Central bank independence: monetary policies in selected jurisdictions (I)

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Central Bank Independence: Monetary Policies in Selected Jurisdictions (I)
The Dynamics Of Central Bank Independence In A Developing Economy

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Temptation!

- An age-old human problem
  - Allow high-inflation to develop in an economy
- An “easy” monetary policy can stimulate the economy to grow faster and lower unemployment rate in the short-run
  - Improved tax revenue for government
  - Public debt situation is made good
Introduction

- Central bank independence (CBI) is often cited as prescription to assure price stability in an economy
- Cross-country empirical studies especially in industrial economies suggest a negative relationship between CBI and inflation
- Hayo and Hefeker (2002)
  - CBI is neither necessary nor sufficient for reaching monetary stability
High CBI and Low Inflation?

- Eijffinger & Haan (1996): 3 theories:
  - Public-choice theory
    - Buchanam & Wagner (1977)
  - Sargent-Wallace (1981) theory
  - Time-inconsistency problem of monetary policy
    - Kydland & Prescott (1977)
    - Calvo (1978)
    - Barro & Gordon (1983)
Cukierman et al. (1992) & Berger et al. (2001)

- Summary of empirical studies
- Among industrial countries, legal CBI index is negatively correlated with inflation but TOR (turnover of central bank governors) has no correlation with inflation
- Among developing countries, legal CBI index is not correlated with inflation but TOR is significantly related to inflation
Panagiotidis et al. (2006) --- Greece

- 1951-99: data before Greece joined EMU
- Time series data on Legal CBI and TOR
- Legal CBI is systematically and inversely related to the rate of inflation
- TOR did not exhibit a significant relationship with inflation
Otero & Ramirez (2006) -- Colombia

- Constitutional Reform in 1991
- Central bank independence guaranteed
- **Creation of an independent central bank changed some parameters of the model**
- Disequilibrium in goods and monetary markets have smaller effect on inflation after central bank independence was granted
In the Beginning

- **WACB** (West African Currency Board) was set up by the British colonial government to administer pound sterling within British West Africa
- **Central Bank of Nigeria (CBN)** charged with responsibility for developing money and capital markets
- CBN used direct controls such as:
  - Credit guidelines
  - Moral suasion
Major Banking Laws

- CBN Act 1958 & Amendments
- Banking Decree 1969 & Amendments
  - Define legal framework within which CBN operates
  - Main functions include
    - Issue legal tender currency
    - Maintain external reserves & international value of naira
    - Promote monetary stability and sound financial structure
SAP and Macroeconomy

- CBN Decree #24 & BOFI Decree #25: 1991
  - Provisions announced in 1988
  - More comprehensive than any previous laws
  - Considerable power given to CBN
  - CBN to consult with gov’t before critical decisions are taken
  - CBN proposals are a component of annual budget speeches
  - Ojo (2000) notes: in practice CBN had no power
CBN (Amendment) Decree #3, 1997
BOFI (Amendment) Decree #4, 1997

- Removed all CBN’s limited discretion in the conduct of its monetary policy under the 1991 laws
- CBN brought under the Minister of Finance
- CBN’s Board of Governors to have an external person (politician) as Chair
CBN (Amendment) Decree #37, 1998
BOFI (Amendment) Decree #38, 1998

- New Decrees repealed all 1997 Decrees
- CBN has Permanent Secretary in Ministry of Finance on Board
- CBN’s Board of Governors now Governor as Chair
- Fine-tune the process of government borrowing from the CBN
- FSRCC set up to coordinate supervision
New CBN Law & Monetary Policy

- Much more meaningful autonomy
- Some discretion to implement its monetary policy without government interference
- Some reasonable freedom for bank to select policy instrument
- Primary objectives are:
  - Maintain monetary stability
  - A sound financial structure
Political Autonomy for CBN?

- Conflict resolution between the bank the government can be resolved at the Board of Directors level
  - Perm. Sec of Ministry of Finance serves on the Board
- Appointment (removal) of Governor and Board members is done by the President
Economic Autonomy for CBN?

- A clear limit on lending to government
- Authority to determine exchange rate
- Required to issue periodic report on its operations to the President/legislators
- Financially independent
Research Question

- Is there a relationship between level of financial development and management of inflation in the Nigerian economy?
  - The usual CBI indices do not really mean much in Nigeria. Legal CBI index was 0.37 for 1989-2000
  - Original mission of CBN was to develop the financial system
  - CBN employed direct controls rather than the traditional monetary policy instruments
Annual Data: 1970-2003

- Beck et al. (2000): Measures of fin. dev’t
- DMCD: Ratio of deposit money banks assets to central bank assets
- LLGDP: Ratio of liquid liabilities to GDP
- CBGDP: Ratio of central bank assets to GDP
- DMGDP: Ratio of deposit money banks assets to GDP
- INF: Inflation index \[\frac{\pi}{1 + \pi}\]
Graphical Representation Of Time Series
## Data Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>INF</th>
<th>DMCD</th>
<th>LLGDP</th>
<th>CBGDP</th>
<th>DMGDP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean</strong></td>
<td>0.159</td>
<td>0.605</td>
<td>0.210</td>
<td>0.120</td>
<td>0.153</td>
</tr>
<tr>
<td><strong>Standard Deviation</strong></td>
<td>0.104</td>
<td>0.169</td>
<td>0.069</td>
<td>0.075</td>
<td>0.058</td>
</tr>
<tr>
<td><strong>Skewness</strong></td>
<td>0.963</td>
<td>0.106</td>
<td>-0.076</td>
<td>0.220</td>
<td>0.483</td>
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<tr>
<td><strong>Kurtosis</strong></td>
<td>2.898</td>
<td>2.267</td>
<td>2.032</td>
<td>2.472</td>
<td>2.062</td>
</tr>
<tr>
<td><strong>Jarque-Bera Statistic</strong></td>
<td>5.269</td>
<td>0.824</td>
<td>1.361</td>
<td>0.668</td>
<td>2.568</td>
</tr>
</tbody>
</table>
## Data Correlation Matrix

