exogenous: Constant
Bandwidth: 13 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-1.863534	0.3459
Test critical values:	1% level	-3.592462	
	5% level	-2.931404	
	10% level	-2.603944	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: POV has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 9 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-2.559173	0.3000
Test critical values:	1% level	-4.186481	
	5% level	-3.518090	
	10% level	-3.189732	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(POV) has a unit root
Exogenous: Constant
Bandwidth: 21 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-9.254966	0.0000
Test critical values:	1% level	-3.596616	
	5% level	-2.933158	
	10% level	-2.604867	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(POV) has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 18 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-11.22431	0.0000
Test critical values:	1% level	-4.192337	
	5% level	-3.520787	
	10% level	-3.191277	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: FI has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.700160	0.4240
Test critical values:	1% level	-3.592462	
	5% level	-2.931404	
	10% level	-2.603944	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: FI has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.169084	0.4940
Test critical values:	1% level	-4.186481	
	5% level	-3.518090	
	10% level	-3.189732	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(FI) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.375356	0.0000
Test critical values:	1% level	-3.596616	
	5% level	-2.933158	
	10% level	-2.604867	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(FI) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.295777	0.0000
Test critical values:	1% level	-4.192337	
	5% level	-3.520787	
	10% level	-3.191277	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: FI has a unit root
Exogenous: Constant
Bandwidth: 2 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-1.784594	0.3830
Test critical values:	1% level	-3.592462	
	5% level	-2.931404	
	10% level	-2.603944	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: FI has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 2 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-2.308711	0.4204
Test critical values:	1% level	-4.186481	
	5% level	-3.518090	
	10% level	-3.189732	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(FI) has a unit root
Exogenous: Constant
Bandwidth: 0 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-6.375356	0.0000
Test critical values:	1% level	-3.596616	
	5% level	-2.933158	
	10% level	-2.604867	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(FI) has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 0 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-6.295777	0.0000
Test critical values:	1% level	-4.192337	
	5% level	-3.520787	
	10% level	-3.191277	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: LPES has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		0.178468	0.9679
Test critical values:	1% level	-3.596616	
	5% level	-2.933158	
	10% level	-2.604867	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: LPES has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 1 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.989842	0.5898
Test critical values:	1% level	-4.192337	
	5% level	-3.520787	
	10% level	-3.191277	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(LPES) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.904557	0.0000
Test critical values:	1% level	-3.596616	
	5% level	-2.933158	
	10% level	-2.604867	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(LPES) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.909892	0.0000
Test critical values:	1% level	-4.192337	

	5% level	-3.520787
	10% level	-3.191277

*MacKinnon (1996) one-sided p-values.
Null Hypothesis: LPES has a unit root
Exogenous: Constant
Bandwidth: 5 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		0.461616	0.9833
Test critical values:	1% level	-3.592462	
	5% level	-2.931404	
	10% level	-2.603944	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: LPES has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 4 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-2.303607	0.4231
Test critical values:	1% level	-4.186481	
	5% level	-3.518090	
	10% level	-3.189732	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(LPES) has a unit root
Exogenous: Constant
Bandwidth: 4 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-6.995614	0.0000
Test critical values:	1% level	-3.596616	
	5% level	-2.933158	
	10% level	-2.604867	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(LPES) has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 7 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-7.037468	0.0000
Test critical values:	1% level	-4.192337	
	5% level	-3.520787	
	10% level	-3.191277	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: LGR has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		1.189025	0.9976
Test critical values:	1% level	-3.592462	
	5% level	-2.931404	
	10% level	-2.603944	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: LGR has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-0.258469	0.9894
Test critical values:	1% level	-4.186481	
	5% level	-3.518090	
	10% level	-3.189732	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(LGR) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.595435	0.0000
Test critical values:	1% level	-3.596616	
	5% level	-2.933158	
	10% level	-2.604867	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(LGR) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.065733	0.0000
Test critical values:	1% level	-4.192337	
	5% level	-3.520787	
	10% level	-3.191277	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: LGR has a unit root
Exogenous: Constant
Bandwidth: 3 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		0.961606	0.9954
Test critical values:	1% level	-3.592462	
	5% level	-2.931404	
	10% level	-2.603944	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: LGR has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 3 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-0.458782	0.9819
Test critical values:	1% level	-4.186481	
	5% level	-3.518090	
	10% level	-3.189732	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(LGR) has a unit root
Exogenous: Constant
Bandwidth: 4 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-5.682045	0.0000
Test critical values:	1% level	-3.596616	
	5% level	-2.933158	
	10% level	-2.604867	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(LGR) has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 2 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-6.066419	0.0000
Test critical values:	1% level	-4.192337	
	5% level	-3.520787	
	10% level	-3.191277	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: TIV has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.040122	0.2693
Test critical values:	1% level	-3.592462	
	5% level	-2.931404	
	10% level	-2.603944	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: TIV has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.288414	0.4310
Test critical values:	1% level	-4.186481	
	5% level	-3.518090	
	10% level	-3.189732	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(TIV) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.819041	0.0000
Test critical values:	1% level	-3.596616	
	5% level	-2.933158	
	10% level	-2.604867	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(TIV) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 1 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.912896	0.0001
Test critical values:	1% level	-4.198503	
	5% level	-3.523623	
	10% level	-3.192902	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: TIV has a unit root
Exogenous: Constant
Bandwidth: 5 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-2.020528	0.2773
Test critical values:	1% level	-3.592462	
	5% level	-2.931404	
	10% level	-2.603944	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: TIV has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 3 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-2.311921	0.4188
Test critical values:	1% level	-4.186481	
	5% level	-3.518090	
	10% level	-3.189732	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(TIV) has a unit root
Exogenous: Constant
Bandwidth: 15 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-6.958966	0.0000
Test critical values:	1% level	-3.596616	
	5% level	-2.933158	
	10% level	-2.604867	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(TIV) has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 16 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-7.971392	0.0000
Test critical values:	1% level	-4.192337	
	5% level	-3.520787	
	10% level	-3.191277	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: EIV has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		1.005262	0.9960
Test critical values:	1% level	-3.592462	
	5% level	-2.931404	
	10% level	-2.603944	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: EIV has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.090796	0.9189
Test critical values:	1% level	-4.186481	
	5% level	-3.518090	
	10% level	-3.189732	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(EIV) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.298967	0.0000
Test critical values:	1% level	-3.596616	
	5% level	-2.933158	
	10% level	-2.604867	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(EIV) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 3 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.231825	0.0007
Test critical values:	1% level	-4.211868	
	5% level	-3.529758	
	10% level	-3.196411	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: EIV has a unit root
Exogenous: Constant
Bandwidth: 28 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		2.584936	1.0000
Test critical values:	1% level	-3.592462	
	5% level	-2.931404	
	10% level	-2.603944	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: EIV has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 30 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		0.170264	0.9970
Test critical values:	1% level	-4.186481	
	5% level	-3.518090	
	10% level	-3.189732	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(EIV) has a unit root
Exogenous: Constant
Bandwidth: 11 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-6.299767	0.0000
Test critical values:	1% level	-3.596616	
	5% level	-2.933158	
	10% level	-2.604867	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(EIV) has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 18 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-10.47724	0.0000
Test critical values:	1% level	-4.192337	
	5% level	-3.520787	
	10% level	-3.191277	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: LAG has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		0.465572	0.9835
Test critical values:	1% level	-3.592462	
	5% level	-2.931404	
	10% level	-2.603944	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: LAG has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.578765	0.2914
Test critical values:	1% level	-4.186481	
	5% level	-3.518090	
	10% level	-3.189732	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(LAG) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.526260	0.0000
Test critical values:	1% level	-3.596616	
	5% level	-2.933158	
	10% level	-2.604867	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(LAG) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.648230	0.0000
Test critical values:	1% level	-4.192337	
	5% level	-3.520787	
	10% level	-3.191277	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: LAG has a unit root
Exogenous: Constant
Bandwidth: 8 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		1.054830	0.9965
Test critical values:	1% level	-3.592462	
	5% level	-2.931404	
	10% level	-2.603944	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: LAG has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 3 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-2.546574	0.3055
Test critical values:	1% level	-4.186481	
	5% level	-3.518090	
	10% level	-3.189732	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(LAG) has a unit root
Exogenous: Constant
Bandwidth: 5 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-6.588424	0.0000
Test critical values:	1% level	-3.596616	
	5% level	-2.933158	
	10% level	-2.604867	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(LAG) has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 9 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-7.294648	0.0000
Test critical values:	1% level	-4.192337	
	5% level	-3.520787	
	10% level	-3.191277	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: TRC has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-0.750290	0.8228
Test critical values:	1% level	-3.592462	
	5% level	-2.931404	
	10% level	-2.603944	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: TRC has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 4 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		1.059442	0.9999
Test critical values:	1% level	-4.211868	
	5% level	-3.529758	
	10% level	-3.196411	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(TRC) has a unit root
Exogenous: Constant
Lag Length: 3 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.967052	0.0002
Test critical values:	1% level	-3.610453	
	5% level	-2.938987	
	10% level	-2.607932	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(TRC) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 3 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.573788	0.0002
Test critical values:	1% level	-4.211868	
	5% level	-3.529758	
	10% level	-3.196411	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: TRC has a unit root
Exogenous: Constant
Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-0.769171	0.8176
Test critical values:	1% level	-3.592462	
	5% level	-2.931404	
	10% level	-2.603944	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: TRC has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-1.386659	0.8509
Test critical values:	1% level	-4.186481	
	5% level	-3.518090	
	10% level	-3.189732	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(TRC) has a unit root
Exogenous: Constant
Bandwidth: 2 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-6.705334	0.0000
Test critical values:	1% level	-3.596616	
	5% level	-2.933158	
	10% level	-2.604867	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(TRC) has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 6 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-7.303136	0.0000
Test critical values:	1% level	-4.192337	
	5% level	-3.520787	
	10% level	-3.191277	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: UT has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.074129	0.2557
Test critical values:	1% level	-3.592462	
	5% level	-2.931404	
	10% level	-2.603944	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: UT has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.901960	0.6362
Test critical values:	1% level	-4.186481	
	5% level	-3.518090	
	10% level	-3.189732	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(UT) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.069346	0.0000
Test critical values:	1% level	-3.596616	
	5% level	-2.933158	
	10% level	-2.604867	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(UT) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.056631	0.0001
Test critical values:	1% level	-4.192337	
	5% level	-3.520787	
	10% level	-3.191277	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: UT has a unit root
Exogenous: Constant
Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-2.176922	0.2173
Test critical values:	1% level	-3.592462	
	5% level	-2.931404	
	10% level	-2.603944	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: UT has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-2.029634	0.5690
Test critical values:	1% level	-4.186481	
	5% level	-3.518090	
	10% level	-3.189732	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(UT) has a unit root
Exogenous: Constant
Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-6.069681	0.0000
Test critical values:	1% level	-3.596616	
	5% level	-2.933158	
	10% level	-2.604867	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(UT) has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 2 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-6.067096	0.0000
Test critical values:	1% level	-4.192337	
	5% level	-3.520787	
	10% level	-3.191277	

*MacKinnon (1996) one-sided p-values.

Appendix B Results on Exogeneity (Overall Crime Model 1A)

Dependent Variable: LCR
Method: Least Squares
Date: 06/14/17 Time: 13:07
Sample (adjusted): 1972 2013
Included observations: 42 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-189.2352	140.5806	-1.346097	0.1908
LCR(-1)	37.91783	27.54406	1.376625	0.1813
LCR(-2)	-3.715579	2.507938	-1.481527	0.1515
UN	-0.764473	0.587664	-1.300869	0.2057
UN(-1)	2.382447	1.773712	1.343198	0.1918
YL	317.4935	234.0454	1.356547	0.1875
YL(-1)	-364.8924	269.5043	-1.353939	0.1884
POV	23.97818	17.71258	1.353737	0.1884
POV(-1)	9.834905	7.356099	1.336973	0.1938
FI	-35.34591	26.24893	-1.346566	0.1907
FI(-1)	32.52594	24.06313	1.351692	0.1891
LPES	25.49598	18.89562	1.349306	0.1898
LPES(-1)	-15.91915	11.70182	-1.360399	0.1863
RUN	0.759659	0.587764	1.292456	0.2085
RYL	-316.9841	234.0461	-1.354366	0.1882
RPOV	-23.80491	17.71377	-1.343864	0.1916
RFI	35.61288	26.24911	1.356728	0.1875
RLPES	-25.59220	18.89570	-1.354393	0.1882

R-squared	0.976751	Mean dependent var	5.302644
Adjusted R-squared	0.960283	S.D. dependent var	0.637433
S.E. of regression	0.127035	Akaike info criterion	-0.991174
Sum squared resid	0.387312	Schwarz criterion	-0.246458
Log likelihood	38.81465	Hannan-Quinn criter.	-0.718206
F-statistic	59.31140	Durbin-Watson stat	2.042431
Prob(F-statistic)	0.000000		

Wald Test:
Equation: Untitled

Test Statistic	Value	df	Probability
F-statistic	1.033632	(5, 24)	0.4206
Chi-square	5.168159	5	0.3957

Null Hypothesis: C(14)= C(15)=C(16)=C(17)= C(18)=0
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(14)	0.759659	0.587764
C(15)	-316.9841	234.0461
C(16)	-23.80491	17.71377
C(17)	35.61288	26.24911
C(18)	-25.59220	18.89570

Restrictions are linear in coefficients.

Appendix C Results on Exogeneity (Persons' Crime Model 1B)

Method: Least Squares
Date: 06/16/17 Time: 11:23
Sample (adjusted): 1972 2013
Included observations: 42 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-33.15578	30.62853	-1.082513	0.2898
LCPS(-1)	-0.254143	0.920494	-0.276094	0.7848
LCPS(-2)	-0.397347	0.738187	-0.538274	0.5953
UN	0.014961	0.109219	0.136983	0.8922
UN(-1)	0.105591	0.184037	0.573748	0.5715
YL	1.755458	11.43968	0.153453	0.8793
YL(-1)	-1.696455	12.74915	-0.133064	0.8953
POV	4.222935	5.099115	0.828170	0.4157
POV(-1)	-0.292445	1.051680	-0.278075	0.7833
FI	0.685102	1.312920	0.521815	0.6066
FI(-1)	0.209379	0.883155	0.237080	0.8146
LPES	2.098059	3.559520	0.589422	0.5611
LPES(-1)	-1.909500	3.249619	-0.587607	0.5623
RUN4	0.044203	0.113778	0.388498	0.7011
RYL4	1.260564	11.53213	0.109309	0.9139
RPOV4	-3.819672	5.130915	-0.744443	0.4638
RFI4	-0.558094	1.340528	-0.416324	0.6809
RLPES4	-2.050574	3.561932	-0.575692	0.5702

R-squared	0.737421	Mean dependent var	3.216745
Adjusted R-squared	0.551428	S.D. dependent var	0.489067
S.E. of regression	0.327555	Akaike info criterion	0.903207
Sum squared resid	2.575019	Schwarz criterion	1.647923
Log likelihood	-0.967350	Hannan-Quinn criter.	1.176175
F-statistic	3.964776	Durbin-Watson stat	1.921244
Prob(F-statistic)	0.001095		

Wald Test:
Equation: Untitled

Test Statistic	Value	df	Probability
F-statistic	0.322465	(5, 24)	0.8945
Chi-square	1.612326	5	0.8998

Null Hypothesis: C(14)=C(15)=C(16)=C(17)=C(18)=0
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(14)	0.044203	0.113778
C(15)	1.260564	11.53213
C(16)	-3.819672	5.130915
C(17)	-0.558094	1.340528
C(18)	-2.050574	3.561932

Restrictions are linear in coefficients.

Appendix D Results on Exogeneity (Property Crime Model 1C)

Dependent Variable: LCPR
Method: Least Squares
Date: 06/14/17 Time: 13:17
Sample (adjusted): 1972 2013
Included observations: 42 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.752167	18.16512	-0.206559	0.8381
LCPR(-1)	-0.059225	0.381832	-0.155107	0.8780
LCPR(-2)	0.072090	0.248150	0.290508	0.7739
UN	0.076882	0.056745	1.354869	0.1881
UN(-1)	-0.042789	0.125844	-0.340012	0.7368
YL	-9.890412	14.25695	-0.693725	0.4945
YL(-1)	10.01215	15.72318	0.636776	0.5303
POV	1.890854	3.535059	0.534886	0.5976
POV(-1)	-1.110551	0.915111	-1.213570	0.2367
FI	0.848699	0.941033	0.901880	0.3761
FI(-1)	-0.285930	1.390489	-0.205633	0.8388
LPES	-0.663090	1.353047	-0.490072	0.6285
LPES(-1)	0.463506	1.203648	0.385084	0.7036
RUN3	-0.033463	0.060806	-0.550330	0.5872
RYL3	12.59274	14.30979	0.880009	0.3876
RPOV3	-1.749488	3.565500	-0.490671	0.6281
RFI3	-0.364063	0.967433	-0.376319	0.7100
RLPES3	0.636432	1.358035	0.468642	0.6436

R-squared	0.892546	Mean dependent var	2.903183
Adjusted R-squared	0.816433	S.D. dependent var	0.655830
S.E. of regression	0.280988	Akaike info criterion	0.596521
Sum squared resid	1.894908	Schwarz criterion	1.341236
Log likelihood	5.473066	Hannan-Quinn criter.	0.869488
F-statistic	11.72658	Durbin-Watson stat	1.806307
Prob(F-statistic)	0.000000		

Wald Test:
Equation: Untitled

Test Statistic	Value	df	Probability
F-statistic	1.022842	(5, 24)	0.4264
Chi-square	5.114210	5	0.4021

Null Hypothesis: C(14)= C(15)=C(16)=C(17)= C(18)=0
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(14)	-0.033463	0.060806
C(15)	12.59274	14.30979
C(16)	-1.749488	3.565500
C(17)	-0.364063	0.967433
C(18)	0.636432	1.358035

Restrictions are linear in coefficients.

