Seigniorage Compensation for Swaziland and Policy Implication.
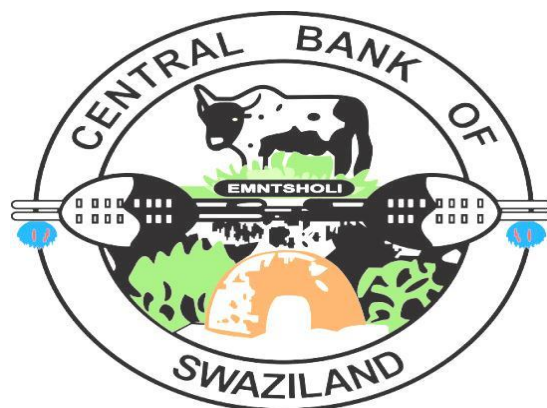
Mkhonta, Simiso F.

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Seigniorage Compensation for Swaziland and Policy Implication.

Simiso F. Mkhonta

Simiso Mkhonta is senior economist at the Central bank of Swaziland[1] Economic Policy, Research and Statistics Department, Policy Analysis and Macroeconomic Analysis Division.

Abstract

Seigniorage compensation for Swaziland is found to depend on Emalangeni in circulation in Swaziland besides the obvious effect of an increase in ZAR/Rands in circulation in South Africa. Where a percent increase in Emalangeni in circulation in Swaziland at time t decreases seigniorage compensation by 0.186 percent and a percent increase in Emalangeni in circulation at time t-1 decreases seigniorage compensation by 0.134 percent through both substitution and base effects respectively. Thus a conservative monetary policy is recommended to sustain seigniorage upwards, to arrest inflationary pressures and sustain the fixed exchange rate.

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[1] Umtsholi Building, Mahlokohla Street Mbabane, Swaziland Tel (00268) 2408 2000 Fax (00268 2404 0063 Email:info@centralbank.org.sz.

1. Introductory background.

Swaziland through the Central Bank receives seigniorage compensation according the Trilateral Agreement between the Common Monetary Area (CMA) which came into existence in 1974. Before the Trilateral Agreement existed an informal arrangement existed among Botswana, Lesotho, South Africa and Swaziland. Botswana though opted out of the formal monetary arrangements that were signed thereafter. The Trilateral Agreement comprised Lesotho, South Africa and Swaziland. The agreement culminated into a Multilateral Agreement when Namibia joined in 1992, shortly after attaining independence.

From 1st April 1986 Swaziland ceased the legal status of the   South African Rand (ZAR) under Article 5 of the Bilateral Monetary Agreement between The Government of the Kingdom of Swaziland and The Government of the Republic of South Africa. According to Thembi Langa (1986) huge depreciation of the ZAR contributed to Swaziland ceasing the legal status of ZAR in Swaziland. Consequently, the obligation of South Africa to make compensatory payments to Swaziland in terms of Article 6 of the Trilateral Agreement ceased on 31st March 1986.

Even though the ZAR stopped to be legal tender in Swaziland in April 1986, the Central Bank maintained the parity peg to the ZAR and economic agents continued trading in the ZAR in the domestic economy unchanged at the rate of one is to one. On 19 September 2003 the legal status of the ZAR was reinstated hence the payment of seigniorage compensation.

2. Seigniorage Calculations.

The seignorage compensation is calculated using the formula stated in the agreement as two thirds of X percent of Y, where X represents the annual yield to redemption at which most recent issue of long-term domestic South African Government stock was offered prior to the 31st day of December immediately preceding the annual payment date and Y represents the relevant agreed amount of ZAR calculated to have been in circulation in the respective contracting parties[2].

The formula for the calculation of seigniorage can be mathematically represented as follows:

$$Y(T) = Y(T)_{t-1} + Y(T)_{t-1} * (1.2/100) \, \Delta RSA(R)_t$$

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[2] Namibia, Lesotho and Swaziland.

$$Y(R) = Y(T) - Y(E)\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (1)$$

Where: Y(R) = total Rands in circulation.

Y (T) = total notes and coins in circulation.

Y (E) = total emalangeni in circulation.

