

## Executive Summary

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### The Impact of Exchange Rate Movement on Employment: The Economy-wide Effect of a Rand Appreciation

Date completed: July 2006

#### 1 Key words

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Exchange rate; exchange rate volatility; employment; appreciation; depreciation; sector shifts; computable general equilibrium (CGE) model; partial equilibrium approach; commodity price boom; price adjustment; import; export; manufacturing sector; mining sector; gross domestic exports; GDP; Dutch-disease; economy; commodity-induced appreciation on the Rand; trade; simulation; relative price; labour regulations; skilled labour; market structure; spending effect; resource movement effect; non-tradable goods; tradable goods; input-output structure; Social Accounting Matrix; consumption; economic policies; tax incentive

#### 2 Commissioned and supported by

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The study was not externally commissioned, but was based on a proposal from the Human Sciences Research Council (HSRC) and funded by the British High Commission. The study was supported by a technical reference group consisting of experts from the National Treasury and the South African Reserve Bank.

#### 3 Conducted by

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The study was conducted by Mr. Stewart Ngandu, Chief Researcher at the Economic Performance and Development Research Programme at the HSRC. Contact: Tel: +27 (0)12 302 2432; Email: [sngandu@hsrc.ac.za](mailto:sngandu@hsrc.ac.za).

The research was conducted in 2006 and was part of a bigger research project. The final report was submitted in July 2006.

#### 4 Background to evaluation

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There has been some debate on the impact of exchange rate volatility and levels in South Africa. This is a particular concern as South Africa needs to dramatically expand sustainable employment, and at the same time, raise value-added in its goods and services production. These are not necessarily complementary objectives in the context of a minerals exporting economy. Surprisingly little has been written about the relationship between exchange rates and employment. Hence the HSRC conducted a study funded by the British High Commission to analyse the possible impact of an appreciation of the Rand on employment<sup>1</sup>.

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<sup>1</sup> Ngandu, S. (2006) "The Impact of Exchange Rate Movements on Employment: The Economy-wide Effect of a Rand Appreciation".

## 5 Overall purpose of the evaluation

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The purpose of the study was:

- To analyse the possible impact of an appreciation of the Rand on employment; and
- To assess how different sectors of the economy were affected by a mineral induced appreciation of the currency.

## 6 Scope of the evaluation

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The scope of the study was to determine how different sectors of the South African economy are affected by a mineral induced appreciation of the Rand.

Topics covered included the recent history of the South African exchange rate movement, literature review on the relationship between exchange rate volatility and trade, between the exchange rate movement and employment, literature review on commodity prices and the 'Dutch Disease' type effect, and the impact of the simulations of mineral induced appreciation of the Rand.

## 7 Evaluation questions

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The research covered the following topics:

- The relationship between exchange rate volatility and trade;
- The relationship between the exchange rate movement and employment; and
- The economic impact of the simulations of mineral induced appreciation of the Rand.

## 8 Evaluation methodology

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### 8.1 Type of evaluation

This research was an economic study that aimed to determine the economic and employment impact of a mineral induced appreciation of the Rand.

### 8.2 Methodology

The study applied the following methodology:

1. Literature review of the relationship between trade and the exchange rate and then on the relationship between the exchange rate and employment;
2. Application of a computable general equilibrium model to investigate the impact of a commodity induced appreciation of the Rand on employment in different sectors of the South African economy.
3. Regular consultation with the Technical Reference Group consisting of experts from Treasury and the South African Reserve Bank;
4. Presentations of findings of the study at a seminar and a round table discussion. Participants included key stakeholders from National Treasury,

the Reserve Bank, the Department of Trade and Industry, banks, academic institutions and businesses.

The research applied a computable general equilibrium model for data analysis as well as statistical analysis for descriptive data.

### 8.3 Data collection

The study applied secondary data and data sets. It did not conduct any primary data collection other than consultation with the Technical Reference Group and key stakeholders at the seminar and round table.

