

## Interest Rate Pass-Through and Monetary Policy Regimes in South Africa

By

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## Outline of Presentation

- Motivation
- Objectives of the study
- Empirical literature
- Overview of monetary policy, financial reforms and financial system development in South Africa
- Data and Methodology
- Empirical results
- Summary of findings and policy implication

## Motivation

- The effectiveness of a change in the official interest rate depends on the magnitude and speed with which it is transmitted to other interest rates.
- Literature from both advanced and emerging market economies has shown that there can be significant rigidity in market interest rates, which may impair the effectiveness of monetary policy.
- Financial and monetary policy reforms in SA
  - De Kock Commission
  - Financial liberalisation
  - Banking consolidation and rationalisation

## Objectives of the Study

- To provide an historical a/c of monetary policy regimes highlighting the response of market interest rates
- To determine the degree of symmetric & asymmetric adjustment of lending and deposit rates
- To evaluate market interest rate pass-through under the different monetary regimes

## 3. Empirical Evidence -1

- USA: Hannan and Berger (1991); Neumark and Sharpe (1992); Jackson III (1997); Sharpe (1997), Payne 2007
- Euro area: Bondt (2002, 2004), Cottarelli and Kourelis(1995), Kwapiil and Scharler (2006), Toolsema, *et al.* (2002), Sorensen and Werner (2006)
- UK: Hefferman (1997); Mizen and Hofman(2002, 2004)
- Australia: Lowe and Rohling (1992), Lim (2001)
- Emerging markets: Scholnick (1996) for Singapore and Malaysia; Iregui, *et al.* (2002) for Colombia and Mexico; Espinosa-Vega and Rebucci (2002) and Berstein and Fuentes (2003) for Chile
- Rest of Africa: Junkee-Junglee (2004)

## 3. Empirical Evidence -2

- South Africa: De Angelis, *et al.* (2005) and Aziakpono, *et al.* (2007)
  - De Angelis, *et al.* (2005):specifically focus on the relationship between three wholesale interest rates and repo rates for two periods: March 1998-Sept. 2001 and Sept. 2001 to Nov. 2004.
  - Aziakpono, *et al.* (2007) explore PT to two wholesale rates for the period 1973 to 2004.
  - Contribution of current study:
    - Covers a broad spectrum of interest rates
    - Following Toolsema, *et al.* (2002), Sander and Kleimeier (2006) and Aziakpono, *et al.* (2008), we complement the analysis of the monetary policy regimes with a rolling window technique to trace the dynamics of interest rate adjustment over time
    - Provides the most up to date analysis of interest rate adjustment in South Africa

#### 4. Overview of monetary policy, financial reforms and financial system development in South Africa-1

- **Monetary policy:**
  - Discount/accommodation policy complemented by OMO and variable cash reserve requirements:
- **Regime 1: Jan. 1980 – Dec. 1985**
  - Market-Oriented Policies (Accommodation Arrangement)
- **Regime 2: Jan. 1986 – April 1993**
  - Accommodation arrangement cond., and Economic Crisis
- **Regime 3: May 1993 – Feb. 1998**
  - Adjustment to the accommodation arrangement
  - After April 1994 the remaining financial sanctions against SA were lifted.
- **Regime 4: March 1998 – Sept. 2001**
  - New accommodation arrangement ( the repo system)
- **Regime 5: Sept. 2001 – December 2007.**
  - Adjustments to the repo system:
    - Sept. 2001to May 2005, May 2005 to May 2007 and May 2007 to date.