$\Delta RSA(R)_t$ = average growth in rand notes and coins in circulation.

$$Compensation = 2/3* (X*Y(R))\dots\dots\dots\dots\dots\dots\dots\dots\dots (2)$$

And X is the returns on South African government bonds.

3. Analysis of the Movements in Seignorage Compensation.

Seignorage compensation for Swaziland has been generally on the increase before cessation of the Rand as legal tender in Swaziland and after resumption of compensation payment as seen in the graph 1 below.
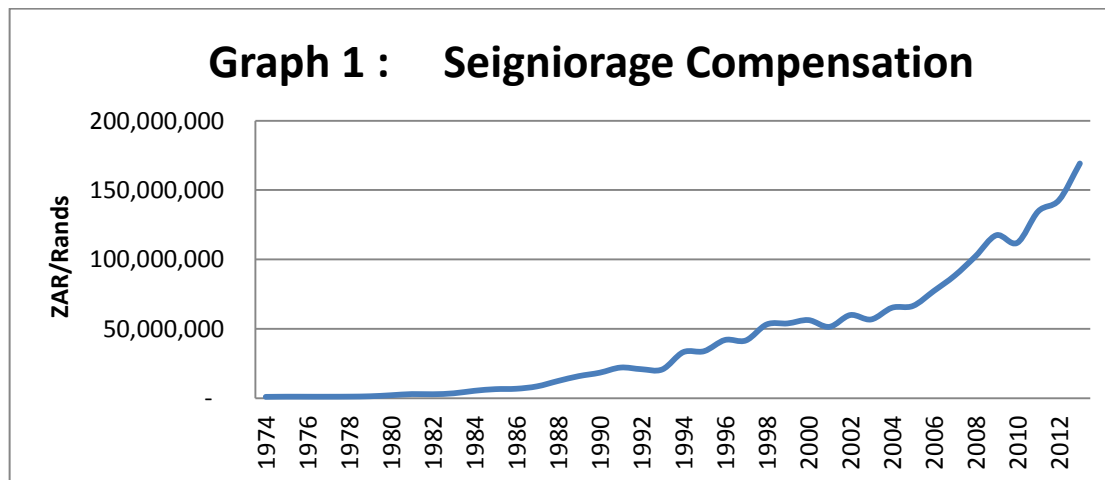
Source: Central bank of Swaziland Quarterly Reviews

The formula used to calculate seigniorage compensation has remained unchanged. Driving the increase in the seigniorage compensation was increased ZAR in circulation in South Africa, increase in Emalangeni/SZL in circulation at time t and an increase in Emalangeni/SZL in circulation in time t-1 as shown in equation 3 below,

$$\%\Delta C_t= f\ (\alpha_1\ \%\Delta RSA(R)_t\ -\ \alpha_2\%\Delta Y(E)_t + \alpha_3\%\Delta Y(E)_{t-1} + \alpha_4\, dX +\varepsilon)\ldots\ldots\ldots\ldots\ldots\ldots(3)$$

where;

$\%\Delta C_t=$ change in seigniorage compensation in percents

$\%\Delta RSA(R)_t\ =$ change in South African Rands in circulation in South Africa in percent.

$\%\Delta Y(E)_t\ =$ change in Emalangeni in circulation in percent.

$dX\ =$ percentage change in Returns on SA government bonds (10yrs and over).

These are the variables that interplay to give seignorage compensation given the parameters of 2/3 and 1.2 percent in the formula.

3 (i) Expected Signs of Variables.

- ➢ The higher the growth in Rands/ZAR in circulation in South Africa the higher the percent change in seigniorage compensation.
- ➢ The higher Emalangeni/SZL in circulation at time t the lower the percent change in seigniorage compensation
- ➢ The higher Emalangeni/SZL in circulation at time t-1 the higher will be the percent change in seigniorage compensation.
- ➢ The higher the returns on South African bond the higher the seigniorage compensation.