Appendix E Results on Exogeneity (Growth-Overall Crime Model 2A)

Dependent Variable: LGR
Method: Least Squares
Date: 06/14/17 Time: 12:47
Sample (adjusted): 1972 2013
Included observations: 42 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	34.37631	18.92343	1.816601	0.0836
LGR(-1)	-0.750406	1.887275	-0.397613	0.6949
LGR(-2)	0.925993	1.608531	0.575676	0.5710
LCR	-1.740422	1.727743	-1.007338	0.3252
LCR(-1)	0.269577	0.208452	1.293232	0.2100
TIV	0.000940	0.015043	0.062464	0.9508
TIV(-1)	-0.026716	0.042352	-0.630814	0.5350
EIV	-2.697860	3.073786	-0.877699	0.3900
EIV(-1)	-0.201071	1.143637	-0.175817	0.8621
LAG	-0.200377	0.317901	-0.630313	0.5353
LAG(-1)	0.062080	0.168902	0.367552	0.7169
TRC	0.119580	0.139715	0.855884	0.4017
TRC(-1)	0.047721	0.044590	1.070221	0.2967
UT	0.032416	0.125698	0.257887	0.7990
UT(-1)	0.067639	0.058187	1.162441	0.2581
RLCR	1.681526	1.731758	0.970993	0.3426
RTIV	5.98E-05	0.015376	0.003887	0.9969
REIV	2.769647	3.089481	0.896477	0.3802
RLAG	0.193584	0.318987	0.606872	0.5504
RTRC	-0.120726	0.140197	-0.861119	0.3989
RUT	-0.000341	0.127771	-0.002666	0.9979

R-squared	0.990704	Mean dependent var	30.83284
Adjusted R-squared	0.981851	S.D. dependent var	0.422970
S.E. of regression	0.056982	Akaike info criterion	-2.585305
Sum squared resid	0.068186	Schwarz criterion	-1.716470
Log likelihood	75.29140	Hannan-Quinn criter.	-2.266842
F-statistic	111.9025	Durbin-Watson stat	2.184338
Prob(F-statistic)	0.000000		

Wald Test:
Equation: Untitled

Test Statistic	Value	df	Probability
F-statistic	1.993260	(6, 21)	0.1123
Chi-square	11.95956	6	0.0629

Null Hypothesis: C(16)=C(17)= C(18)=C(19)=
C(20)=C(21)=0
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(16)	1.681526	1.731758
C(17)	5.98E-05	0.015376
C(18)	2.769647	3.089481

C(19)	0.193584	0.318987
C(20)	-0.120726	0.140197
C(21)	-0.000341	0.127771

Restrictions are linear in coefficients.

Appendix F Results on Exogeneity (Growth-Persons' Crime Model 2B)

Dependent Variable: LGR
Method: Least Squares
Date: 06/14/17 Time: 12:53
Sample (adjusted): 1972 2013
Included observations: 42 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	26.42215	8.064395	3.276395	0.0036
LGR(-1)	0.526286	0.433840	1.213089	0.2386
LGR(-2)	-0.397642	0.265056	-1.500221	0.1484
LCPS	-0.037784	0.185289	-0.203920	0.8404
LCPS(-1)	-0.013923	0.068251	-0.203993	0.8403
TIV	0.000568	0.009238	0.061508	0.9515
TIV(-1)	0.000143	0.009622	0.014841	0.9883
EIV	0.547625	0.544814	1.005158	0.3263
EIV(-1)	0.655066	0.404478	1.619533	0.1203
LAG	-0.014372	0.108144	-0.132896	0.8955
LAG(-1)	0.042417	0.096699	0.438646	0.6654
TRC	0.024094	0.029920	0.805294	0.4297
TRC(-1)	-0.016365	0.023196	-0.705529	0.4882
UT	-0.088516	0.044656	-1.982166	0.0607
UT(-1)	0.150356	0.042425	3.544046	0.0019
RLCPS	-0.030575	0.188200	-0.162459	0.8725
RTIV2	0.001337	0.009734	0.137366	0.8920
REIV2	-0.650943	0.612281	-1.063144	0.2998
RLAG2	0.034879	0.111459	0.312934	0.7574
RTRC2	-0.028662	0.032247	-0.888808	0.3842
RUT2	0.112542	0.050147	2.244253	0.0357

R-squared	0.991704	Mean dependent var	30.83284
Adjusted R-squared	0.983803	S.D. dependent var	0.422970
S.E. of regression	0.053831	Akaike info criterion	-2.699088
Sum squared resid	0.060853	Schwarz criterion	-1.830253
Log likelihood	77.68084	Hannan-Quinn criter.	-2.380626
F-statistic	125.5143	Durbin-Watson stat	2.097924
Prob(F-statistic)	0.000000		

Wald Test:
Equation: Untitled

Test Statistic	Value	df	Probability
F-statistic	2.266309	(6, 21)	0.0764
Chi-square	13.59785	6	0.0345

Null Hypothesis: C(16)=C(17)= C(18)=C(19)=
C(20)=C(21)=0
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(16)	-0.030575	0.188200
C(17)	0.001337	0.009734
C(18)	-0.650943	0.612281
C(19)	0.034879	0.111459
C(20)	-0.028662	0.032247
C(21)	0.112542	0.050147

Restrictions are linear in coefficients.

Appendix G Results on Exogeneity (Growth-Property Crime Model 2C)

Dependent Variable: LGR
Method: Least Squares
Date: 06/14/17 Time: 13:00
Sample (adjusted): 1972 2013
Included observations: 42 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	26.76180	80.83668	0.331060	0.7439
LGR(-1)	0.669509	3.800717	0.176153	0.8619
LGR(-2)	-0.570588	1.039562	-0.548873	0.5889
LCPR	0.134389	1.799269	0.074691	0.9412
LCPR(-1)	0.008115	0.808706	0.010034	0.9921
TIV	-0.006700	0.052131	-0.128519	0.8990
TIV(-1)	0.010266	0.032351	0.317346	0.7541
EIV	1.671096	9.433589	0.177143	0.8611
EIV(-1)	0.312383	3.010722	0.103757	0.9183
LAG	-0.123312	1.882026	-0.065521	0.9484
LAG(-1)	0.142335	2.003150	0.071055	0.9440
TRC	0.024246	0.361312	0.067105	0.9471
TRC(-1)	-0.038330	0.423120	-0.090589	0.9287
UT	-0.102470	0.199354	-0.514013	0.6126
UT(-1)	0.161962	0.491535	0.329501	0.7450
RLCPR	-0.157411	1.799693	-0.087465	0.9311
RTIV3	0.009587	0.052250	0.183478	0.8562
REIV3	-1.627330	9.437480	-0.172433	0.8647
RLAG3	0.134045	1.882208	0.071217	0.9439
RTRC3	-0.028086	0.361492	-0.077696	0.9388
RUT3	0.130091	0.200633	0.648403	0.5238

R-squared	0.991517	Mean dependent var	30.83284
Adjusted R-squared	0.983439	S.D. dependent var	0.422970
S.E. of regression	0.054432	Akaike info criterion	-2.676868
Sum squared resid	0.062220	Schwarz criterion	-1.808033
Log likelihood	77.21423	Hannan-Quinn criter.	-2.358406
F-statistic	122.7331	Durbin-Watson stat	2.090889
Prob(F-statistic)	0.000000		

Wald Test:
Equation: Untitled

Test Statistic	Value	df	Probability
F-statistic	2.699352	(6, 21)	0.0421
Chi-square	16.19611	6	0.0127

Null Hypothesis: C(16)=C(17)= C(18)=C(19)=
C(20)=C(21)=0
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(16)	-0.157411	1.799693
C(17)	0.009587	0.052250
C(18)	-1.627330	9.437480
C(19)	0.134045	1.882208
C(20)	-0.028086	0.361492
C(21)	0.130091	0.200633

Restrictions are linear in coefficients.

Appendix H ARDL OLS Results for Overall Crime Model 1A

Dependent Variable: LCR
Method: ARDL
Date: 05/20/17 Time: 10:51
Sample (adjusted): 1972 2013
Included observations: 42 after adjustments
Maximum dependent lags: 2 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (2 lags, automatic): UN YL POV FI LPES
Fixed regressors: C
Number of models evalulated: 486
Selected Model: ARDL(1, 0, 0, 2, 2, 1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LCR(-1)	0.333004	0.146525	2.272680	0.0304
UN	-0.005030	0.008162	-0.616298	0.5423
YL	0.745347	0.261269	2.852790	0.0078
POV	0.162900	0.187109	0.870617	0.3909
POV(-1)	-0.104063	0.182976	-0.568727	0.5738
POV(-2)	-0.385928	0.197305	-1.956002	0.0598
FI	0.223765	0.082555	2.710484	0.0110
FI(-1)	-0.042910	0.101915	-0.421038	0.6767
FI(-2)	-0.109334	0.076151	-1.435742	0.1614
LPES	-0.083407	0.047463	-1.757325	0.0891
LPES(-1)	-0.072121	0.050709	-1.422264	0.1653
C	1.773388	1.713521	1.034938	0.3090

R-squared	0.974656	Mean dependent var	5.302644
Adjusted R-squared	0.965364	S.D. dependent var	0.637433
S.E. of regression	0.118632	Akaike info criterion	-1.190632
Sum squared resid	0.422203	Schwarz criterion	-0.694155
Log likelihood	37.00327	Hannan-Quinn criter.	-1.008654
F-statistic	104.8846	Durbin-Watson stat	2.026042
Prob(F-statistic)	0.000000		

*Note: p-values and any subsequent tests do not account for model selection.

Model Selection Criteria Table
Dependent Variable: LCR
Date: 05/20/17 Time: 10:54
Sample: 1970 2013
Included observations: 42

Model	LogL	AIC*	BIC	HQ	Adj. R-sq	Specification
461	37.003272	-1.190632	-0.694155	-1.008654	0.965364	ARDL(1, 0, 0, 2, 2, 1)

ARDL Long Run Form and Bounds Test
Dependent Variable: D(LCR)
Selected Model: ARDL(1, 0, 0, 2, 2, 1)
Case 2: Restricted Constant and No Trend
Date: 05/20/17 Time: 10:54
Sample: 1970 2013
Included observations: 42

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.773388	1.713521	1.034938	0.3090
LCR(-1)*	-0.666996	0.146525	-4.552104	0.0001
UN**	-0.005030	0.008162	-0.616298	0.5423
YL**	0.745347	0.261269	2.852790	0.0078
POV(-1)	-0.327091	0.285130	-1.147166	0.2604
FI(-1)	0.071522	0.068855	1.038729	0.3072
LPES(-1)	-0.155528	0.031322	-4.965387	0.0000
D(POV)	0.162900	0.187109	0.870617	0.3909
D(POV(-1))	0.385928	0.197305	1.956002	0.0598
D(FI)	0.223765	0.082555	2.710484	0.0110
D(FI(-1))	0.109334	0.076151	1.435742	0.1614
D(LPES)	-0.083407	0.047463	-1.757325	0.0891

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
UN	-0.007541	0.012356	-0.610357	0.5462
YL	1.117468	0.339084	3.295553	0.0025
POV	-0.490394	0.442145	-1.109126	0.2762
FI	0.107230	0.096859	1.107070	0.2771
LPES	-0.233177	0.023849	-9.777367	0.0000
C	2.658768	2.668641	0.996300	0.3271

EC = LCR - (-0.0075*UN + 1.1175*YL -0.4904*POV + 0.1072*FI -0.2332
*LPES + 2.6588)

ARDL Error Correction Regression
Dependent Variable: D(LCR)
Selected Model: ARDL(1, 0, 0, 2, 2, 1)
Case 2: Restricted Constant and No Trend
Date: 05/20/17 Time: 10:55
Sample: 1970 2013
Included observations: 42

ECM Regression
Case 2: Restricted Constant and No Trend

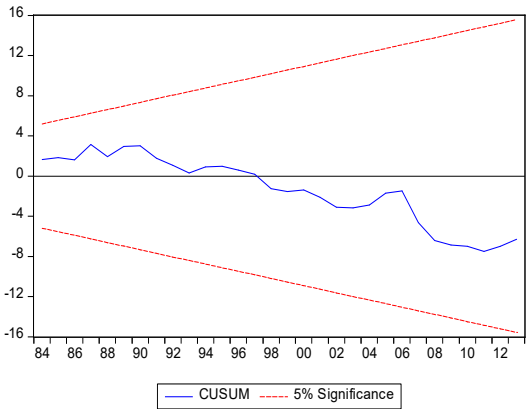
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(POV)	0.162900	0.129835	1.254667	0.2193
D(POV(-1))	0.385928	0.133936	2.881428	0.0072
D(FI)	0.223765	0.065205	3.431717	0.0018
D(FI(-1))	0.109334	0.065974	1.657226	0.1079
D(LPES)	-0.083407	0.038565	-2.162738	0.0387
CointEq(-1)*	-0.666996	0.118124	-5.646592	0.0000

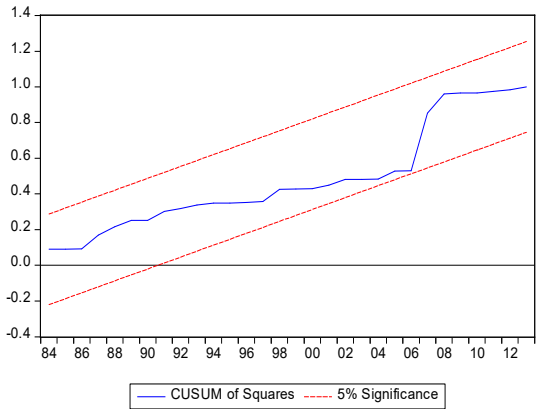
R-squared	0.537511	Mean dependent var	-0.034669
Adjusted R-squared	0.473277	S.D. dependent var	0.149217
S.E. of regression	0.108295	Akaike info criterion	-1.476346
Sum squared resid	0.422203	Schwarz criterion	-1.228108
Log likelihood	37.00327	Hannan-Quinn criter.	-1.385357
Durbin-Watson stat	2.026042		

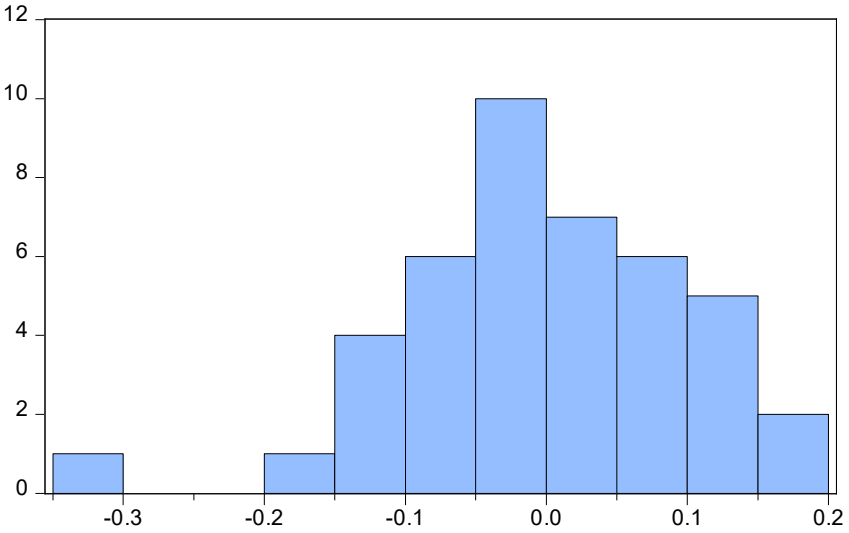
* p-value incompatible with t-Bounds distribution.