## 9 Findings

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Through the study process, the following findings were identified:

### *Impact on outputs and employment in various sectors*

The study showed that the impact on output and employment varies across sectors. Broadly speaking, outputs of tradable sectors fall and those of non-tradables rise. The exception is the booming sector i.e. mining. Sectoral employment changes tend (with a few exceptions) to follow the same pattern. The net effect on employment is positive. Low skilled employment rises by 0.9% and skilled by 2.0%; high skilled employment is fixed by assumption. This effect is not surprising, i.e. the positive shock to the terms of trade has a positive net effect on the economy since a favourable terms of trade shift makes the economy richer (as well as appreciating the exchange rate).

### *Impact on exports*

The study found that there is a net appreciation (7.5%) of the real exchange rate. Exports fall in all sectors. The appreciation has reduced the Rand price of exports relative to sales in the domestic market. Producers thus switch market destinations away from the world market. The exception is the booming sector, mining, which continues to benefit from the initial price increase (although by less than it would have without the appreciation). The largest decreases are in labour intensive intermediate, consumer and capital goods (-8.7%, -6.4% and - 7.2% respectively). The patterns of both domestic demand and imports also change. This can affect the possibilities of selling in the domestic market and therefore the possibility of switching away from exporting. This effect will differ from sector to sector.

### *Impact on imports*

The study revealed that as imports become cheaper due to the appreciation more of them are purchased. All sectors experience increased import penetration, except mining (the booming sector) and capital intensive intermediate goods. The largest increases are in capital-intensive consumer goods (29.7%) and low skill intensive intermediate services (18.7%), although several other sectors see imports rise by more than 10%. These changes in imports affect domestic sales, since they compete for the same market. However, both are also affected by changes in demand arising from macroeconomic effects (arising from both the increased employment and changes to savings required by the adjustment process) and from changing factor prices and uses (and therefore changing factor incomes).

### *Impact on GDP*

A look at gross domestic exports (GDP) and its components shows that total absorption increases by 3.2%. Under the assumptions outlined above, all of this

increase comes from private consumption, which rises by 4.9% - investment and government consumption are fixed in real terms. This rise in domestic absorption is offset by falling exports (-3.1%) and rising imports (7.9%), so that the net effect on GDP is a small increase (0.2%). Thus, although tradable output (largely manufacturing) falls, the effect on GDP is more than offset by the rise in non-tradable production (largely services).

#### *Impact on private consumption*

The rise in private consumption occurs because there is a rise in household incomes. The total income of skilled and high skilled labour both rise (by 1.3% and 3.3% respectively), as does capital income (3.2%). One might expect this to be true of low skilled labour as well, since more is employed and sectoral wages are constant. However, it turns out that the changing pattern of employment reallocates low skilled labour from higher to lower wage sectors, so that despite the increased employment, its total income falls (-0.2%).

#### *Impact on household income*

These changing factor incomes feed into changing household incomes. All households experience a rise in income, but there are higher percentage increases for richer households. Rich households derive more of their income from capital and from high skilled labour, which are the factors most benefited by the commodity price boom.

#### *Impact tradable and non-tradable sectors*

With respect to factor and skill intensity, it seems as if the effects of the appreciation are determined by whether the sector is tradable or non-tradable, rather than whether it is labour or capital intensive. Output declines in both labour and capital intensive tradable sectors, and rises in both low-skill and skill intensive non-tradable sectors.

#### *Impact on the real product wages*

Change in relative factor prices underlie the resource reallocations described above. Although wages of low-skilled and skilled labour are constant in terms of the consumer price index, they change relative to sector prices. These real product wages fall in the non-tradable sectors and rise in tradable sectors. The real product wage of high-skilled labour rises in almost all sectors. Finally, there are changes in the returns to capital in each sector. Since capital is sector specific and fully employed, there are fairly large changes in its returns. These fall in all tradable sectors, in some cases by as much as 28%. They rise in all non-tradable sectors and in the booming sector.