3(ii) Estimation Results

$$\%\Delta C_t= 1.615\ (\%\Delta RSA(R)_t)\ -\ 0.186\ (\%\Delta Y(E)_t)\ -0.134\ (\%\Delta Y(E)_{t-1}) +8.849(dX) +\varepsilon$$

$$(0.\ 000)\qquad (0.1553)\qquad\qquad (0.0871)\qquad\qquad (0.\ 000)$$

$$R^2 = 0.924721$$

$$DW= 2.3846$$

3(iii) Results Interpretation.

The results show no autocorrelation due to a Durbin Watson statistics of approximately 2. The explanatory power of the regression is high at 0.92 and there is only one insignificant variable at 15 percent attesting to the absence of multicollinearity. Heteroscedacity is not a problem for estimation but would cause problems when forecasting has to be done.

The seigniorage compensation formula has two parameters as stipulated above being a factor of 1.2 percent of change in Rand/ZAR in circulation and a factor 2/3 of the Rand/ZAR in Swaziland. The variables results are as follows;

- ➢ 1% change in growth in Rand/ZAR in circulation leads to a 1.615 percent change in growth in seignorage.
- ➢ 1% growth in Emalangeni/SZL in circulation at time t reduces the change in seigniorage by 0.816 percent and it is not significant but becomes significant with a lag. This is because Emalangeni in circulation are subtracted from total money in circulation in Swaziland including Rands which is grown annually by the percent change in Rands in circulation in South Africa (see equation 1). The variable captures the substitution effects of Emalangeni against Rands as they grow within the Swaziland economy subject to the level of economic activity.
- ➢ 1% growth in Emalangeni/SZL in circulation at time t-1 reduces the change in seigniorage by 0.134 percent because it is part of the base for the Rands and Emalangeni in the following year. Emalangeni at t-1 with a negative sign therefore show that monetary policy in Swaziland is generally conservative through the base effect of Emalangeni at t-1.
- ➢ 1% growth in returns on South African bond lead to 91.151/ (100-8.849) percent reduction in seigniorage compensation. Note should be taken that South Africa pays the opportunity cost of the Rand circulating locally had they been invested in South African bonds (refer to equation 2).

Appendix 1 graph 2 shows a fall in the growth of seigniorage as the growth in Rand/ZAR in circulation in South Africa grow at a dampening rate. The falling increase in Emalangeni in circulation also leads to a dampening of the growth in seigniorage compensation.

4. Substitution and Base Effects of Emalangeni in Circulation($Y(E)_t$).

Rands/ZAR trickle into the domestic economy mainly through export trade with South Africa and SACU receipts and the rate at which they circulate in the domestic economy is determined by the competing volume of Emalangeni in circulation. With high volumes of Emalangeni /SZL in circulation economic agents have the leeway of setting the Rand/ZAR aside for transactions in the South African Economy leading to a fall in seigniorage. More in particular with low economic growth being experienced an increase in Emalangeni in circulation coupled with an increase in Rands will lead to Rands reverting back to South Africa due to shortage of goods to chase domestically. The free flow of capital between South Africa and Swaziland dampens any inflationary effects that may arise from the inflow of the Rand/ZAR. This effect can be referred to as the substitution effect. The variable, $(Y(E)_t)$, therefore has assumed the expected sign of negative, meaning that Emalangeni growth have the tendency to push Rand/ZAR out of the domestic economy. This suggests that a somewhat expansionary monetary policy is in play.