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	3.795714	10%	2.08	3
k	5	5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15







Series: Residuals	
Sample 1972 2013	
Observations 42	
Mean	-3.42e-16
Median	-0.005714
Maximum	0.195669
Minimum	-0.307123
Std. Dev.	0.101477
Skewness	-0.450793
Kurtosis	3.552834
Jarque-Bera	1.957346
Probability	0.375810

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.019769	Prob. F(2,28)	0.3737
Obs*R-squared	2.851594	Prob. Chi-Square(2)	0.2403

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.188743	Prob. F(11,30)	0.3357
Obs*R-squared	12.74949	Prob. Chi-Square(11)	0.3100
Scaled explained SS	8.302891	Prob. Chi-Square(11)	0.6859

Ramsey RESET Test
Equation: UNTITLED
Specification: LCR LCR(-1) UN YL POV POV(-1) POV(-2) FI FI(-1) FI(-2) LPES LPES(-1) C
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	1.655205	29	0.1087
F-statistic	2.739705	(1, 29)	0.1087

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	0.036444	1	0.036444
Restricted SSR	0.422203	30	0.014073
Unrestricted SSR	0.385760	29	0.013302

Appendix I ARDL IV Results for Overall Crime Model 1A

Dependent Variable: LCR
Method: Two-Stage Least Squares
Date: 06/13/17 Time: 14:44
Sample (adjusted): 1972 2013
Included observations: 42 after adjustments
Instrument specification: 1 UN YL POV(-1) FI(-1) LPES(-1) D(POV) D(POV(-1)) D(FI) D(FI(-1)) D(LPES) LCR(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.658768	2.668641	0.996300	0.3271
UN	-0.007541	0.012356	-0.610357	0.5462
YL	1.117468	0.339084	3.295553	0.0025
POV	-0.490394	0.442145	-1.109126	0.2762
FI	0.107230	0.096859	1.107070	0.2771
LPES	-0.233177	0.023849	-9.777367	0.0000
D(POV)	0.734624	0.363190	2.022701	0.0521
D(POV(-1))	0.578606	0.300833	1.923347	0.0640
D(FI)	0.228253	0.128412	1.777508	0.0856
D(FI(-1))	0.163919	0.113219	1.447808	0.1580
D(LPES)	0.108129	0.071865	1.504603	0.1429
D(LCR)	-0.499259	0.329355	-1.515869	0.1400

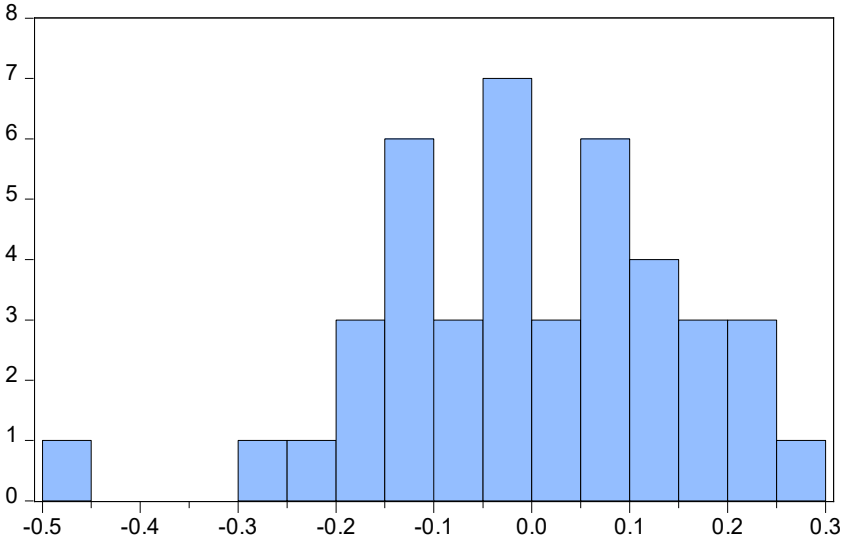
R-squared	0.943033	Mean dependent var	5.302644
Adjusted R-squared	0.922145	S.D. dependent var	0.637433
S.E. of regression	0.177859	Sum squared resid	0.949020
F-statistic	46.66144	Durbin-Watson stat	2.026042
Prob(F-statistic)	0.000000	Second-Stage SSR	0.422203
J-statistic	0.000000	Instrument rank	12

Breusch-Godfrey Serial Correlation LM Test:

Obs*R-squared	0.080429	Prob. Chi-Square(1)	0.7767

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.569579	Prob. F(11,30)	0.1590
Obs*R-squared	15.34200	Prob. Chi-Square(11)	0.1674
Scaled explained SS	9.991220	Prob. Chi-Square(11)	0.5312



Series: Residuals	
Sample 1972 2013	
Observations 42	
Mean	-4.80e-15
Median	-0.008567
Maximum	0.293359
Minimum	-0.460457
Std. Dev.	0.152141
Skewness	-0.450793
Kurtosis	3.552834
Jarque-Bera	1.957346
Probability	0.375810

Wald Test:
Equation: Untitled

Test Statistic	Value	df	Probability
F-statistic	95.25563	(5, 30)	0.0000
Chi-square	476.2782	5	0.0000

Null Hypothesis: C(2)=C(3)=C(4)=C(5)=C(6)=0
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(2)	-0.007541	0.012356
C(3)	1.117468	0.339084
C(4)	-0.490394	0.442145
C(5)	0.107230	0.096859
C(6)	-0.233177	0.023849

Restrictions are linear in coefficients.

Dependent Variable: D(LCR)
Method: Two-Stage Least Squares
Date: 06/13/17 Time: 14:50
Sample (adjusted): 1972 2013
Included observations: 42 after adjustments
Instrument specification: 1 UN YL POV(-1) FI(-1) LPES(-1) D(POV) D(POV(-1)) D(FI) D(FI(-1)) D(LPES) LCR(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.773388	1.713521	1.034938	0.3090
LCR(-1)	-0.666996	0.146525	-4.552104	0.0001
UN	-0.005030	0.008162	-0.616298	0.5423
YL	0.745347	0.261269	2.852790	0.0078
POV(-1)	-0.327091	0.285130	-1.147166	0.2604
FI(-1)	0.071522	0.068855	1.038729	0.3072
LPES(-1)	-0.155528	0.031322	-4.965387	0.0000
D(POV)	0.162900	0.187109	0.870617	0.3909
D(POV(-1))	0.385928	0.197305	1.956002	0.0598
D(FI)	0.223765	0.082555	2.710484	0.0110
D(FI(-1))	0.109334	0.076151	1.435742	0.1614
D(LPES)	-0.083407	0.047463	-1.757325	0.0891

R-squared	0.537511	Mean dependent var	-0.034669
Adjusted R-squared	0.367932	S.D. dependent var	0.149217
S.E. of regression	0.118632	Sum squared resid	0.422203
F-statistic	3.169675	Durbin-Watson stat	2.026042
Prob(F-statistic)	0.005909	Second-Stage SSR	0.422203
J-statistic	0.000000	Instrument rank	12

Appendix J ARDL OLS Results for Person's Crime Model 1B

Dependent Variable: LCPS
Method: ARDL
Date: 05/20/17 Time: 12:30
Sample (adjusted): 1971 2013
Included observations: 43 after adjustments
Maximum dependent lags: 1 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (1 lag, automatic): UN YL POV FI LPES
Fixed regressors: C
Number of models evalulated: 32
Selected Model: ARDL(1, 0, 0, 0, 1, 0)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LCPS(-1)	0.257406	0.142001	1.812702	0.0785
UN	0.056769	0.018624	3.048164	0.0044
YL	1.440067	0.506567	2.842794	0.0074
POV	0.722233	0.409086	1.765480	0.0862
FI	-0.029536	0.184878	-0.159758	0.8740
FI(-1)	0.275781	0.185331	1.488042	0.1457
LPES	-0.000554	0.030860	-0.017963	0.9858
C	-16.15294	4.034020	-4.004180	0.0003

R-squared	0.702719	Mean dependent var	3.209164
Adjusted R-squared	0.643263	S.D. dependent var	0.485760
S.E. of regression	0.290132	Akaike info criterion	0.529280
Sum squared resid	2.946181	Schwarz criterion	0.856945
Log likelihood	-3.379514	Hannan-Quinn criter.	0.650112
F-statistic	11.81912	Durbin-Watson stat	2.021943
Prob(F-statistic)	0.000000		

*Note: p-values and any subsequent tests do not account for model selection.

Model Selection Criteria Table
Dependent Variable: LCPS
Date: 05/20/17 Time: 12:30
Sample: 1970 2013
Included observations: 43

Model	LogL	AIC*	BIC	HQ	Adj. R-sq	Specification
30	-3.379514	0.529280	0.856945	0.650112	0.643263	ARDL(1, 0, 0, 0, 1, 0)

ARDL Long Run Form and Bounds Test
Dependent Variable: D(LCPS)
Selected Model: ARDL(1, 0, 0, 0, 1, 0)
Case 2: Restricted Constant and No Trend
Date: 05/20/17 Time: 12:30
Sample: 1970 2013
Included observations: 43

Conditional Error Correction Regression

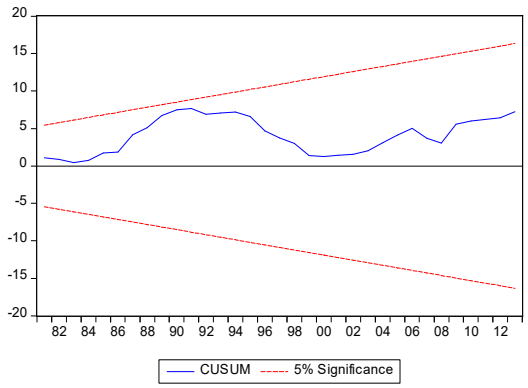
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-16.15294	4.034020	-4.004180	0.0003
LCPS(-1)*	-0.742594	0.142001	-5.229491	0.0000
UN**	0.056769	0.018624	3.048164	0.0044
YL**	1.440067	0.506567	2.842794	0.0074
POV**	0.722233	0.409086	1.765480	0.0862
FI(-1)	0.246245	0.144469	1.704480	0.0972
LPES**	-0.000554	0.030860	-0.017963	0.9858
D(FI)	-0.029536	0.184878	-0.159758	0.8740

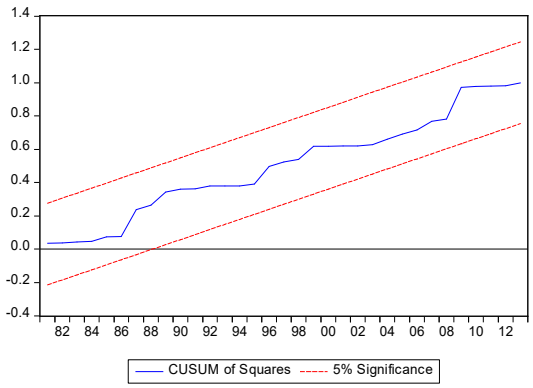
* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

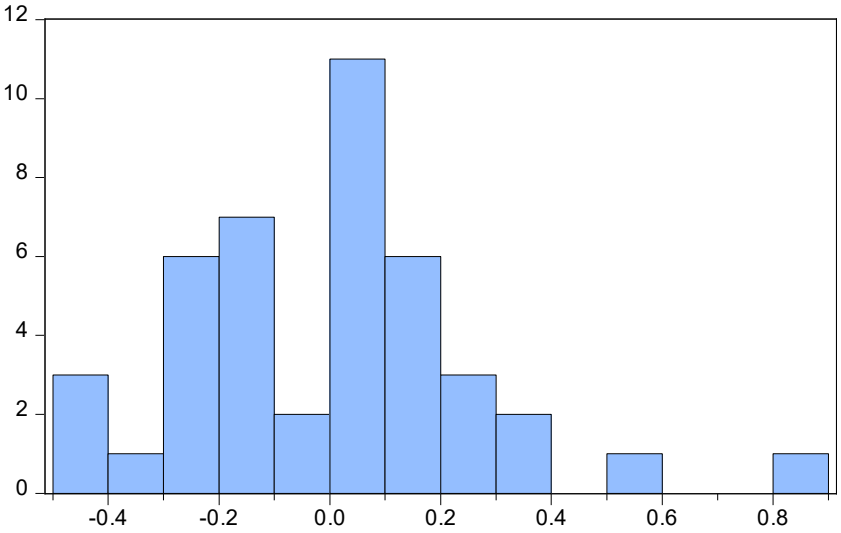
Levels Equation
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
UN	0.076447	0.032024	2.387197	0.0225
YL	1.939238	0.554236	3.498937	0.0013
POV	0.972581	0.559374	1.738696	0.0909
FI	0.331601	0.212023	1.563986	0.1268
LPES	-0.000747	0.041593	-0.017948	0.9858
C	-21.75205	4.464918	-4.871768	0.0000

EC = LCPS - (0.0764*UN + 1.9392*YL + 0.9726*POV + 0.3316*FI -0.0007 *LPES -21.7520)







Series: Residuals	
Sample 1971 2013	
Observations 43	
Mean	4.30e-15
Median	0.015854
Maximum	0.867388
Minimum	-0.447050
Std. Dev.	0.264853
Skewness	0.796538
Kurtosis	4.433827
Jarque-Bera	8.230470
Probability	0.016322

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.116376	Prob. F(1,34)	0.7351
Obs*R-squared	0.146679	Prob. Chi-Square(1)	0.7017

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.591511	Prob. F(7,35)	0.1705
Obs*R-squared	10.38229	Prob. Chi-Square(7)	0.1679
Scaled explained SS	11.80975	Prob. Chi-Square(7)	0.1070

Ramsey RESET Test
Equation: UNTITLED
Specification: LCPS LCPS(-1) UN YL POV FI FI(-1) LPES C
Instruction specification: 1 LCR(-1) UN YL POV POV(-1) POV(-2) FI FI(-1) FI(-2) LPES LPES(-1)
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	0.477814	34	0.6358
F-statistic	0.228307	(1, 34)	0.6358

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	0.019651	1	0.019651
Restricted SSR	2.946181	35	0.084177
Unrestricted SSR	2.926530	34	0.086074

Appendix K ARDL IV Results for Person's Crime Model 1B

Method: Two-Stage Least Squares
Date: 06/13/17 Time: 16:28
Sample (adjusted): 1971 2013
Included observations: 43 after adjustments
Instrument specification: 1 UN YL POV FI(-1) LPES D(FI) LCPS(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-21.75205	4.464918	-4.871768	0.0000
UN	0.076447	0.032024	2.387197	0.0225
YL	1.939238	0.554236	3.498937	0.0013
POV	0.972581	0.559374	1.738696	0.0909
FI	0.331601	0.212023	1.563986	0.1268
LPES	-0.000747	0.041593	-0.017948	0.9858
D(FI)	-0.371375	0.257021	-1.444922	0.1574
D(LCPS)	-0.346631	0.257507	-1.346102	0.1869

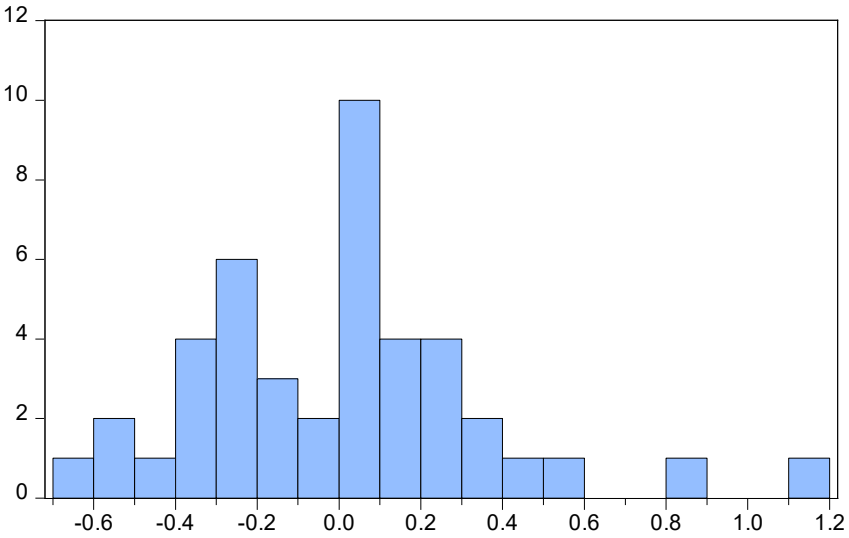
R-squared	0.460907	Mean dependent var	3.209164
Adjusted R-squared	0.353088	S.D. dependent var	0.485760
S.E. of regression	0.390701	Sum squared resid	5.342646
F-statistic	6.517605	Durbin-Watson stat	2.021943
Prob(F-statistic)	0.000059	Second-Stage SSR	2.946181
J-statistic	5.88E-35	Instrument rank	8

Breusch-Godfrey Serial Correlation LM Test:

Obs*R-squared	0.146679	Prob. Chi-Square(1)	0.7017

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.591511	Prob. F(7,35)	0.1705
Obs*R-squared	10.38229	Prob. Chi-Square(7)	0.1679
Scaled explained SS	11.80975	Prob. Chi-Square(7)	0.1070



Series: Residuals	
Sample 1971 2013	
Observations 43	
Mean	-5.03e-15
Median	0.021350
Maximum	1.168051
Minimum	-0.602011
Std. Dev.	0.356659
Skewness	0.796538
Kurtosis	4.433827
Jarque-Bera	8.230470
Probability	0.016322

Wald Test:
Equation: Untitled

Test Statistic	Value	df	Probability
F-statistic	8.917580	(5, 35)	0.0000
Chi-square	44.58790	5	0.0000

Null Hypothesis: C(2)=C(3)=C(4)=C(5)=C(6)=0
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(2)	0.076447	0.032024
C(3)	1.939238	0.554236
C(4)	0.972581	0.559374
C(5)	0.331601	0.212023
C(6)	-0.000747	0.041593

Restrictions are linear in coefficients.