## **10 Conclusions and recommendations**

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Based on the findings, the following conclusions and recommendations were made:

- The impact of an appreciation generates interesting industry and sectoral effects. There is a clear bias against manufacturing which exports a large proportion of its output while those sectors that do not rely on exports seem not to be affected by the appreciation.
- The sharp contrast in the performance of the different sectors in the model tells a very standard booming sector story with strong 'Dutch Disease' implications. The experiments conducted involved increasing the world export price of three commodities, gold, other mining and coal. This has

several effects on the economy: the exchange rate appreciates and both GDP and employment rise marginally.

- The performance of GDP and employment is driven mainly by the boom which creates a wealth and a spending effect. This spending effect (one of the principal effects of a boom the other being the resource movement effect) can be expected to dominate in the South African case. The major impact of the boom and the resultant higher incomes lead to extra spending on all goods (consumer boom) which raises their price. With a fixed price of tradables on world markets, the extra spending raises the relative price of non-tradables, resulting in a further appreciation of the real exchange rate. We then have labour shifting from the tradables sector to the non-tradables sector resulting in a contraction of the non-booming tradables sector.
- The commodity boom has a positive impact on the economy in the short run. Thus one would expect to see a rise in GDP and possibly in employment. The exchange rate appreciation reflects this boom: the Rand gets stronger because the economy is doing well. However, when one looks behind these aggregate figures one sees the potential for Dutch disease effects in the longer term. Almost all traded sectors (except of course the ones receiving increased prices for their exports) are affected negatively by the appreciation. In contrast, non-traded sectors experience a boost in face of the appreciation.
- A concern is what the position of the economy will be when the commodity price boom is over. Either capital will move out, or future investment will be directed towards other sectors. This suggests that if the boom is sustained there will be negative impacts on the capacity of these sectors. For them to revive at the end of the boom will require investment, not simply more intense use of existing capacity.
- The results also raise questions about appropriate growth path for South Africa. If one is trying to get onto a higher labour-absorbing growth path on the basis of growth in higher value goods and services for global markets, is it sensible that the sectors producing these goods are subject to the vagaries of world mineral market prices?
- The study recommends that rents from resources can be used to diversify the rest of the economy given supportive industrial policies.
- One way of achieving this diversity is through tax incentives to assist non-resource based sectors. To reduce vulnerability from the country's main resource export, good fiscal policy becomes very important and the objective should be to keep the budget in balance across the commodity-price cycle. It should be based on conservative assumptions for the major export commodities, as such a budget that balances only because of high commodity prices is therefore not in balance.
- One of the fears that arise from an appreciation of the exchange rate in a country with high unemployment is that firms will import more capital and as such substitute it for labour thus worsening the unemployment problem. However, the increased revenues accruing to government during the commodity boom can be used to import capital goods that cannot be made locally such as computer equipment for schools, medical equipment for public hospitals, and backbone communication infrastructure. The advantage with this kind of investment is that it improves the competitive position of the economy and generates little exchange rate appreciation.

## 11 Evidence of use

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The study was one of the first economic studies of the impact of exchange rate movements on employment in South Africa. No formal reflective process has been conducted on what could be done to strengthen future study. It is possible that some government departments had utilised the findings and recommendations produced. The researcher had received emails indicating this. There was also evidence on the HSRC website that the paper was being utilised however it was not clear by whom. Unfortunately, it was not possible to locate relevant interviewees from government, and therefore the evidence of use of the study could not be confirmed.

## 12 Note on quality of report

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The study received an overall score of 4.00 in the Evaluation Quality Assessment Tool [EQAT].

The strengths of the study lie in a skilled researcher from HSRC conducted the research and that a technical reference group consisting of experts from Treasury and the Reserve Bank was consulted throughout the study. Also the findings were presented and comments received at a seminar and a round table by key stakeholders from the academic institutions, government, banks and businesses. The report is well written and presented, although there are some gaps such as the absence of a clear Theory of Change and no clear sections on the limitations of the study and recommendations. Also, there was no plan for capacity building of partners responsible for the study. Finally there was no planned process for the use of the findings from the study.

Despite these gaps the research was well executed.