However, the variable $Y(E)_{t-1}$ captures the base effect by either increasing or decreasing the base for Rands and Emalangeni in circulation for the following year. Thus this variable captures the base effects and as with the results it shows that base effects have been low, attesting to conservative monetary policy, as shown by the negative sign of $Y(E)_{t-1}$ in the results.
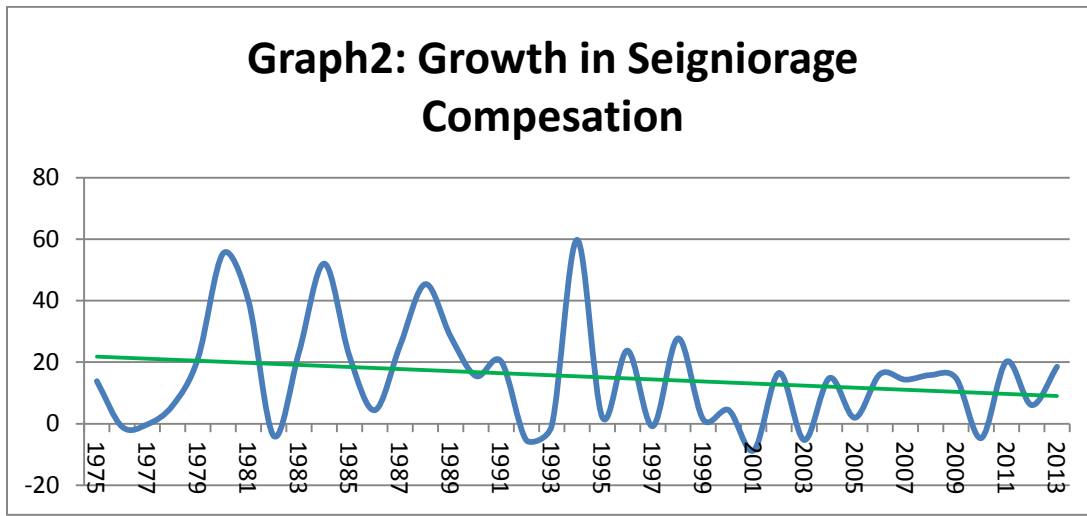
Thus from the seigniorage formula and results, it is found that $Y(E)_t$ shows expansionary monetary policy through the substitution effect by replacing Rands/ZAR and reducing seignorage compensation in process yet $Y(E)_{t-1}$ shows conservative monetary policy by at the same time by reducing seigniorage compensation through lower base effects. Ultimately both results sum up to shows that under the fixed exchange rate regime the monetary authorities pursue prudent monetary policy.

Total money in circulation in Swaziland including Rands has increased at a decreasing rate as shown in graph 5 and 6 leading to an decreasing rate of increase in seigniorage compensation and as the change in Rands in circulation South Africa effect outweigh the substitution and base effects Emalangeni in circulation in Swaziland seigniorage is set to be on a sustainable upwards trajectory.
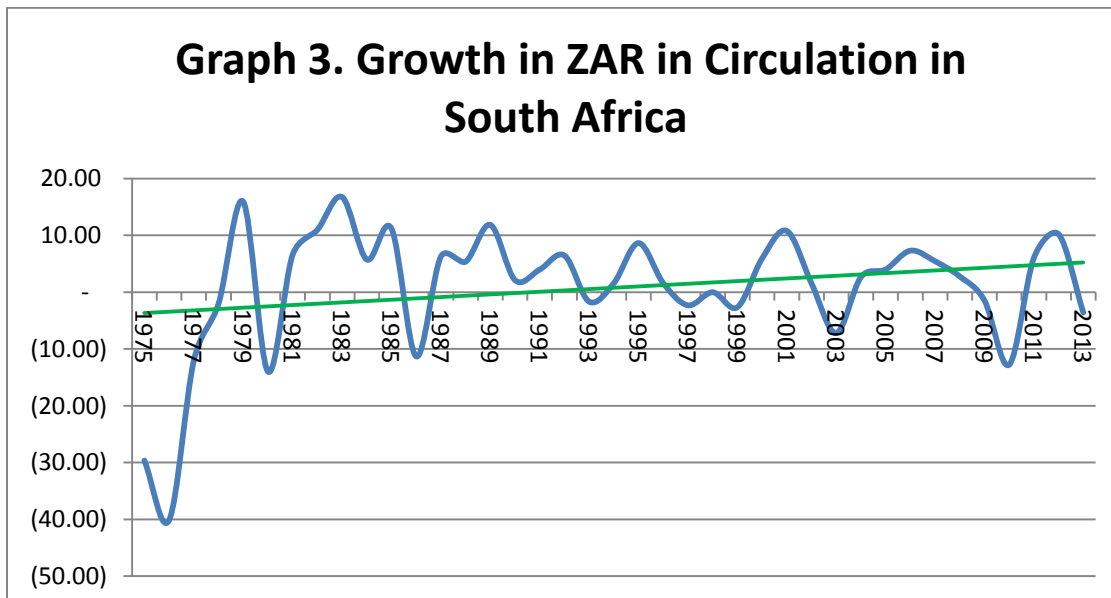
5. Policy Recommendation

