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Agricultural Production and Economic Growth in South America

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Background

- Agriculture must be part of the world economic growth, especially in those countries where their poor population depend on farming.
- Strategies designed to promote the early stages of economic growth in most African countries cannot ignore agriculture (1).
- The majority of people in South America live in rural areas where they depend on agriculture for their livelihoods.
- However Brazil is among the world's top five producers and exporters of agricultural products and has a significant portion of their population working in agriculture (2), 21.4% of its population live below the poverty line (3).

Objective

To obtain the contribution of agricultural production to economic growth in most South American agricultural countries.

Data and Methodology

- Data are collected from the World Bank, World Development Indicators (WDI) and the International Monetary Fund (IMF), International Financial Statistics websites for the period 1962-2012.
- The Dicky Fuller GLS test is used in order to determine whether a series possesses a unit root.
- The autoregressive distributed lag model (ARDL) is employed when regressors have found to be mutually cointegrated, otherwise the Vector Error Correction Model (VECM) is used to examine the relationship between economic growth and its determinants.
- Wald test is used to differentiate the long-run relationship among non-stationary variables while Johnson Cointegration test is used for stationary variables.

Results

- Variables related to Brazil, Chile and Venezuela were not integrated of the same order while variables related to Colombia were all non-stationary which indicates the existence of the unit root test in all variables.
- There is a long-run relationship between agricultural production and economic growth for Brazil, Chile and Colombia.
- The agricultural production has a positive and significant influence on economic growth at 1% probability level for Brazil, Chile and Colombia in the long run, and for Venezuela in the short-run.

ARDL (Brazil, Chile and Venezuela)

Country	Variable	Coefficient	Std. Error	t-Statistic	Prob.
Brazil	Ag. Production	0.845	0.202	4.167***	0.0002
	Inflation Rate	0.136	0.149	0.911	0.368
	Exchange Rate	0.0002	0.012	0.021	0.982
	Interest Rate	0.194	0.072	2.672***	0.011
	C	22.914	0.747	30.639	0
ARDL (1, 0, 3, 3, 4) selected					
Chile	Ag. Production	1.54	0.117	13.12***	0
	Inflation Rate	-0.017	0.01	-1.72*	0.101
	Exchange Rate	0.006	0.018	0.356	0.725
	Interest Rate	0.039	0.021	1.833*	0.082
	C	18.517	0.477	38.812	0
ARDL (1, 4, 0, 3, 0) selected					
Venezuela	Δ Ag. Production	0.277	0.087	3.176***	0.002
	Δ Inflation Rate	-0.005	0.005	-0.932	0.356
	Δ Exchange Rate	-0.011	0.004	-2.527	0.015
	Δ Interest Rate	-0.025	0.015	-1.574	0.122
	CoinEq(-1)	-0.192	0.067	-2.854	0.006
ARDL (1, 0, 0, 1, 0) selected					

VECM (Colombia)

Cointegrating Eq	GDP(-1)	Ag.Production(-1)	Inflation Rate(-1)	Exchange Rate(-1)	Interest Rate(-1)	C
CointEq1	1	2.16*** (-0.576)	-0.795*** (-0.193)	-0.075 (-0.097)	0.177 (-0.188)	18.011

Note: *P<0.1, **P<0.05, ***P<0.01

Conclusion

- There is a positive and significant relationship between agricultural production and the economic growth in the long run for all countries except Venezuela which implies the importance of this variable in economic development.
- In addition, inflation rate seems to have a negative and significant effect on economic growth as expected.
- These results might help policy makers to enhance investments in agricultural development which might cause poverty elimination in theses countries.

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