Dependent Variable: D(LCPS)
Method: Two-Stage Least Squares
Date: 06/13/17 Time: 16:34
Sample (adjusted): 1971 2013
Included observations: 43 after adjustments
Instrument specification: 1 UN YL POV FI(-1) LPES D(FI) LCPS(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-16.15294	4.034020	-4.004180	0.0003
LCPS(-1)	-0.742594	0.142001	-5.229491	0.0000
UN	0.056769	0.018624	3.048164	0.0044
YL	1.440067	0.506567	2.842794	0.0074
POV	0.722233	0.409086	1.765480	0.0862
FI(-1)	0.246245	0.144469	1.704480	0.0972
LPES	-0.000554	0.030860	-0.017963	0.9858
D(FI)	-0.029536	0.184878	-0.159758	0.8740

R-squared	0.586969	Mean dependent var	-0.005483
Adjusted R-squared	0.504363	S.D. dependent var	0.412110
S.E. of regression	0.290132	Sum squared resid	2.946181
F-statistic	7.105625	Durbin-Watson stat	2.021943
Prob(F-statistic)	0.000027	Second-Stage SSR	2.946181
J-statistic	1.75E-34	Instrument rank	8

Appendix L ARDL OLS Results for Property Crime Model 1C

Dependent Variable: LCPR
Method: ARDL
Date: 05/20/17 Time: 12:42
Sample (adjusted): 1972 2013
Included observations: 42 after adjustments
Maximum dependent lags: 2 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (2 lags, automatic): UN YL POV FI LPES
Fixed regressors: C
Number of models evalulated: 486
Selected Model: ARDL(1, 0, 1, 2, 1, 1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LCPR(-1)	0.194195	0.139353	1.393550	0.1737
UN	0.044440	0.018067	2.459673	0.0199
YL	2.416396	1.048814	2.303932	0.0283
YL(-1)	-1.557408	1.053378	-1.478488	0.1497
POV	0.194049	0.409714	0.473620	0.6392
POV(-1)	0.004067	0.391627	0.010386	0.9918
POV(-2)	-0.939930	0.423880	-2.217442	0.0343
FI	0.373972	0.171299	2.183152	0.0370
FI(-1)	0.297442	0.175095	1.698741	0.0997
LPES	-0.032216	0.100392	-0.320904	0.7505
LPES(-1)	-0.136235	0.104108	-1.308602	0.2006
C	2.773859	3.755778	0.738558	0.4659

R-squared	0.887698	Mean dependent var	2.903183
Adjusted R-squared	0.846521	S.D. dependent var	0.655830
S.E. of regression	0.256930	Akaike info criterion	0.354934
Sum squared resid	1.980398	Schwarz criterion	0.851411
Log likelihood	4.546386	Hannan-Quinn criter.	0.536912
F-statistic	21.55797	Durbin-Watson stat	1.816569
Prob(F-statistic)	0.000000		

*Note: p-values and any subsequent tests do not account for model selection.

Model Selection Criteria Table
Dependent Variable: LCPR
Date: 05/20/17 Time: 12:42
Sample: 1970 2013
Included observations: 42

Model	LogL	AIC*	BIC	HQ	Adj. R-sq	Specification
437	4.546386	0.354934	0.851411	0.536912	0.846521	ARDL(1, 0, 1, 2, 1, 1)

ARDL Long Run Form and Bounds Test
Dependent Variable: D(LCPR)
Selected Model: ARDL(1, 0, 1, 2, 1, 1)
Case 2: Restricted Constant and No Trend
Date: 05/20/17 Time: 12:42
Sample: 1970 2013
Included observations: 42

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.773859	3.755778	0.738558	0.4659
LCPR(-1)*	-0.805805	0.139353	-5.782482	0.0000
UN**	0.044440	0.018067	2.459673	0.0199
YL(-1)	0.858988	0.509713	1.685240	0.1023
POV(-1)	-0.741814	0.619411	-1.197611	0.2404
FI(-1)	0.671413	0.145518	4.613958	0.0001
LPES(-1)	-0.168451	0.039102	-4.308007	0.0002
D(YL)	2.416396	1.048814	2.303932	0.0283
D(POV)	0.194049	0.409714	0.473620	0.6392
D(POV(-1))	0.939930	0.423880	2.217442	0.0343
D(FI)	0.373972	0.171299	2.183152	0.0370
D(LPES)	-0.032216	0.100392	-0.320904	0.7505

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
UN	0.055149	0.023841	2.313224	0.0277
YL	1.066000	0.614796	1.733908	0.0932
POV	-0.920587	0.789481	-1.166067	0.2528
FI	0.833221	0.186129	4.476575	0.0001
LPES	-0.209047	0.040916	-5.109201	0.0000
C	3.442346	4.789481	0.718731	0.4779

EC = LCPR - (0.0551*UN + 1.0660*YL -0.9206*POV + 0.8332*FI -0.2090
*LPES + 3.4423)

ARDL Error Correction Regression
Dependent Variable: D(LCPR)
Selected Model: ARDL(1, 0, 1, 2, 1, 1)
Case 2: Restricted Constant and No Trend
Date: 05/20/17 Time: 12:43
Sample: 1970 2013
Included observations: 42

ECM Regression
Case 2: Restricted Constant and No Trend

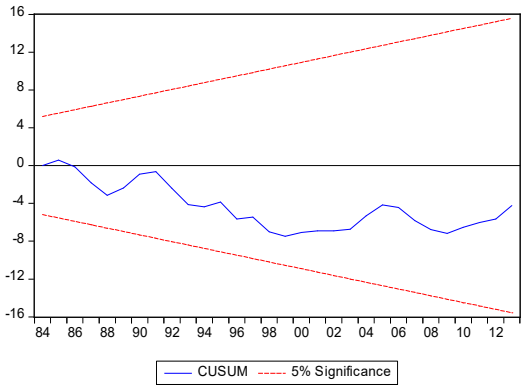
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(YL)	2.416396	0.813740	2.969493	0.0058
D(POV)	0.194049	0.274244	0.707576	0.4847
D(POV(-1))	0.939930	0.286664	3.278852	0.0026
D(FI)	0.373972	0.141253	2.647539	0.0128
D(LPES)	-0.032216	0.081504	-0.395269	0.6954
CointEq(-1)*	-0.805805	0.105951	-7.605425	0.0000

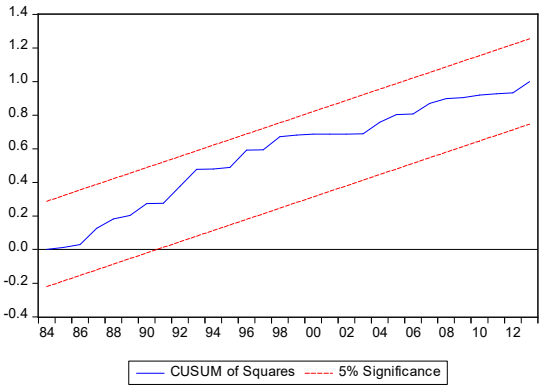
R-squared	0.651120	Mean dependent var	-0.028155
Adjusted R-squared	0.602665	S.D. dependent var	0.372089
S.E. of regression	0.234544	Akaike info criterion	0.069220
Sum squared resid	1.980398	Schwarz criterion	0.317458
Log likelihood	4.546386	Hannan-Quinn criter.	0.160209
Durbin-Watson stat	1.816569		

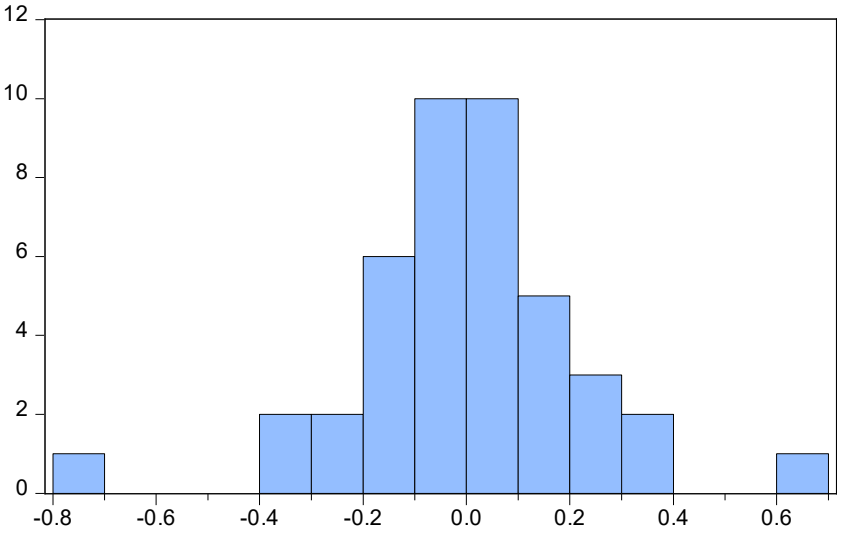
* p-value incompatible with t-Bounds distribution.

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	6.886011	10%	2.08	3
k	5	5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15







Series: Residuals	
Sample 1972 2013	
Observations 42	
Mean	-3.31e-15
Median	0.008291
Maximum	0.641807
Minimum	-0.719147
Std. Dev.	0.219778
Skewness	-0.295201
Kurtosis	5.606183
Jarque-Bera	12.49634
Probability	0.001934

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.341663	Prob. F(1,29)	0.5634
Obs*R-squared	0.489060	Prob. Chi-Square(1)	0.4843

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.936013	Prob. F(11,30)	0.5210
Obs*R-squared	10.73150	Prob. Chi-Square(11)	0.4660
Scaled explained SS	12.61002	Prob. Chi-Square(11)	0.3196

Ramsey RESET Test
Equation: UNTITLED
Specification: LCPR LCPR(-1) UN YL YL(-1) POV POV(-1) POV(-2) FI FI(-1) LPES LPES(-1) C
Instrument specification: 1 LCR LCR(-1) UN YL POV POV(-1) POV(-2) FI FI(-1) FI(-2) LPES LPES(-1) C
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	1.453568	29	0.1568
F-statistic	2.112860	(1, 29)	0.1568

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	0.134488	1	0.134488
Restricted SSR	1.980398	30	0.066013
Unrestricted SSR	1.845910	29	0.063652

Appendix M ARDL IV Results for Property Crime Model 1C

Dependent Variable: LCPR
Method: Two-Stage Least Squares
Date: 06/13/17 Time: 15:02
Sample (adjusted): 1972 2013
Included observations: 42 after adjustments
Instrument specification: 1 UN YL(-1) POV(-1) FI(-1) LPES(-1) D(YL) D(POV) D(POV(-1)) D(FI) D(LPES) LCPR(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.442346	4.789481	0.718731	0.4779
UN	0.055149	0.023841	2.313224	0.0277
YL	1.066000	0.614796	1.733908	0.0932
POV	-0.920587	0.789481	-1.166067	0.2528
FI	0.833221	0.186129	4.476575	0.0001
LPES	-0.209047	0.040916	-5.109201	0.0000
D(YL)	1.932735	1.434443	1.347377	0.1879
D(POV)	1.161401	0.599564	1.937075	0.0622
D(POV(-1))	1.166448	0.538328	2.166800	0.0383
D(FI)	-0.369124	0.209287	-1.763717	0.0880
D(LPES)	0.169067	0.128694	1.313719	0.1989
D(LCPR)	-0.240995	0.214613	-1.122930	0.2704

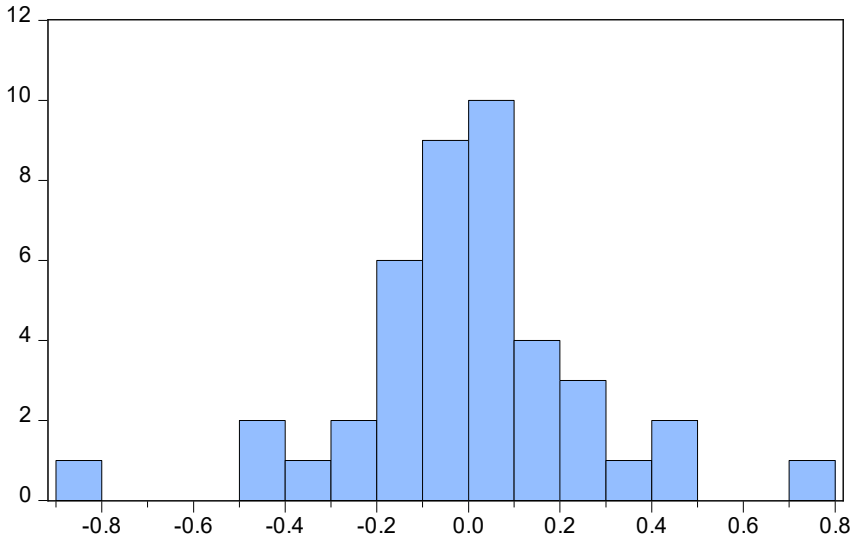
R-squared	0.827048	Mean dependent var	2.903183
Adjusted R-squared	0.763632	S.D. dependent var	0.655830
S.E. of regression	0.318850	Sum squared resid	3.049950
F-statistic	13.99805	Durbin-Watson stat	1.816569
Prob(F-statistic)	0.000000	Second-Stage SSR	1.980398
J-statistic	2.05E-35	Instrument rank	12

Breusch-Godfrey Serial Correlation LM Test:

Obs*R-squared	0.489060	Prob. Chi-Square(1)	0.4843

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.026287	Prob. F(11,30)	0.4487
Obs*R-squared	11.48351	Prob. Chi-Square(11)	0.4037
Scaled explained SS	13.49367	Prob. Chi-Square(11)	0.2623



Series: Residuals	
Sample 1972 2013	
Observations 42	
Mean	6.11e-16
Median	0.010289
Maximum	0.796479
Minimum	-0.892458
Std. Dev.	0.272744
Skewness	-0.295201
Kurtosis	5.606183
Jarque-Bera	12.49634
Probability	0.001934

Wald Test:
Equation: Untitled

Test Statistic	Value	df	Probability
F-statistic	25.28228	(5, 30)	0.0000
Chi-square	126.4114	5	0.0000

Null Hypothesis: C(2)=C(3)=C(4)=C(5)=C(6)=0
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(2)	0.055149	0.023841
C(3)	1.066000	0.614796
C(4)	-0.920587	0.789481
C(5)	0.833221	0.186129
C(6)	-0.209047	0.040916

Restrictions are linear in coefficients.

Dependent Variable: D(LCPR)
Method: Two-Stage Least Squares
Date: 06/13/17 Time: 16:22
Sample (adjusted): 1972 2013
Included observations: 42 after adjustments
Instrument specification: 1 UN YL(-1) POV(-1) FI(-1) LPES(-1) D(YL) D(POV) D(POV(-1)) D(FI) D(LPES) LCPR(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.773859	3.755778	0.738558	0.4659
LCPR(-1)	-0.805805	0.139353	-5.782482	0.0000
UN	0.044440	0.018067	2.459673	0.0199
YL(-1)	0.858988	0.509713	1.685240	0.1023
POV(-1)	-0.741814	0.619411	-1.197611	0.2404
FI(-1)	0.671413	0.145518	4.613958	0.0001
LPES(-1)	-0.168451	0.039102	-4.308007	0.0002
D(YL)	2.416396	1.048814	2.303932	0.0283
D(POV)	0.194049	0.409714	0.473620	0.6392
D(POV(-1))	0.939930	0.423880	2.217442	0.0343
D(FI)	0.373972	0.171299	2.183152	0.0370
D(LPES)	-0.032216	0.100392	-0.320904	0.7505

R-squared	0.651120	Mean dependent var	-0.028155
Adjusted R-squared	0.523198	S.D. dependent var	0.372089
S.E. of regression	0.256930	Sum squared resid	1.980398
F-statistic	5.089959	Durbin-Watson stat	1.816569
Prob(F-statistic)	0.000185	Second-Stage SSR	1.980398
J-statistic	0.000000	Instrument rank	12

Appendix N ARDL OLS Results for Growth Model 2A (Overall Crime)

Dependent Variable: LGR
Method: ARDL
Date: 05/04/17 Time: 12:55
Sample (adjusted): 1972 2013
Included observations: 42 after adjustments
Maximum dependent lags: 2 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (2 lags, automatic): LCR TIV EIV LAG TRC UT
Fixed regressors: C
Number of models evalulated: 1458
Selected Model: ARDL(1, 0, 0, 2, 0, 1, 2)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LGR(-1)	0.417201	0.125383	3.327417	0.0024
LCR	-0.143417	0.078389	-1.829551	0.0776
TIV	0.000768	0.002102	0.365377	0.7175
EIV	-0.046140	0.239705	-0.192485	0.8487
EIV(-1)	-0.328199	0.306531	-1.070689	0.2931
EIV(-2)	0.923867	0.286433	3.225428	0.0031
LAG	0.013390	0.011623	1.151983	0.2587
TRC	-0.002290	0.009334	-0.245390	0.8079
TRC(-1)	0.021081	0.009189	2.294225	0.0292
UT	0.022483	0.017232	1.304687	0.2023
UT(-1)	-0.012733	0.026006	-0.489609	0.6281
UT(-2)	0.045126	0.020703	2.179713	0.0375
C	18.34696	3.902111	4.701802	0.0001

R-squared	0.989077	Mean dependent var	30.83284
Adjusted R-squared	0.984558	S.D. dependent var	0.422970
S.E. of regression	0.052562	Akaike info criterion	-2.804989
Sum squared resid	0.080119	Schwarz criterion	-2.267139
Log likelihood	71.90477	Hannan-Quinn criter.	-2.607846
F-statistic	218.8344	Durbin-Watson stat	2.285041
Prob(F-statistic)	0.000000		

*Note: p-values and any subsequent tests do not account for model selection.