Due to the above results a conservative monetary policy is recommended to contain the increase in Emalangeni/SZL in circulation for the seigoniorage compensation to be sustainable on an upward trajectory. This is because of the negative relationship Emalangeni/SZL in circulation has with a growth in seigniorage compensation both at time t and t-1. Thus there ought to be a steady balance in the growth in Emalangeni/SZL in circulation to avoid a sub-optimal growth in seignoirage compensation both through the optimization of the sum of the substitution effect and the base effect so that growth in and Rands/ZAR and returns on South African government bonds outweigh the effects. The growth in Rands/ZAR in circulation in South Africa and returns of South African government bonds are taken purely as exogenous factor and thus regarded as given. Swaziland has fairly pursued conservative and prudent monetary policy as shown by falling growth in Emalangeni/SZL in circulation in graph 4. This has resulted in the seigniorage compensation increase of from **R142 745 148.00** in 2012 to an estimated **R169 189 971.00** in 2013. A conservative monetary policy thus is recommended to sustain the upward trajectory of seigniorage compensation, contain inflation and sustain the fixed exchange rate regime.
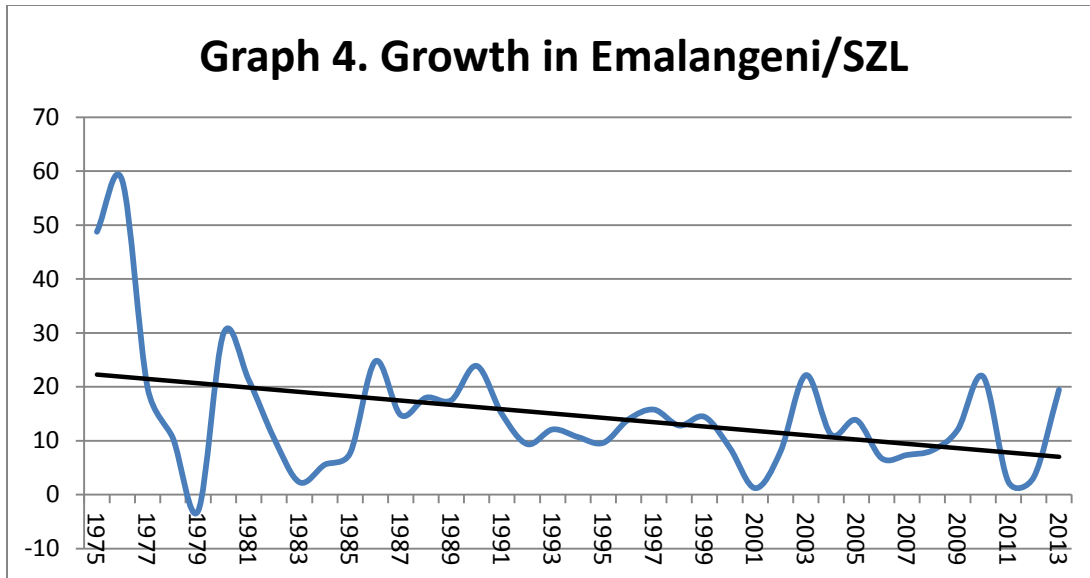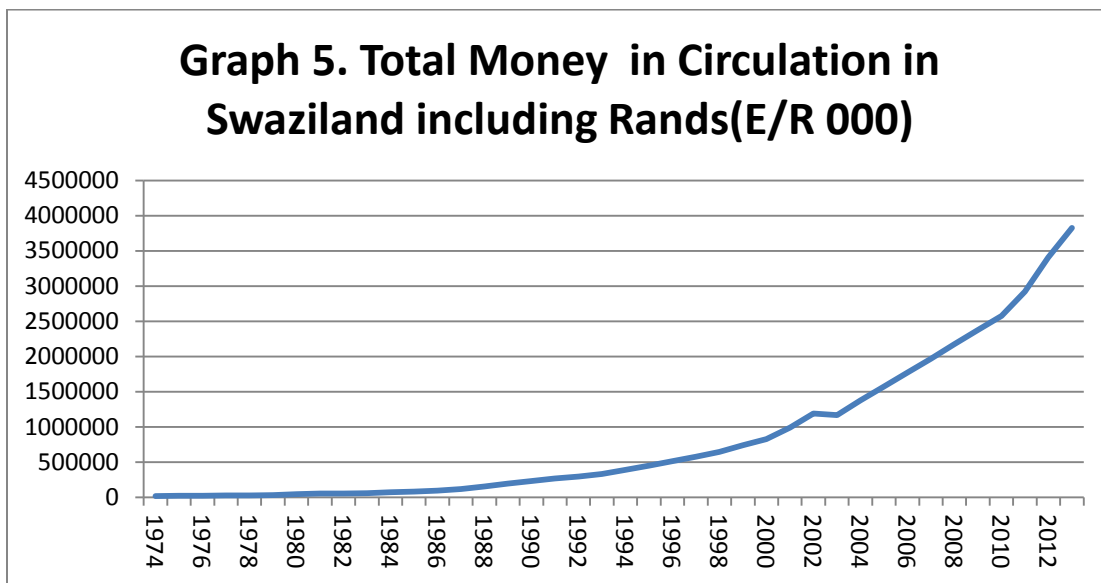
Appendix