#### 4. Overview of monetary policy, financial reforms and financial system development in South Africa

Table 1: Composition of bank assets by major banks and number of banks

Year	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Percent of Total Asset																	
ABSA	20.9	28.7	27.9	28.7	29.0	28.1	25.9	24.2	21.7	22.2	22.0	21.4	19.8	21.3	22.6	23.2	24.9
FNB	14.8	15.8	17.8	18.7	18.0	18.0	17.5	15.2	18.3	18.5	21.3	20.0	19.4	18.9	19.4	20.2	21.1
Investec	1.1	1.3	1.5	2.2	2.7	3.0	3.9	5.3	6.2	6.6	6.8	6.0	6.4	5.2	6.1	6.1	6.3
Nedbank	12.7	13.3	14.0	14.1	14.0	14.4	14.6	13.5	14.2	14.8	15.7	15.2	21.3	22.2	19.1	19.7	18.7
Standard	19.3	19.7	19.6	21.8	22.1	23.2	21.9	20.9	19.8	19.7	20.1	20.3	24.2	27.7	27.5	27.6	28.3
Big 5	68.8	79.8	80.8	85.4	85.7	86.6	83.8	79.0	80.2	81.8	86.0	83.0	91.2	95.3	94.7	96.8	74.4
Big 4	67.7	78.5	79.3	83.2	83.0	83.7	79.9	73.7	74.0	75.2	79.1	76.9	84.8	90.1	88.6	90.6	68.2
Others	31.2	20.2	19.2	14.6	14.3	13.4	16.2	21.0	19.8	18.2	14.0	17.0	8.8	4.7	5.3	3.2	25.6
No of Banks																	
Registered Banks	35(11/35)(8)	35	35	34	39	40	39	41	41	39	28	20	18	17	17	17	17
Branches of Foreign Banks				4	6	9	12	12	15	15	14	15	15	15	15	14	14
Controlling Companies	26	17	23	23	27	26	32	34	40	38	37	27	19	16	15	15	15
Local rep offices	30	31	33	40	46	58	60	58	57	61	56	52	44	44	47	43	46

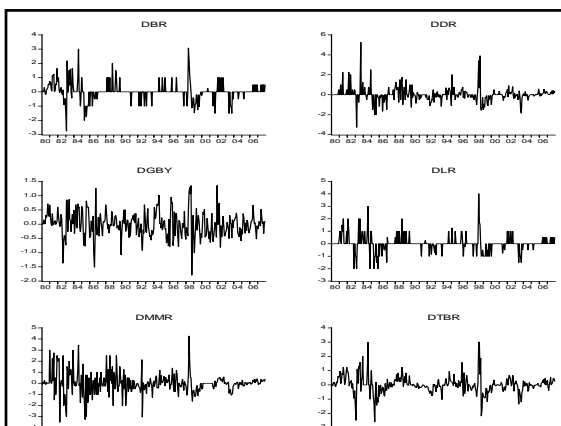
Note: The big 5 are ABSA bank, FNB, NedBank, Standard Bank and Investec, while the Big 4 excludes Investec.  
Sources: Data were computed based on Annual Reports of Banking Regulation of the SARB

#### 4: Summary

- 1980 were 50 registered banks, increased to 60 in 1989 and dropped to 35 in 1991. By 2007, only 17 registered banks.
- **Concentration in the banking sector:** indicated by total assets controlled by major banks.
- 1991- the Big 5 controlled 68% of total assets of banking sector.
- Mergers and takeovers occurred such that by 1994, asset share 83%.
- By 2003, 90% and 2006 = 97%
- **1991- 2007, average share of asset of the Big 4 was 80%.**

#### Data description

- Monthly from Jan 1980 – Dec 2007 IMF International Financial Statistics CD ROM May 2008.
- 6 interest rates:
  - Reserve Bank (repo) rate (BR)
  - Money market rate (MMR)
  - Lending rate (LR)
  - Deposit rate (DR)
  - Treasury bill rate (TBR)
  - Government bond yield (GBY)
- 3 types of analysis – entire sample, 5 MP regimes, 6 year rolling window.



#### Methodology

- Asymmetric error correction model used as in Scholnick (1996) following Hannan and Berger (1991) and Neumark and Sharpe (1992).
- Eq1 
$$MR_t = \alpha_0 + \alpha_1 BR_t + \varepsilon_t$$
- **Step I:** Testing for stationary of the series using the DF-GLS test, also Ng and Perron test.
- Non-stationary series but with the same order of integration are used to estimate the long-run function.

## Methodology

- Where cointegration is found, ECM of the following form is estimated in order to examine the short run dynamics.