Model Selection Criteria Table
Dependent Variable: LGR
Date: 05/04/17 Time: 12:55
Sample: 1970 2013
Included observations: 42

Model	LogL	AIC*	BIC	HQ	Adj. R-sq	Specification
1399	71.904767	-2.804989	-2.267139	-2.607846	0.984558	ARDL(1, 0, 0, 2, 0, 1, 2)

ARDL Long Run Form and Bounds Test
Dependent Variable: D(LGR)
Selected Model: ARDL(1, 0, 0, 2, 0, 1, 2)
Case 2: Restricted Constant and No Trend
Date: 05/04/17 Time: 12:56
Sample: 1970 2013
Included observations: 42

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	18.34696	3.902111	4.701802	0.0001
LGR(-1)*	-0.582799	0.125383	-4.648151	0.0001
LCR**	-0.143417	0.078389	-1.829551	0.0776
TIV**	0.000768	0.002102	0.365377	0.7175
EIV(-1)	0.549529	0.272724	2.014962	0.0533
LAG**	0.013390	0.011623	1.151983	0.2587
TRC(-1)	0.018790	0.010061	1.867580	0.0720
UT(-1)	0.054876	0.018283	3.001438	0.0055
D(EIV)	-0.046140	0.239705	-0.192485	0.8487
D(EIV(-1))	-0.923867	0.286433	-3.225428	0.0031
D(TRC)	-0.002290	0.009334	-0.245390	0.8079
D(UT)	0.022483	0.017232	1.304687	0.2023
D(UT(-1))	-0.045126	0.020703	-2.179713	0.0375

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LCR	-0.246083	0.131925	-1.865320	0.0723
TIV	0.001318	0.003583	0.367882	0.7156
EIV	0.942913	0.436534	2.160002	0.0392
LAG	0.022975	0.019307	1.189966	0.2437
TRC	0.032242	0.015376	2.096917	0.0448
UT	0.094159	0.021775	4.324197	0.0002
C	31.48077	0.871229	36.13377	0.0000

EC = LGR - (-0.2461*LCR + 0.0013*TIV + 0.9429*EIV + 0.0230*LAG + 0.0322 *TRC + 0.0942*UT + 31.4808)

ARDL Error Correction Regression
Dependent Variable: D(LGR)
Selected Model: ARDL(1, 0, 0, 2, 0, 1, 2)
Case 2: Restricted Constant and No Trend
Date: 05/04/17 Time: 12:55
Sample: 1970 2013
Included observations: 42

ECM Regression
Case 2: Restricted Constant and No Trend

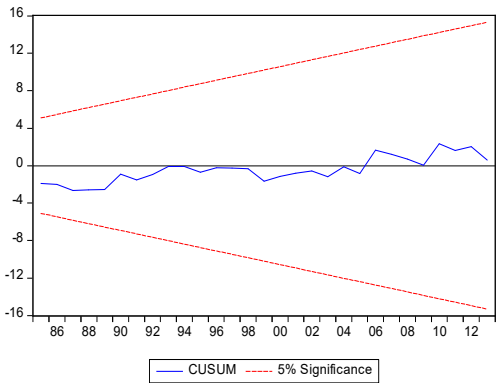
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(EIV)	-0.046140	0.157392	-0.293152	0.7715
D(EIV(-1))	-0.923867	0.220826	-4.183694	0.0002
D(TRC)	-0.002290	0.006067	-0.377549	0.7085
D(UT)	0.022483	0.014279	1.574543	0.1262
D(UT(-1))	-0.045126	0.017558	-2.570068	0.0156
CointEq(-1)*	-0.582799	0.072262	-8.065047	0.0000

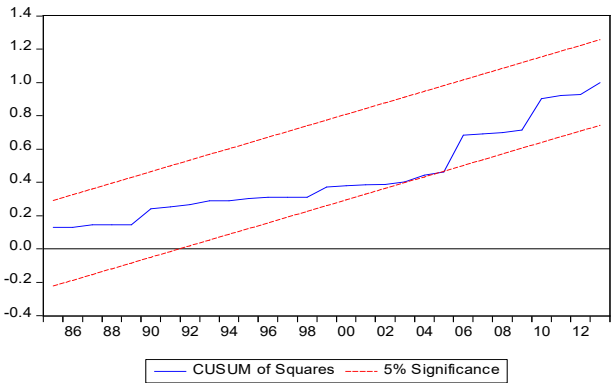
R-squared	0.603544	Mean dependent var	0.033689
Adjusted R-squared	0.548481	S.D. dependent var	0.070207
S.E. of regression	0.047175	Akaike info criterion	-3.138322
Sum squared resid	0.080119	Schwarz criterion	-2.890084
Log likelihood	71.90477	Hannan-Quinn criter.	-3.047333
Durbin-Watson stat	2.285041		

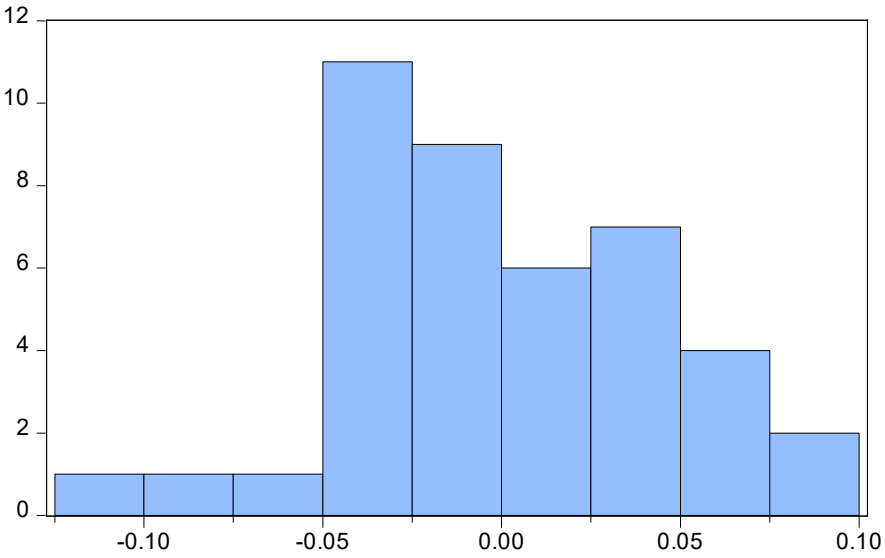
* p-value incompatible with t-Bounds distribution.

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	6.549668	10%	1.99	2.94
k	6	5%	2.27	3.28
		2.5%	2.55	3.61
		1%	2.88	3.99







Series: Residuals	
Sample 1972 2013	
Observations 42	
Mean	2.45e-15
Median	-0.005803
Maximum	0.096194
Minimum	-0.101572
Std. Dev.	0.044205
Skewness	0.164160
Kurtosis	2.719693
Jarque-Bera	0.326139
Probability	0.849532

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.746579	Prob. F(1,28)	0.1970
Obs*R-squared	2.466042	Prob. Chi-Square(1)	0.1163

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.064821	Prob. F(12,29)	0.4224
Obs*R-squared	12.84580	Prob. Chi-Square(12)	0.3803
Scaled explained SS	5.265985	Prob. Chi-Square(12)	0.9485

Ramsey RESET Test
Equation: UNTITLED
Specification: LGR LGR(-1) LCR TIV EIV EIV(-1) EIV(-2) LAG TRC TRC(-1) UT UT(-1) UT(-2) C
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	0.907460	28	0.3719
F-statistic	0.823484	(1, 28)	0.3719

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	0.002289	1	0.002289
Restricted SSR	0.080119	29	0.002763
Unrestricted SSR	0.077830	28	0.002780

Appendix O ARDL IV Results for Growth Model 2A (Overall Crime)

Method: Two-Stage Least Squares
Date: 06/13/17 Time: 12:04
Sample (adjusted): 1972 2013
Included observations: 42 after adjustments
Instrument specification: 1 LCR TIV EIV(-1) LAG TRC(-1) UT(-1) D(EIV) D(EIV(-1)) D(TRC) D(UT) D(UT(-1)) LGR(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	31.48077	0.871229	36.13377	0.0000
LCR	-0.246083	0.131925	-1.865320	0.0723
TIV	0.001318	0.003583	0.367882	0.7156
EIV	0.942913	0.436534	2.160002	0.0392
LAG	0.022975	0.019307	1.189966	0.2437
TRC	0.032242	0.015376	2.096917	0.0448
UT	0.094159	0.021775	4.324197	0.0002
D(LGR)	-0.715858	0.369148	-1.939214	0.0623
D(EIV)	-1.022082	0.378666	-2.699164	0.0115
D(EIV(-1))	-1.585225	0.528345	-3.000363	0.0055
D(TRC)	-0.036172	0.014737	-2.454410	0.0204
D(UT)	-0.055582	0.031883	-1.743314	0.0919
D(UT(-1))	-0.077430	0.031667	-2.445112	0.0208

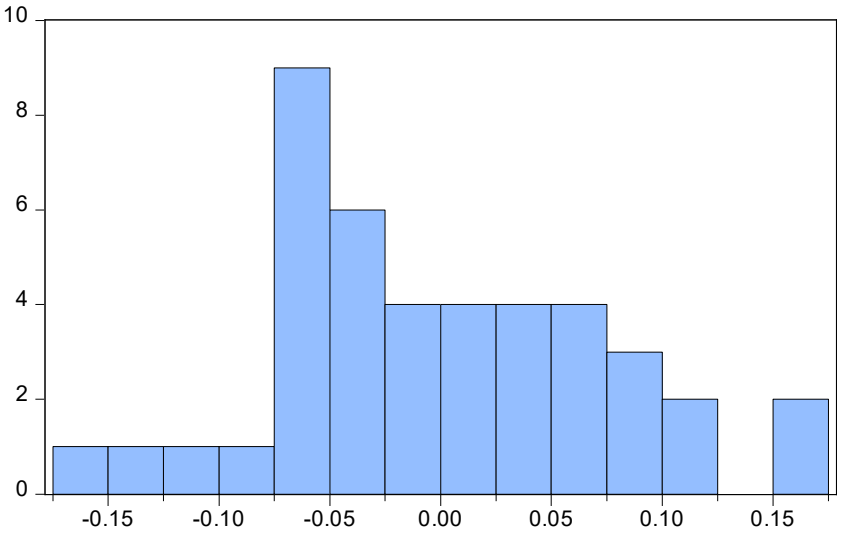
R-squared	0.967842	Mean dependent var	30.83284
Adjusted R-squared	0.954535	S.D. dependent var	0.422970
S.E. of regression	0.090188	Sum squared resid	0.235883
F-statistic	74.32808	Durbin-Watson stat	2.285041
Prob(F-statistic)	0.000000	Second-Stage SSR	0.080119
J-statistic	7.05E-34	Instrument rank	13

Breusch-Godfrey Serial Correlation LM Test:

Obs*R-squared	2.466042	Prob. Chi-Square(1)	0.1163

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.891481	Prob. F(12,29)	0.5652
Obs*R-squared	11.31818	Prob. Chi-Square(12)	0.5019
Scaled explained SS	4.639754	Prob. Chi-Square(12)	0.9689



Series: Residuals	
Sample 1972 2013	
Observations 42	
Mean	-5.95e-15
Median	-0.009957
Maximum	0.165056
Minimum	-0.174282
Std. Dev.	0.075850
Skewness	0.164160
Kurtosis	2.719693
Jarque-Bera	0.326139
Probability	0.849532

Wald Test:
Equation: Untitled

Test Statistic	Value	df	Probability
F-statistic	72.30189	(6, 29)	0.0000
Chi-square	433.8114	6	0.0000

Null Hypothesis: C(2)=C(3)=C(4)=C(5)=C(6)=C(7)=0
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(2)	-0.246083	0.131925
C(3)	0.001318	0.003583
C(4)	0.942913	0.436534
C(5)	0.022975	0.019307
C(6)	0.032242	0.015376
C(7)	0.094159	0.021775

Restrictions are linear in coefficients.

Dependent Variable: D(LGR)
Method: Two-Stage Least Squares
Date: 06/13/17 Time: 12:14
Sample (adjusted): 1972 2013
Included observations: 42 after adjustments
Instrument specification: 1 LCR TIV EIV(-1) LAG TRC(-1) UT(-1) D(EIV) D(EIV(-1)) D(TRC) D(UT) D(UT(-1)) LGR(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	18.34696	3.902111	4.701802	0.0001
LGR(-1)	-0.582799	0.125383	-4.648151	0.0001
LCR	-0.143417	0.078389	-1.829551	0.0776
TIV	0.000768	0.002102	0.365377	0.7175
EIV(-1)	0.549529	0.272724	2.014962	0.0533
LAG	0.013390	0.011623	1.151983	0.2587
TRC(-1)	0.018790	0.010061	1.867580	0.0720
UT(-1)	0.054876	0.018283	3.001438	0.0055
D(EIV)	-0.046140	0.239705	-0.192485	0.8487
D(EIV(-1))	-0.923867	0.286433	-3.225428	0.0031
D(TRC)	-0.002290	0.009334	-0.245390	0.8079
D(UT)	0.022483	0.017232	1.304687	0.2023
D(UT(-1))	-0.045126	0.020703	-2.179713	0.0375

R-squared	0.603544	Mean dependent var	0.033689
Adjusted R-squared	0.439494	S.D. dependent var	0.070207
S.E. of regression	0.052562	Sum squared resid	0.080119
F-statistic	3.679014	Durbin-Watson stat	2.285041
Prob(F-statistic)	0.002009	Second-Stage SSR	0.080119
J-statistic	0.000000	Instrument rank	13

Appendix P ARDL OLS Results for Growth Model 2B (Person's Crime)

Dependent Variable: LGR
Method: ARDL
Date: 05/04/17 Time: 13:04
Sample (adjusted): 1972 2013
Included observations: 42 after adjustments
Maximum dependent lags: 2 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (2 lags, automatic): LCPS TIV EIV LAG TRC UT
Fixed regressors: C
Number of models evalulated: 1458
Selected Model: ARDL(1, 0, 0, 2, 2, 1, 2)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LGR(-1)	0.341895	0.122614	2.788385	0.0096
LCPS	-0.060112	0.025565	-2.351324	0.0263
TIV	0.001608	0.001711	0.939890	0.3556
EIV	-0.001171	0.221861	-0.005278	0.9958
EIV(-1)	-0.130431	0.320133	-0.407427	0.6869
EIV(-2)	0.853760	0.286240	2.982670	0.0060
LAG	0.014559	0.021617	0.673518	0.5063
LAG(-1)	0.001929	0.028230	0.068329	0.9460
LAG(-2)	0.030873	0.022602	1.365953	0.1832
TRC	-0.001368	0.009076	-0.150702	0.8813
TRC(-1)	0.013139	0.007977	1.647047	0.1111
UT	0.028356	0.017112	1.657121	0.1091
UT(-1)	-0.004673	0.024721	-0.189027	0.8515
UT(-2)	0.045624	0.019477	2.342477	0.0268
C	19.77815	3.665195	5.396207	0.0000

R-squared	0.991168	Mean dependent var	30.83284
Adjusted R-squared	0.986588	S.D. dependent var	0.422970
S.E. of regression	0.048984	Akaike info criterion	-2.922183
Sum squared resid	0.064785	Schwarz criterion	-2.301587
Log likelihood	76.36585	Hannan-Quinn criter.	-2.694710
F-statistic	216.4262	Durbin-Watson stat	2.202035
Prob(F-statistic)	0.000000		

*Note: p-values and any subsequent tests do not account for model selection.