Graph2: Growth in Seigniorage Compesation

Source: Central Bank of Swaziland Quarterly

Graph 3. Growth in ZAR in Circulation in South Africa

Source: Central bank of Swaziland Quarterly

Graph 4. Growth in Emalangeni/SZL

Source: Central Bank of Swaziland Quarterly

Graph 5. Total Money in Circulation in Swaziland including Rands(E/R 000)

Source: Central Bank of Swaziland Quarterly

Graph 6. Growth in Total Money in Circulation in Swaziland including Rands
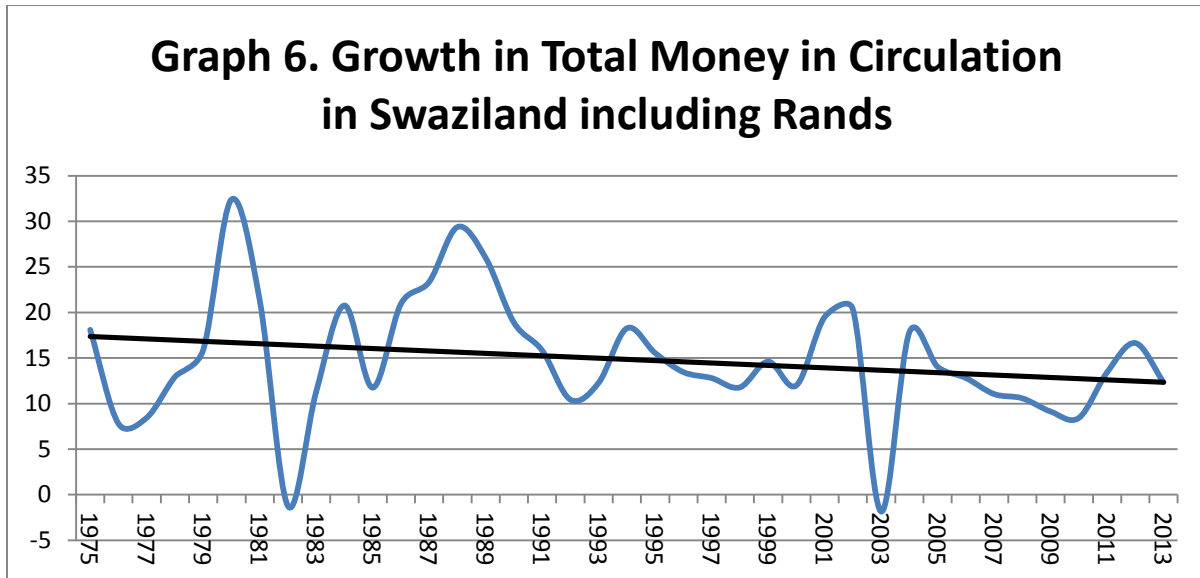
Source: Central bank of Swaziland and South African Reserve Bank

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