- Equation 2:

$$\Delta MR_t = \delta_0 + \delta_1 \Delta MR_{t-1} + \beta_1 \Delta BR_{it} + \phi EC_{t-1} + \sigma_t$$

- $\beta_1$  gives us the SR pass-thru.
- Symmetric mean lag:

- Equation 3:  $ML = (1 - \beta_1) / \phi$

## Methodology

- Asymmetric ECM: Eq 4

$$\Delta MR_t = \delta_0 + \delta_1 \Delta MR_t + \beta_1 \Delta BR_t + \phi_1 EC_{t-1} + \phi_2 EC_{t-1} + \sigma_t$$

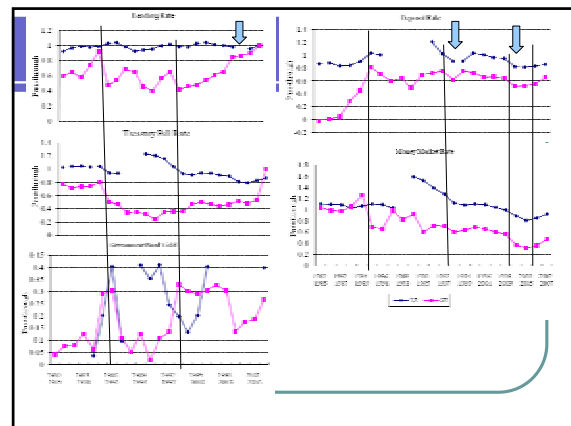
- Asymmetric Mean Lag:

- Eq5:  $ML^+ = (1 - \beta_1) / \phi_1$

- Eq6:  $ML^- = (1 - \beta_1) / \phi_2$

## Results: Long-run PT

- With the exception of GBY, the long-run PT of all the interest rates are quite high, hovering around one.
- this suggests almost one-for-one PT in the long-run for either the regimes or the rolling window and the full sample.
- The long-run PT to the GBY is far lower than the other interest rates.



## Mean adjustment lags [ML]

- Overall, the mean lag results mirror the spread between the long-run and short-run PTs
- Lending Rate  $\Rightarrow$  low mean lags of less than a month throughout the periods
- DR, TBR and MMR  $\Rightarrow$  the adjustment is slower than the LR and often above one month
  - Consistent with the results of the long-run and short-run PTs, there is some evidence of a decline in the speed of adjustment in recent years
- GBY takes almost 7 months to fully adjust to changes in repo rate!

## Asymmetric adjustment

- **Lending rate:**
- The results suggest existence of asymmetry in lending rate adjustment with the null hypothesis of no asymmetry being accepted in only six out of 21 cases where cointegration was found
  - In the 15 cases where the results suggest asymmetric adjustment in the lending rate, there are some indications that the direction asymmetry has changed over time
  - In the rolling windows between 1980-1985 and 1983-1988, the lending rate was significantly more rigid in downward adjustment than upward adjustment, thus lending support to a collusive behaviour of banks.
  - In contrast, in the rolling windows between 1993-1998 and 1997-2002, the lending rate was more rigid in adjusting upward, thus supporting the theory of negative customer reaction.

## Asymmetric adjustment

- **Deposit rate**
- In instances where there is statistically significant asymmetric adjustment, the evidence suggests that there is rigidity in deposit rate upward rather than downward adjustment, thus confirming the evidence of collusive behaviour among banks in the deposit market.
- Thus, in contrast to the lending rate adjustment that supports the negative customer reaction hypothesis, the deposit rate's adjustment suggests collusive behaviour among banks.

## 7. Summary of findings and policy implication

- First, the high speed of adjustment of market interest rates to monetary action during periods of market-oriented reforms suggests that interference with the market forces may further slowdown the PT process, thereby reducing the effectiveness of monetary policy.
- Second, the stable and high speed of PT to the prime lending rate of commercial banks may be an indication that targeting the prime lending rate of commercial banks (the practice in the previous regime) may enhance the effectiveness of monetary policy than the current practice of targeting the prime interbank lending rate.
- Moreover, the declining effect of the monetary transmission through the stages of the transmission mechanism as shown by the weak PT to the capital market interest rate is an indication that it may take an extensively long time before the effect of a monetary policy action, such as changing the repo rate, can be felt in the ultimate goal.

## Summary of findings and policy implication

- The finding that banks may be behaving in a collusive manner in the deposit market may call for some form of intervention to ensure that depositors are protected against exploitation by banks. Any exploitation in form of low interest earning on deposits may further worsen the already low saving habit of the population
- Finally, the finding of a significant negative effect of political and economic uncertainties and financial crisis on the efficiency of the transmission mechanism has serious implications in the context of the current global financial crisis and the consequent economic slowdown, which is also affecting South Africa

Thank you!