Model Selection Criteria Table
Dependent Variable: LGR
Date: 05/04/17 Time: 13:04
Sample: 1970 2013
Included observations: 42

Model	LogL	AIC*	BIC	HQ	Adj. R-sq	Specification
1381	76.365847	-2.922183	-2.301587	-2.694710	0.986588	ARDL(1, 0, 0, 2, 2, 1, 2)

ARDL Long Run Form and Bounds Test
Dependent Variable: D(LGR)
Selected Model: ARDL(1, 0, 0, 2, 2, 1, 2)
Case 2: Restricted Constant and No Trend
Date: 05/04/17 Time: 13:04
Sample: 1970 2013
Included observations: 42

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	19.77815	3.665195	5.396207	0.0000
LGR(-1)*	-0.658105	0.122614	-5.367289	0.0000
LCPS**	-0.060112	0.025565	-2.351324	0.0263
TIV**	0.001608	0.001711	0.939890	0.3556
EIV(-1)	0.722158	0.202323	3.569332	0.0014
LAG(-1)	0.047361	0.011513	4.113656	0.0003
TRC(-1)	0.011771	0.007630	1.542727	0.1345
UT(-1)	0.069307	0.019614	3.533621	0.0015
D(EIV)	-0.001171	0.221861	-0.005278	0.9958
D(EIV(-1))	-0.853760	0.286240	-2.982670	0.0060
D(LAG)	0.014559	0.021617	0.673518	0.5063
D(LAG(-1))	-0.030873	0.022602	-1.365953	0.1832
D(TRC)	-0.001368	0.009076	-0.150702	0.8813
D(UT)	0.028356	0.017112	1.657121	0.1091
D(UT(-1))	-0.045624	0.019477	-2.342477	0.0268

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LCPS	-0.091341	0.039751	-2.297791	0.0296
TIV	0.002444	0.002554	0.956638	0.3472
EIV	1.097330	0.261160	4.201757	0.0003
LAG	0.071966	0.014640	4.915526	0.0000
TRC	0.017886	0.010356	1.727178	0.0956
UT	0.105313	0.019951	5.278637	0.0000
C	30.05319	0.166265	180.7553	0.0000

EC = LGR - (-0.0913*LCPS + 0.0024*TIV + 1.0973*EIV + 0.0720*LAG + 0.0179 *TRC + 0.1053*UT + 30.0532)

ARDL Error Correction Regression
Dependent Variable: D(LGR)
Selected Model: ARDL(1, 0, 0, 2, 2, 1, 2)
Case 2: Restricted Constant and No Trend
Date: 05/04/17 Time: 13:05
Sample: 1970 2013
Included observations: 42

ECM Regression
Case 2: Restricted Constant and No Trend

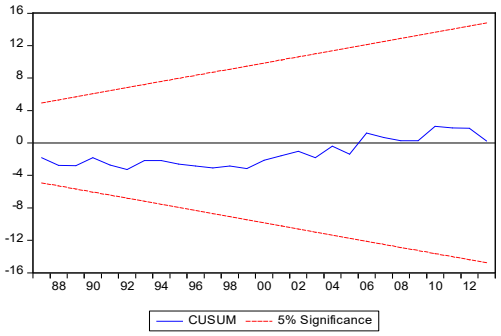
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(EIV)	-0.001171	0.153801	-0.007614	0.9940
D(EIV(-1))	-0.853760	0.200451	-4.259196	0.0002
D(LAG)	0.014559	0.016228	0.897192	0.3775
D(LAG(-1))	-0.030873	0.016258	-1.898954	0.0683
D(TRC)	-0.001368	0.005893	-0.232103	0.8182
D(UT)	0.028356	0.013483	2.103042	0.0449
D(UT(-1))	-0.045624	0.016090	-2.835475	0.0086
CointEq(-1)*	-0.658105	0.072790	-9.041196	0.0000

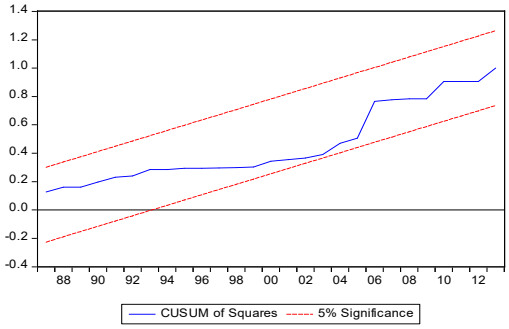
R-squared	0.679420	Mean dependent var	0.033689
Adjusted R-squared	0.613418	S.D. dependent var	0.070207
S.E. of regression	0.043651	Akaike info criterion	-3.255517
Sum squared resid	0.064785	Schwarz criterion	-2.924532
Log likelihood	76.36585	Hannan-Quinn criter.	-3.134198
Durbin-Watson stat	2.202035		

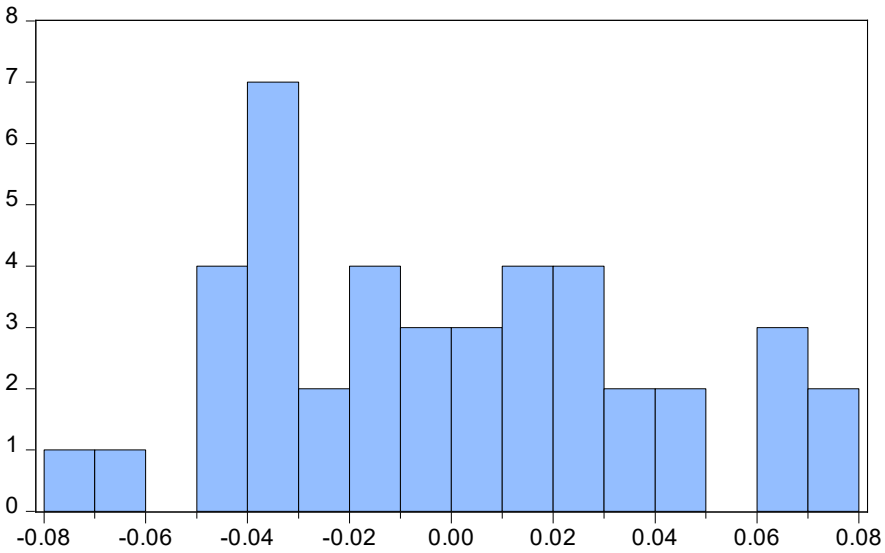
* p-value incompatible with t-Bounds distribution.

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	8.114217	10%	1.99	2.94
k	6	5%	2.27	3.28
		2.5%	2.55	3.61
		1%	2.88	3.99







Series: Residuals	
Sample 1972 2013	
Observations 42	
Mean	4.65e-15
Median	-0.004129
Maximum	0.079711
Minimum	-0.073568
Std. Dev.	0.039751
Skewness	0.272449
Kurtosis	2.278014
Jarque-Bera	1.431811
Probability	0.488749

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.980805	Prob. F(1,26)	0.3311
Obs*R-squared	1.526783	Prob. Chi-Square(1)	0.2166

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.023784	Prob. F(14,27)	0.4604
Obs*R-squared	14.56428	Prob. Chi-Square(14)	0.4086
Scaled explained SS	3.846125	Prob. Chi-Square(14)	0.9963

Ramsey RESET Test
Equation: UNTITLED
Specification: LGR LGR(-1) LCPS TIV EIV EIV(-1) EIV(-2) LAG LAG(-1) LAG(-2) TRC TRC(-1) UT UT(-1) UT(-2) C
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	0.285072	26	0.7778
F-statistic	0.081266	(1, 26)	0.7778

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	0.000202	1	0.000202
Restricted SSR	0.064785	27	0.002399
Unrestricted SSR	0.064583	26	0.002484

Appendix Q ARDL IV Results for Growth Model 2B (Person's Crime)

Dependent Variable: LGR
Method: Two-Stage Least Squares
Date: 06/13/17 Time: 12:47
Sample (adjusted): 1972 2013
Included observations: 42 after adjustments
Instrument specification: 1 LCPS TIV EIV(-1) LAG(-1) TRC(-1) UT(-1) D(EIV) D(EIV(-1)) D(LAG)D(LAG(-1)) D(TRC) D(UT) D(UT(-1)) LGR(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	30.05319	0.166265	180.7553	0.0000
LCPS	-0.091341	0.039751	-2.297791	0.0296
TIV	0.002444	0.002554	0.956638	0.3472
EIV	1.097330	0.261160	4.201757	0.0003
LAG	0.071966	0.014640	4.915526	0.0000
TRC	0.017886	0.010356	1.727178	0.0956
UT	0.105313	0.019951	5.278637	0.0000
D(EIV)	-1.099109	0.308038	-3.568099	0.0014
D(EIV(-1))	-1.297301	0.466447	-2.781242	0.0098
D(LAG)	-0.049842	0.030818	-1.617341	0.1174
D(LAG(-1))	-0.046911	0.032806	-1.429959	0.1642
D(TRC)	-0.019965	0.011698	-1.706685	0.0994
D(UT)	-0.062225	0.026470	-2.350812	0.0263
D(UT(-1))	-0.069326	0.026374	-2.628572	0.0140
D(LGR)	-0.519515	0.283107	-1.835050	0.0775

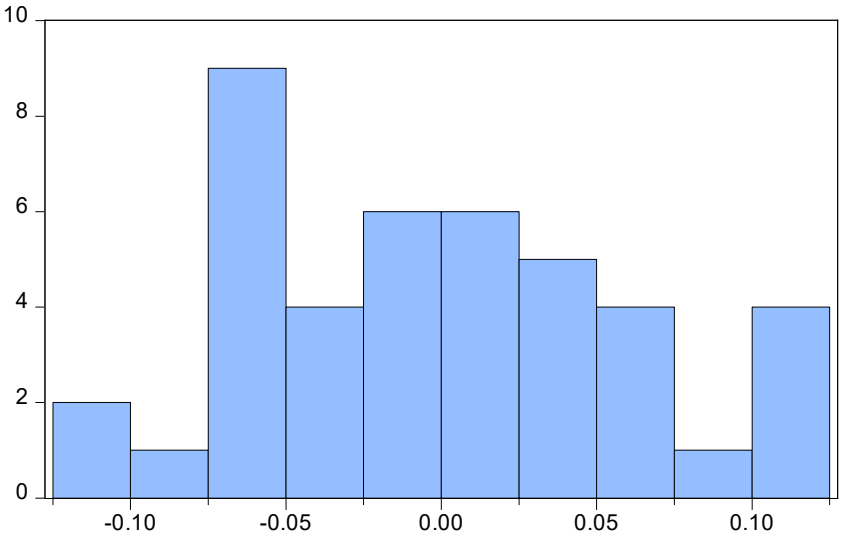
R-squared	0.979607	Mean dependent var	30.83284
Adjusted R-squared	0.969033	S.D. dependent var	0.422970
S.E. of regression	0.074432	Sum squared resid	0.149584
F-statistic	93.73463	Durbin-Watson stat	2.202035
Prob(F-statistic)	0.000000	Second-Stage SSR	0.064785
J-statistic	0.000000	Instrument rank	15

Breusch-Godfrey Serial Correlation LM Test:

Obs*R-squared	1.526783	Prob. Chi-Square(1)	0.2166

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.091059	Prob. F(14,27)	0.4070
Obs*R-squared	15.17552	Prob. Chi-Square(14)	0.3663
Scaled explained SS	4.007542	Prob. Chi-Square(14)	0.9954



Series: Residuals	
Sample 1972 2013	
Observations 42	
Mean	-2.60e-15
Median	-0.006274
Maximum	0.121122
Minimum	-0.111788
Std. Dev.	0.060402
Skewness	0.272449
Kurtosis	2.278014
Jarque-Bera	1.431811
Probability	0.488749

Wald Test:
Equation: Untitled

Test Statistic	Value	df	Probability
F-statistic	109.0577	(6, 27)	0.0000
Chi-square	654.3462	6	0.0000

Null Hypothesis: C(2)=C(3)=C(4)=C(5)=C(6)=C(7)=0
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(2)	-0.091341	0.039751
C(3)	0.002444	0.002554
C(4)	1.097330	0.261160
C(5)	0.071966	0.014640
C(6)	0.017886	0.010356
C(7)	0.105313	0.019951

Restrictions are linear in coefficients.

Dependent Variable: D(LGR)
Method: Two-Stage Least Squares
Date: 06/13/17 Time: 12:54
Sample (adjusted): 1972 2013
Included observations: 42 after adjustments
Instrument specification: 1 LCPS TIV EIV(-1) LAG(-1) TRC(-1) UT(-1) D(EIV) D(EIV(-1)) D(LAG) D(LAG(-1)) D(TRC) D(UT) D(UT(-1)) LGR(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	19.77815	3.665195	5.396207	0.0000
LGR(-1)	-0.658105	0.122614	-5.367289	0.0000
LCPS	-0.060112	0.025565	-2.351324	0.0263
TIV	0.001608	0.001711	0.939890	0.3556
EIV(-1)	0.722158	0.202323	3.569332	0.0014
LAG(-1)	0.047361	0.011513	4.113656	0.0003
TRC(-1)	0.011771	0.007630	1.542727	0.1345
UT(-1)	0.069307	0.019614	3.533621	0.0015
D(EIV)	-0.001171	0.221861	-0.005278	0.9958
D(EIV(-1))	-0.853760	0.286240	-2.982670	0.0060
D(LAG)	0.014559	0.021617	0.673518	0.5063
D(LAG(-1))	-0.030873	0.022602	-1.365953	0.1832
D(TRC)	-0.001368	0.009076	-0.150702	0.8813
D(UT)	0.028356	0.017112	1.657121	0.1091
D(UT(-1))	-0.045624	0.019477	-2.342477	0.0268

R-squared	0.679420	Mean dependent var	0.033689
Adjusted R-squared	0.513193	S.D. dependent var	0.070207
S.E. of regression	0.048984	Sum squared resid	0.064785
F-statistic	4.087312	Durbin-Watson stat	2.202035
Prob(F-statistic)	0.000840	Second-Stage SSR	0.064785
J-statistic	2.99E-30	Instrument rank	15

Appendix R ARDL OLS Results for Growth Model 2C (Property Crime)

Dependent Variable: LGR
Method: ARDL
Date: 05/05/17 Time: 11:31
Sample (adjusted): 1972 2013
Included observations: 42 after adjustments
Maximum dependent lags: 2 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (2 lags, automatic): LCPR TIV EIV LAG TRC UT
Fixed regressors: C
Number of models evalulated: 1458
Selected Model: ARDL(1, 2, 0, 2, 0, 1, 2)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LGR(-1)	0.433155	0.136529	3.172629	0.0037
LCPR	-0.048262	0.029112	-1.657776	0.1089
LCPR(-1)	0.042364	0.031052	1.364283	0.1837
LCPR(-2)	-0.052686	0.031153	-1.691194	0.1023
TIV	0.003620	0.001866	1.939384	0.0630
EIV	0.098813	0.209747	0.471106	0.6413
EIV(-1)	-0.354421	0.300946	-1.177690	0.2492
EIV(-2)	0.986541	0.279110	3.534591	0.0015
LAG	0.029807	0.010682	2.790317	0.0095
TRC	-0.012062	0.008907	-1.354210	0.1869
TRC(-1)	0.021733	0.008715	2.493819	0.0191
UT	0.028757	0.017303	1.662005	0.1081
UT(-1)	-0.021639	0.025405	-0.851792	0.4018
UT(-2)	0.046543	0.020742	2.243890	0.0332
C	17.09352	4.108794	4.160228	0.0003

R-squared	0.990280	Mean dependent var	30.83284
Adjusted R-squared	0.985239	S.D. dependent var	0.422970
S.E. of regression	0.051388	Akaike info criterion	-2.826372
Sum squared resid	0.071300	Schwarz criterion	-2.205775
Log likelihood	74.35380	Hannan-Quinn criter.	-2.598898
F-statistic	196.4762	Durbin-Watson stat	1.994824
Prob(F-statistic)	0.000000		

*Note: p-values and any subsequent tests do not account for model selection.