<table>
<thead>
<tr>
<th></th>
<th>INF</th>
<th>DMCD</th>
<th>LLGDP</th>
<th>CBGDP</th>
<th>DMGDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>INF</td>
<td>1.000</td>
<td>-0.455</td>
<td>0.143</td>
<td>0.518</td>
<td>-0.027</td>
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<tr>
<td>DMCD</td>
<td></td>
<td>1.000</td>
<td>-0.306</td>
<td>-0.892</td>
<td>-0.155</td>
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<tr>
<td>LLGDP</td>
<td></td>
<td></td>
<td>1.000</td>
<td>0.516</td>
<td>0.903</td>
</tr>
<tr>
<td>CBGDP</td>
<td></td>
<td></td>
<td></td>
<td>1.000</td>
<td>0.417</td>
</tr>
<tr>
<td>DMGDP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.000</td>
</tr>
</tbody>
</table>
# Unit Root Test Results

<table>
<thead>
<tr>
<th>SERIES IN LEVELS</th>
<th>INF</th>
<th>DMCD</th>
<th>LLGDP</th>
<th>CBGDP</th>
<th>DMGDP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ADF Statistic</strong></td>
<td>-3.140</td>
<td>-1.415</td>
<td>-1.775</td>
<td>-1.446</td>
<td>-1.261</td>
</tr>
<tr>
<td><strong>KPSS Statistic</strong></td>
<td>0.171</td>
<td>0.382***</td>
<td>0.196</td>
<td>0.460***</td>
<td>0.194</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FIRST DIFFERENCE OF SERIES</th>
<th>INF</th>
<th>DMCD</th>
<th>LLGDP</th>
<th>CBGDP</th>
<th>DMGDP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ADF Statistic</strong></td>
<td>-5.910*</td>
<td>-6.114*</td>
<td>-4.979*</td>
<td>-4.185*</td>
<td>-4.500*</td>
</tr>
<tr>
<td><strong>KPSS Statistic</strong></td>
<td>0.5000**</td>
<td>0.229</td>
<td>0.153</td>
<td>0.261</td>
<td>0.115</td>
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</tbody>
</table>
### Johansen Bivariate Cointegration Test Results

<table>
<thead>
<tr>
<th>$\lambda_i$</th>
<th>$H_0$</th>
<th>$H_1$</th>
<th>$\lambda$-max statistic</th>
<th>$H_0$</th>
<th>$H_1$</th>
<th>$\lambda$-trace statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) INFLATION AND DMCD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.507</td>
<td>$r = 0$</td>
<td>$r = 1$</td>
<td>22.647**</td>
<td>$r = 0$</td>
<td>$r = 1$</td>
<td>24.209**</td>
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<tr>
<td>0.048</td>
<td>$r \leq 1$</td>
<td>$r = 2$</td>
<td>1.562</td>
<td>$r \leq 1$</td>
<td>$r = 2$</td>
<td>1.562</td>
</tr>
<tr>
<td>(b) INFLATION AND LLGDP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.359</td>
<td>$r = 0$</td>
<td>$r = 1$</td>
<td>14.225</td>
<td>$r = 0$</td>
<td>$r = 1$</td>
<td>17.952**</td>
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<tr>
<td>0.110</td>
<td>$r \leq 1$</td>
<td>$r = 2$</td>
<td>3.727</td>
<td>$r \leq 1$</td>
<td>$r = 2$</td>
<td>3.727</td>
</tr>
<tr>
<td>(c) INFLATION AND CBGDP</td>
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<tr>
<td>0.380</td>
<td>$r = 0$</td>
<td>$r = 1$</td>
<td>15.303**</td>
<td>$r = 0$</td>
<td>$r = 1$</td>
<td>18.351**</td>
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<tr>
<td>0.091</td>
<td>$r \leq 1$</td>
<td>$r = 2$</td>
<td>3.048</td>
<td>$r \leq 1$</td>
<td>$r = 2$</td>
<td>3.048</td>
</tr>
<tr>
<td>(d) INFLATION AND DMGDP</td>
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<tr>
<td>0.325</td>
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<td>15.082</td>
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<tr>
<td>0.076</td>
<td>$r \leq 1$</td>
<td>$r = 2$</td>
<td>2.516</td>
<td>$r \leq 1$</td>
<td>$r = 2$</td>
<td>2.516</td>
</tr>
</tbody>
</table>
Summary of Results (1)

- Based on ADF unit-root test, all the time series data are integrated of order 1
- The Johansen cointegration results show:
  - INF and DMCD are cointegrated
  - INF and LLGDP are cointegrated
  - INF and CBGDP are cointegrated
  - INF and DMGDP are not cointegrated
Summary of Results (2)

- Inflation is negatively correlated with DMCD and DMGDP
- Inflation is positively correlated with LLGDP and CBGDP
Conclusion

- There is a long-run relationship between the level of financial development and inflation
- The level of financial development is more appropriate than the existing indices of central bank independence
- It is not logical to assume that all developing countries are homogenous in terms of the role and influence of central banks on price stability