Model Selection Criteria Table
Dependent Variable: LGR
Date: 05/05/17 Time: 11:31
Sample: 1970 2013
Included observations: 42

Model	LogL	AIC*	BIC	HQ	Adj. R-sq	Specification
913	74.353802	-2.826372	-2.205775	-2.598898	0.985239	ARDL(1, 2, 0, 2, 0, 1, 2)

ARDL Long Run Form and Bounds Test
Dependent Variable: D(LGR)
Selected Model: ARDL(1, 2, 0, 2, 0, 1, 2)
Case 2: Restricted Constant and No Trend
Date: 05/05/17 Time: 11:31
Sample: 1970 2013
Included observations: 42

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	17.09352	4.108794	4.160228	0.0003
LGR(-1)*	-0.566845	0.136529	-4.151829	0.0003
LCPR(-1)	-0.058583	0.036091	-1.623205	0.1162
TIV**	0.003620	0.001866	1.939384	0.0630
EIV(-1)	0.730934	0.213519	3.423267	0.0020
LAG**	0.029807	0.010682	2.790317	0.0095
TRC(-1)	0.009670	0.007608	1.271091	0.2145
UT(-1)	0.053661	0.019956	2.688997	0.0121
D(LCPR)	-0.048262	0.029112	-1.657776	0.1089
D(LCPR(-1))	0.052686	0.031153	1.691194	0.1023
D(EIV)	0.098813	0.209747	0.471106	0.6413
D(EIV(-1))	-0.986541	0.279110	-3.534591	0.0015
D(TRC)	-0.012062	0.008907	-1.354210	0.1869
D(UT)	0.028757	0.017303	1.662005	0.1081
D(UT(-1))	-0.046543	0.020742	-2.243890	0.0332

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LCPR	-0.103350	0.059412	-1.739536	0.0933
TIV	0.006386	0.003001	2.127891	0.0426
EIV	1.289479	0.345863	3.728291	0.0009
LAG	0.052585	0.015154	3.469947	0.0018
TRC	0.017060	0.011900	1.433605	0.1632
UT	0.094666	0.022507	4.206121	0.0003
C	30.15557	0.232500	129.7013	0.0000

EC = LGR - (-0.1034*LCPR + 0.0064*TIV + 1.2895*EIV + 0.0526*LAG + 0.0171 *TRC + 0.0947*UT + 30.1556)

ARDL Error Correction Regression
Dependent Variable: D(LGR)
Selected Model: ARDL(1, 2, 0, 2, 0, 1, 2)
Case 2: Restricted Constant and No Trend
Date: 05/05/17 Time: 11:32
Sample: 1970 2013
Included observations: 42

ECM Regression
Case 2: Restricted Constant and No Trend

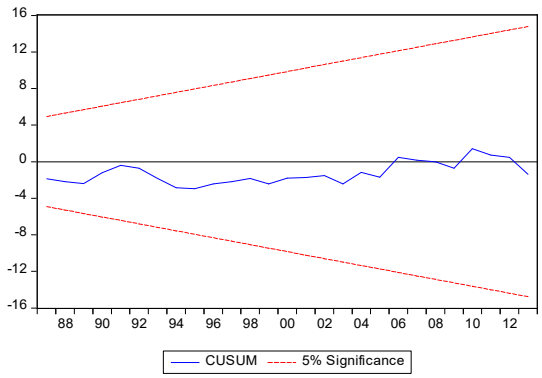
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LCPR)	-0.048262	0.021552	-2.239352	0.0336
D(LCPR(-1))	0.052686	0.022161	2.377451	0.0248
D(EIV)	0.098813	0.154741	0.638570	0.5285
D(EIV(-1))	-0.986541	0.221828	-4.447335	0.0001
D(TRC)	-0.012062	0.006344	-1.901273	0.0680
D(UT)	0.028757	0.013967	2.058993	0.0493
D(UT(-1))	-0.046543	0.017102	-2.721574	0.0112
CointEq(-1)*	-0.566845	0.069212	-8.189918	0.0000

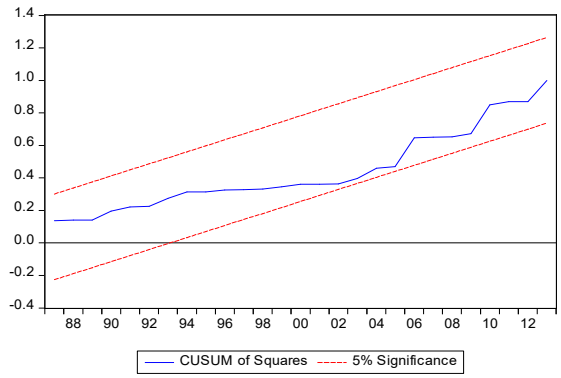
R-squared	0.647185	Mean dependent var	0.033689
Adjusted R-squared	0.574547	S.D. dependent var	0.070207
S.E. of regression	0.045794	Akaike info criterion	-3.159705
Sum squared resid	0.071300	Schwarz criterion	-2.828720
Log likelihood	74.35380	Hannan-Quinn criter.	-3.038386
Durbin-Watson stat	1.994824		

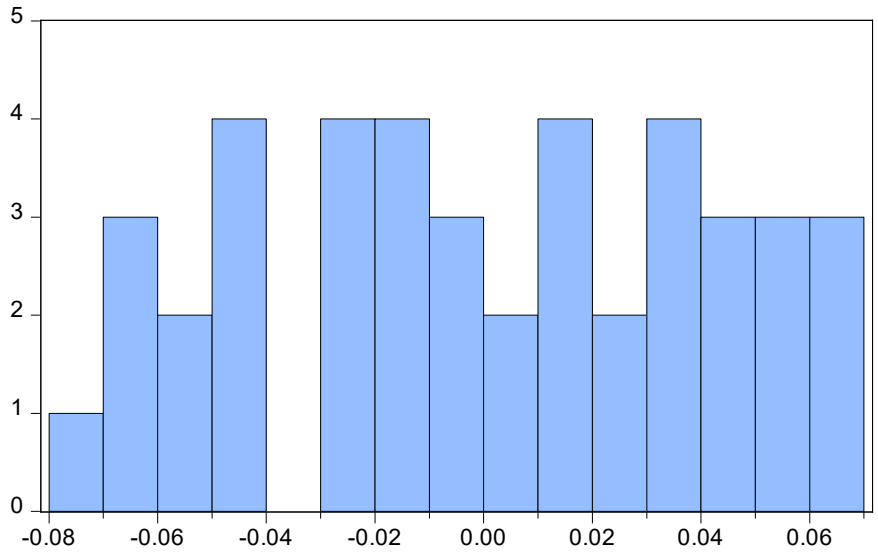
* p-value incompatible with t-Bounds distribution.

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	6.658155	10%	1.99	2.94
k	6	5%	2.27	3.28
		2.5%	2.55	3.61
		1%	2.88	3.99







Series: Residuals	
Sample 1972 2013	
Observations 42	
Mean	-2.45e-15
Median	-0.000748
Maximum	0.068516
Minimum	-0.072410
Std. Dev.	0.041701
Skewness	-0.073683
Kurtosis	1.902811
Jarque-Bera	2.144695
Probability	0.342204

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.084990	Prob. F(1,26)	0.7730
Obs*R-squared	0.136845	Prob. Chi-Square(1)	0.7114

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.313819	Prob. F(14,27)	0.2625
Obs*R-squared	17.01843	Prob. Chi-Square(14)	0.2552
Scaled explained SS	3.174793	Prob. Chi-Square(14)	0.9987

Ramsey RESET Test
Equation: UNTITLED
Specification: LGR LGR(-1) LCPR LCPR(-1) LCPR(-2) TIV EIV EIV(-1) EIV(-2) LAG TRC TRC(-1) UT UT(-1) UT(-2) C
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	0.512363	26	0.6127
F-statistic	0.262516	(1, 26)	0.6127

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	0.000713	1	0.000713
Restricted SSR	0.071300	27	0.002641
Unrestricted SSR	0.070587	26	0.002715

Appendix S ARDL OLS Results for Growth Model 2C (Property Crime)

Dependent Variable: LGR
Method: Two-Stage Least Squares
Date: 06/13/17 Time: 14:06
Sample (adjusted): 1972 2013
Included observations: 42 after adjustments
Instrument specification: 1 LCPR(-1) TIV EIV(-1) LAG TRC(-1) UT(-1) D(LCPR) D(LCPR(-1)) D(EIV) D(EIV(-1)) D(TRC) D(UT) D(UT(-1)) LGR(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	30.15557	0.232500	129.7013	0.0000
LCPR	-0.103350	0.059412	-1.739536	0.0933
TIV	0.006386	0.003001	2.127891	0.0426
EIV	1.289479	0.345863	3.728291	0.0009
LAG	0.052585	0.015154	3.469947	0.0018
TRC	0.017060	0.011900	1.433605	0.1632
UT	0.094666	0.022507	4.206121	0.0003
D(LCPR)	0.018209	0.066048	0.275692	0.7849
D(LCPR(-1))	0.092946	0.051433	1.807112	0.0819
D(EIV)	-1.115157	0.432759	-2.576854	0.0158
D(EIV(-1))	-1.740409	0.589745	-2.951123	0.0065
D(TRC)	-0.038339	0.015162	-2.528652	0.0176
D(UT)	-0.043934	0.033336	-1.317913	0.1986
D(UT(-1))	-0.082109	0.032471	-2.528726	0.0176
D(LGR)	-0.764152	0.424910	-1.798387	0.0833

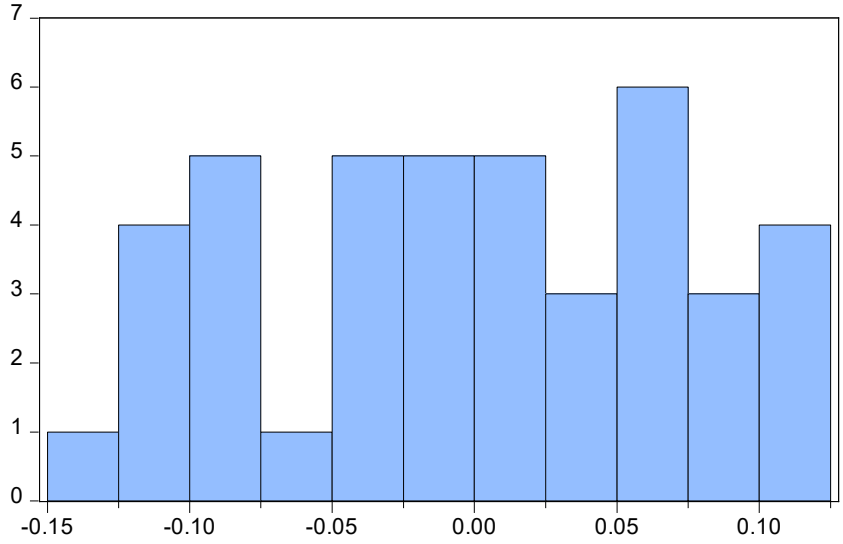
R-squared	0.969748	Mean dependent var	30.83284
Adjusted R-squared	0.954062	S.D. dependent var	0.422970
S.E. of regression	0.090656	Sum squared resid	0.221901
F-statistic	63.13031	Durbin-Watson stat	1.994824
Prob(F-statistic)	0.000000	Second-Stage SSR	0.071300
J-statistic	0.000000	Instrument rank	15

Breusch-Godfrey Serial Correlation LM Test:

Obs*R-squared	0.136845	Prob. Chi-Square(1)	0.7114

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.131043	Prob. F(14,27)	0.3774
Obs*R-squared	15.52607	Prob. Chi-Square(14)	0.3432
Scaled explained SS	2.896393	Prob. Chi-Square(14)	0.9992



Series: Residuals	
Sample 1972 2013	
Observations 42	
Mean	-6.91e-16
Median	-0.001320
Maximum	0.120872
Minimum	-0.127742
Std. Dev.	0.073568
Skewness	-0.073683
Kurtosis	1.902811
Jarque-Bera	2.144695
Probability	0.342204

Wald Test:
Equation: Untitled

Test Statistic	Value	df	Probability
F-statistic	61.98353	(6, 27)	0.0000
Chi-square	371.9012	6	0.0000

Null Hypothesis: C(2)=C(3)=C(4)=C(5)=C(6)=C(7)=0
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(2)	-0.103350	0.059412
C(3)	0.006386	0.003001
C(4)	1.289479	0.345863
C(5)	0.052585	0.015154
C(6)	0.017060	0.011900
C(7)	0.094666	0.022507

Restrictions are linear in coefficients.

Dependent Variable: D(LGR)
Method: Two-Stage Least Squares
Date: 06/13/17 Time: 14:12
Sample (adjusted): 1972 2013
Included observations: 42 after adjustments
Instrument specification: 1 LCPR(-1) TIV EIV(-1) LAG TRC(-1) UT(-1) D(LCPR) D(LCPR(-1)) D(EIV) D(EIV(-1)) D(TRC) D(UT) D(UT(-1)) LGR(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	17.09352	4.108794	4.160228	0.0003
LCPR(-1)	-0.058583	0.036091	-1.623205	0.1162
TIV	0.003620	0.001866	1.939384	0.0630
EIV(-1)	0.730934	0.213519	3.423267	0.0020
LAG	0.029807	0.010682	2.790317	0.0095
TRC(-1)	0.009670	0.007608	1.271091	0.2145
UT(-1)	0.053661	0.019956	2.688997	0.0121
D(LCPR)	-0.048262	0.029112	-1.657776	0.1089
D(LCPR(-1))	0.052686	0.031153	1.691194	0.1023
D(EIV)	0.098813	0.209747	0.471106	0.6413
D(EIV(-1))	-0.986541	0.279110	-3.534591	0.0015
D(TRC)	-0.012062	0.008907	-1.354210	0.1869
D(UT)	0.028757	0.017303	1.662005	0.1081
D(UT(-1))	-0.046543	0.020742	-2.243890	0.0332
LGR(-1)	-0.566845	0.136529	-4.151829	0.0003

R-squared	0.647185	Mean dependent var	0.033689
Adjusted R-squared	0.464244	S.D. dependent var	0.070207
S.E. of regression	0.051388	Sum squared resid	0.071300
F-statistic	3.537672	Durbin-Watson stat	1.994824
Prob(F-statistic)	0.002368	Second-Stage SSR	0.071300
J-statistic	1.79E-29	Instrument rank	15

Appendix T Results for Granger Causality (Overall Crime)

VAR Lag Order Selection Criteria
Endogenous variables: LGR LCR UN YL POV
Exogenous variables: C
Date: 05/05/17 Time: 21:12
Sample: 1970 2013
Included observations: 40

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-44.55532	NA	8.20e-06	2.477766	2.688876	2.554097
1	235.6734	476.3889	2.38e-11	-10.28367	-9.017012*	-9.825687*
2	254.2420	26.92438	3.49e-11	-9.962098	-7.639889	-9.122461
3	272.1324	21.46858	5.86e-11	-9.606622	-6.228863	-8.385331
4	328.3109	53.36950*	1.74e-11*	-11.16554*	-6.732235	-9.562599

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

VAR Residual Serial Correlation LM Tests
Null Hypothesis: no serial correlation at lag order h
Date: 05/05/17 Time: 21:14
Sample: 1970 2013
Included observations: 40

Lags	LM-Stat	Prob
1	25.84105	0.4161
2	8.991279	0.9986

Probs from chi-square with 25 df.

VAR Granger Causality/Block Exogeneity Wald Tests
Date: 05/05/17 Time: 21:15
Sample: 1970 2013
Included observations: 39

Dependent variable: LGR

Excluded	Chi-sq	df	Prob.
LCR	3.822024	4	0.4306
UN	4.645480	4	0.3256
YL	5.237002	4	0.2638
POV	2.231512	4	0.6933
All	15.68188	16	0.4754

Dependent variable: LCR

Excluded	Chi-sq	df	Prob.
LGR	6.819592	4	0.1457
UN	2.429980	4	0.6572
YL	6.869742	4	0.1429
POV	2.380662	4	0.6661
All	15.91755	16	0.4587

Dependent variable: UN

Excluded	Chi-sq	df	Prob.
LGR	4.827516	4	0.3055
LCR	24.93858	4	0.0001
YL	4.640094	4	0.3263
POV	23.90008	4	0.0001
All	58.41629	16	0.0000

Dependent variable: YL

Excluded	Chi-sq	df	Prob.
LGR	5.185245	4	0.2688
LCR	3.951218	4	0.4126
UN	4.663124	4	0.3236
POV	2.112329	4	0.7151
All	15.84874	16	0.4636

Dependent variable: POV

Excluded	Chi-sq	df	Prob.
LGR	0.639836	4	0.9585
LCR	4.156000	4	0.3853
UN	3.747257	4	0.4413
YL	0.575050	4	0.9658
All	16.49392	16	0.4191

Variance Decomposition of LGR:

Period	S.E.	LGR	LCR	UN	YL	POV
1	0.067649	100.0000	0.000000	0.000000	0.000000	0.000000
2	0.099779	96.85906	0.110828	0.380984	1.738989	0.910137
3	0.121664	95.68051	1.939457	0.351099	1.416436	0.612496
4	0.140823	93.70468	3.034745	0.308925	2.171384	0.780267
5	0.158378	87.51309	5.633228	4.459569	1.773986	0.620126
6	0.199527	62.64073	8.126934	22.61578	5.878126	0.738427
7	0.243937	42.77319	13.13231	33.31745	10.16752	0.609528
8	0.293550	30.05425	13.06766	41.65515	14.25850	0.964438

9	0.342825	25.19312	10.04167	46.86663	16.88242	1.016162
10	0.377778	25.31544	8.934177	46.58003	17.52587	1.644482
Variance Decomposition of LCR:						
Period	S.E.	LGR	LCR	UN	YL	POV
1	0.149197	8.194390	91.80561	0.000000	0.000000	0.000000
2	0.202813	11.94739	80.18595	2.519968	5.266221	0.080473
3	0.246078	8.235605	68.38942	1.978910	20.15095	1.245116
4	0.276199	9.809388	60.69749	2.297610	26.20306	0.992451
5	0.310741	9.459694	53.67483	6.546604	27.16503	3.153844
6	0.361871	9.702158	46.38085	9.562639	28.28759	6.066759
7	0.417754	10.42896	35.93667	14.94039	33.64785	5.046129
8	0.462935	9.740826	29.59706	20.22095	36.31005	4.131113
9	0.487160	9.188933	26.84544	23.07910	36.30912	4.577411
10	0.498913	9.540159	25.85779	24.38839	35.55898	4.654686
Variance Decomposition of UN:						
Period	S.E.	LGR	LCR	UN	YL	POV
1	1.772442	1.106750	0.107072	98.78618	0.000000	0.000000
2	2.135697	0.781042	15.15522	83.62100	0.436796	0.005941
3	2.870652	3.248660	21.80261	51.42091	0.385109	23.14270
4	3.161482	2.907870	22.18416	53.10097	0.700031	21.10697
5	3.409821	2.505161	25.94200	46.03962	0.991766	24.52145
6	3.605119	2.944158	23.25535	47.08904	1.014037	25.69741
7	3.881461	6.381326	20.26156	46.61659	2.238084	24.50243
8	4.339464	7.218036	16.83313	41.58036	14.16364	20.20484
9	4.559721	7.094672	15.48317	39.64258	18.24148	19.53810
10	4.650806	8.527884	15.20437	38.10615	17.54193	20.61967
Variance Decomposition of YL:						
Period	S.E.	LGR	LCR	UN	YL	POV
1	0.044049	99.90089	0.000466	0.010303	0.088337	0.000000
2	0.064941	96.52473	0.131602	0.234311	2.303778	0.805574
3	0.078856	95.32350	1.968639	0.215389	1.937973	0.554495
4	0.090639	93.57326	3.117824	0.187082	2.430349	0.691484
5	0.101873	86.80294	5.886908	4.760246	2.002272	0.547633
6	0.128969	61.39460	8.564605	23.35320	5.998067	0.689527
7	0.157907	41.79257	13.82882	33.78357	10.00425	0.590797
8	0.189388	29.54296	13.83391	41.84688	13.77195	1.004305
9	0.219587	24.98056	10.79158	46.94540	16.17611	1.106343
10	0.240450	25.13649	9.720560	46.60390	16.70237	1.836685
Variance Decomposition of POV:						
Period	S.E.	LGR	LCR	UN	YL	POV
1	0.115561	8.746689	8.732136	5.412141	0.333468	76.77557
2	0.149705	33.18768	12.54484	8.039343	0.274020	45.95412
3	0.160335	34.76309	14.30489	10.61284	0.247170	40.07201
4	0.166560	32.75177	15.27518	10.45167	2.930782	38.59059
5	0.174975	35.22927	14.63620	10.11434	2.658668	37.36152
6	0.188547	33.49995	14.35755	16.90126	3.007408	32.23384
7	0.205782	31.30519	17.58999	19.64920	3.035478	28.42014
8	0.219302	35.41824	17.94158	18.79741	2.818666	25.02410
9	0.240271	45.67215	15.24201	15.65952	2.569857	20.85647
10	0.268453	47.47362	13.03855	17.54466	5.106174	16.83699
Cholesky Ordering: LGR LCR UN YL POV						

Appendix U Results for Granger Causality (Person's Crime)

VAR Lag Order Selection Criteria
Endogenous variables: LGR LCPS UN YL POV
Exogenous variables: C
Date: 05/05/17 Time: 21:18
Sample: 1970 2013
Included observations: 40

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-72.61925	NA	3.34e-05	3.880962	4.092072	3.957293
1	215.9001	490.4830	6.39e-11*	-9.295007	-8.028348*	-8.837023*
2	231.6586	22.84974	1.08e-10	-8.832929	-6.510720	-7.993292
3	255.2117	28.26378	1.37e-10	-8.760586	-5.382828	-7.539295
4	299.4651	42.04075*	7.37e-11	-9.723257*	-5.289949	-8.120313

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

VAR Residual Serial Correlation LM Tests
Null Hypothesis: no serial correlation at lag order h
Date: 05/15/17 Time: 16:54
Sample: 1970 2013
Included observations: 40

Lags	LM-Stat	Prob
1	25.47389	0.4361
2	30.56811	0.2037

Probs from chi-square with 25 df.

VAR Granger Causality/Block Exogeneity Wald Tests
Date: 05/05/17 Time: 21:19
Sample: 1970 2013
Included observations: 39

Dependent variable: LGR

Excluded	Chi-sq	df	Prob.
LCPS	4.490072	4	0.3437
UN	4.596418	4	0.3313
YL	4.104810	4	0.3920
POV	3.813166	4	0.4319
All	18.62055	16	0.2888

Dependent variable: LCPS

Excluded	Chi-sq	df	Prob.
LGR	9.179754	4	0.0568
UN	2.982610	4	0.5607
YL	9.673613	4	0.0463
POV	6.187733	4	0.1856
All	34.55638	16	0.0046

Dependent variable: UN

Excluded	Chi-sq	df	Prob.
LGR	10.91485	4	0.0275
LCPS	29.17147	4	0.0000
YL	11.59711	4	0.0206
POV	20.89587	4	0.0003
All	94.19447	16	0.0000

Dependent variable: YL

Excluded	Chi-sq	df	Prob.
LGR	4.181237	4	0.3820
LCPS	4.681245	4	0.3216
UN	4.682641	4	0.3214
POV	3.793997	4	0.4346
All	19.37851	16	0.2495

Dependent variable: POV

Excluded	Chi-sq	df	Prob.
LGR	5.392775	4	0.2493
LCPS	8.794680	4	0.0664
UN	9.240694	4	0.0554
YL	5.316989	4	0.2563
All	27.86162	16	0.0328

Variance Decomposition of LGR:						
Period	S.E.	LGR	LCPS	UN	YL	POV
1	0.066943	100.0000	0.000000	0.000000	0.000000	0.000000
2	0.097366	98.23136	0.055433	0.086904	0.008502	1.617803
3	0.119940	95.91179	0.121253	1.489290	0.764508	1.713163
4	0.138009	88.06104	2.351844	1.631647	4.108905	3.846565
5	0.147293	83.79423	2.098818	5.292129	4.064449	4.750376
6	0.169844	64.31210	7.238818	20.44269	3.580709	4.425686
7	0.210505	43.55592	14.45017	32.60810	4.170919	5.214888
8	0.271012	35.82704	14.21151	35.33217	9.525658	5.103623
9	0.342729	36.01080	10.51114	33.34145	14.99153	5.145078
10	0.417474	38.09229	7.489312	29.70755	17.49575	7.215106
Variance Decomposition of LCPS:						

Period	S.E.	LGR	LCPS	UN	YL	POV
1	0.295456	19.21705	80.78295	0.000000	0.000000	0.000000
2	0.375067	27.27189	50.13353	1.037952	19.57166	1.984964
3	0.403381	26.74128	44.76809	4.157090	17.68303	6.650514
4	0.414176	28.06889	43.29798	4.249557	18.06451	6.319067
5	0.440010	30.33308	38.38456	3.804762	16.42496	11.05264
6	0.518660	22.44322	28.22512	24.39573	14.75139	10.18455
7	0.603866	19.03529	23.76454	36.59425	10.91105	9.694868
8	0.688479	21.82860	20.38275	34.38955	9.057124	14.34197
9	0.804534	23.86877	15.09444	31.86624	15.97574	13.19481
10	0.979625	28.15249	10.44667	31.93020	16.88424	12.58640
Variance Decomposition of UN:						
Period	S.E.	LGR	LCPS	UN	YL	POV
1	1.534903	1.475760	0.002464	98.52178	0.000000	0.000000
2	2.694400	2.840406	40.79577	47.45832	8.807142	0.098364
3	3.291326	4.884361	43.26387	33.61828	5.941223	12.29226
4	3.422762	5.020679	40.03714	32.40412	10.72384	11.81421
5	3.528686	4.894145	37.67079	32.01539	11.37530	14.04438
6	4.016564	11.37713	29.07530	25.98393	11.40794	22.15570
7	4.525107	14.44481	25.49866	20.53093	11.05599	28.46960
8	4.792407	17.03690	24.91455	19.96752	12.43857	25.64247
9	5.036702	15.77399	22.93092	18.47945	18.05126	24.76439
10	5.185741	14.88862	25.59784	18.20845	17.06433	24.24076
Variance Decomposition of YL:						
Period	S.E.	LGR	LCPS	UN	YL	POV
1	0.043454	99.89935	0.015439	0.006697	0.078518	0.000000
2	0.063207	98.17243	0.068963	0.033685	0.044382	1.680539
3	0.077619	95.71567	0.145923	1.732350	0.605876	1.800184
4	0.088874	87.68612	2.603215	1.964145	3.640647	4.105877
5	0.094758	82.88423	2.303649	6.050979	3.562396	5.198750
6	0.109904	62.50171	7.263947	22.00821	3.297987	4.928147
7	0.137700	42.07774	14.15413	33.93969	4.070872	5.757573
8	0.178608	35.55441	13.58306	35.82284	9.479255	5.560432
9	0.226750	36.56642	9.864747	33.18871	14.87919	5.500933
10	0.276748	39.05057	6.947638	29.23027	17.30012	7.471396
Variance Decomposition of POV:						
Period	S.E.	LGR	LCPS	UN	YL	POV
1	0.109600	0.429275	1.217502	2.388019	0.695798	95.26941
2	0.149450	25.82573	0.685720	5.680296	0.473003	67.33525
3	0.170923	25.98817	0.542310	14.82881	0.430537	58.21017
4	0.177683	25.78184	3.805342	14.32658	0.759473	55.32676
5	0.200025	28.44691	5.954922	13.39623	1.576785	50.62514
6	0.250786	29.30516	4.401818	25.26322	7.177374	33.85243
7	0.366315	39.05332	6.743144	28.27836	5.963806	19.96138
8	0.490222	48.72326	5.807513	23.90075	8.854697	12.71378
9	0.631883	57.70573	3.500302	17.73770	12.51107	8.545196
10	0.752169	62.04282	2.780749	13.54859	14.53724	7.090596
Cholesky Ordering: LGR LCPS UN YL POV						

Appendix V Results for Granger Causality (Property Crime)

VAR Lag Order Selection Criteria
Endogenous variables: LGR LCPR UN YL POV
Exogenous variables: C
Date: 05/05/17 Time: 21:20
Sample: 1970 2013
Included observations: 40

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-75.44786	NA	3.84e-05	4.022393	4.233503	4.098724
1	210.2074	485.6140	8.50e-11*	-9.010372	-7.743712*	-8.552388*
2	227.3274	24.82392	1.34e-10	-8.616369	-6.294160	-7.776732
3	249.3096	26.37871	1.84e-10	-8.465482	-5.087723	-7.244191
4	292.9425	41.45123*	1.02e-10	-9.397126*	-4.963817	-7.794182

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

VAR Residual Serial Correlation LM Tests
Null Hypothesis: no serial correlation at lag order h
Date: 05/15/17 Time: 16:54
Sample: 1970 2013
Included observations: 40

Lags	LM-Stat	Prob
1	26.96938	0.3574
2	32.25386	0.1508

Probs from chi-square with 25 df.

VAR Granger Causality/Block Exogeneity Wald Tests
Date: 05/05/17 Time: 21:21
Sample: 1970 2013
Included observations: 39

Dependent variable: LGR

Excluded	Chi-sq	df	Prob.
LCPR	6.116250	4	0.1906
UN	3.946200	4	0.4133
YL	6.509672	4	0.1642
POV	3.027977	4	0.5532
All	21.48798	16	0.1605

Dependent variable: LCPR

Excluded	Chi-sq	df	Prob.
LGR	13.20308	4	0.0103
UN	6.119166	4	0.1904
YL	13.45264	4	0.0093
POV	4.573613	4	0.3339
All	50.92098	16	0.0000

Dependent variable: UN

Excluded	Chi-sq	df	Prob.
LGR	1.428809	4	0.8392
LCPR	3.183470	4	0.5276
YL	1.420416	4	0.8406
POV	6.064901	4	0.1944
All	18.49132	16	0.2959

Dependent variable: YL

Excluded	Chi-sq	df	Prob.
LGR	6.710802	4	0.1520
LCPR	6.174389	4	0.1865
UN	4.093574	4	0.3935
POV	2.920693	4	0.5712
All	22.03431	16	0.1421

Dependent variable: POV

Excluded	Chi-sq	df	Prob.
LGR	2.561293	4	0.6337
LCPR	8.980766	4	0.0616
UN	8.007864	4	0.0913
YL	2.340198	4	0.6735
All	27.31358	16	0.0381

Variance Decomposition of LGR:						
Period	S.E.	LGR	LCPR	UN	YL	POV
1	0.063083	100.0000	0.000000	0.000000	0.000000	0.000000
2	0.093091	91.15399	2.690515	1.651714	2.416428	2.087358
3	0.111847	88.02349	5.986964	1.147710	1.781634	3.060205
4	0.127813	87.33329	4.908659	0.999473	1.401823	5.356751
5	0.147275	78.90924	3.963402	9.647770	1.662026	5.817560
6	0.184983	54.74224	2.715748	32.86243	5.843426	3.836152
7	0.215935	40.18469	5.366724	40.94714	10.14790	3.353550
8	0.253274	31.04008	12.10392	41.47451	12.77096	2.610524
9	0.294935	29.09127	15.44495	39.83816	13.69914	1.926490
10	0.328569	29.27508	20.12230	36.78382	12.25949	1.559300
Variance Decomposition of LCPR:						
Period	S.E.	LGR	LCPR	UN	YL	POV

1	0.239285	12.45727	87.54273	0.000000	0.000000	0.000000
2	0.287048	8.677244	76.49907	11.61296	2.227377	0.983347
3	0.353814	5.799084	53.01092	11.85755	26.76088	2.571569
4	0.399902	17.15664	41.54878	11.58183	27.43522	2.277523
5	0.477430	26.39443	31.10289	10.09956	26.40888	5.994232
6	0.657840	56.63380	16.47407	6.127479	16.83416	3.930493
7	0.854443	65.33409	10.19612	7.044187	12.55260	4.873010
8	1.076691	71.83194	7.317842	6.061782	9.671929	5.116507
9	1.233753	77.07943	5.654424	4.731402	7.570105	4.964638
10	1.378650	77.38208	4.534507	5.882953	6.064542	6.135917
Variance Decomposition of UN:						
Period	S.E.	LGR	LCPR	UN	YL	POV
1	2.603001	0.038341	23.25173	76.70993	0.000000	0.000000
2	3.265647	0.910441	17.05117	81.62479	0.408733	0.004872
3	3.569889	1.293852	19.32632	71.17786	1.416085	6.785884
4	3.645103	1.578112	18.99025	71.22964	1.654273	6.547720
5	3.672897	2.843090	18.70418	70.17855	1.629931	6.644248
6	4.244920	5.911489	19.64295	64.70452	2.419300	7.321745
7	4.371811	8.400928	19.77180	61.94992	2.331026	7.546325
8	4.514054	9.491657	20.82037	58.25102	4.278555	7.158398
9	4.646287	12.31701	19.75755	55.06045	5.848388	7.016598
10	4.687755	12.20955	19.48244	55.47563	5.938989	6.893392
Variance Decomposition of YL:						
Period	S.E.	LGR	LCPR	UN	YL	POV
1	0.041047	99.88940	0.044997	0.009077	0.056522	0.000000
2	0.060603	90.36709	3.139123	1.606677	2.873356	2.013753
3	0.072733	86.96634	6.843423	1.124168	2.131051	2.935015
4	0.082684	86.37322	5.752853	0.974362	1.694973	5.204590
5	0.095141	77.77774	4.662476	9.994376	1.876694	5.688714
6	0.119919	53.66275	3.172304	33.59982	5.841787	3.723341
7	0.140036	39.35559	5.965988	41.38980	9.991835	3.296787
8	0.163788	30.34861	12.98415	41.61301	12.45356	2.600673
9	0.189462	28.26142	16.51963	39.95038	13.31976	1.948814
10	0.209881	28.04907	21.46264	36.97586	11.90487	1.607550
Variance Decomposition of POV:						
Period	S.E.	LGR	LCPR	UN	YL	POV
1	0.106828	18.26028	15.16837	5.456482	1.315747	59.79912
2	0.156771	49.17725	11.78670	9.511209	0.979915	28.54493
3	0.168106	53.93616	11.29856	8.868627	0.881293	25.01536
4	0.181379	48.88416	11.04283	12.15913	6.281664	21.63222
5	0.185582	47.15555	10.73779	14.45424	6.011935	21.64049
6	0.207634	37.80026	8.601168	30.52021	4.814232	18.26413
7	0.234295	34.22056	9.837188	35.04744	4.334308	16.56050
8	0.254667	32.38563	19.04456	29.98648	4.407584	14.17574
9	0.264809	30.15463	24.06414	28.57921	4.085249	13.11678
10	0.280281	27.08408	24.42220	29.90226	6.583490	12.00798
Cholesky Ordering: LGR LCPR UN YL POV						