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Trade policy, fiscal constraint and the long term impact of government expenditure

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**Introduction:**

Many studies have evaluated the impact of trade liberalisation in South Africa. Some of them evaluate the impacts on poverty and inequality. Our study proposes to evaluate the consequences of trade liberalisation when fiscal constraints and budget discipline lead government to reallocate the fiscal adjustment induced. More precisely, we will focus on the consequences on the education system and the consequences of students' performances at school in long run.

We will present three scenarios of total trade liberalisation and we will analyse the effects of this change on students' behaviours via relative wages and public spending level. Thus, students would be more incentive to go on studying if skilled wage rate is increasing, or entering the labour market if this wage rate decreases. In the same way, a decrease in public education spending would decrease the quality of education and then lead students to leave school.

The paper is presented as follows: section 1 presents the situation of trade liberalisation in South Africa. Section 2 shows the state of the art of CGE dealing with trade liberalisation in South Africa. Sections 3 and 4 respectively present the model and data used. Section 5 analyses the results and section 6 concludes.

**1-Trade liberalisation in South Africa:**

According to Bell (1992, 1997), between 1925 and the 1970s trade policy was broadly geared towards import substitution. In the 1980s there were attempts to open the economy through export stimulation policies. Quantitative restrictions continued to be reduced throughout. Since 1994, South Africa is a WTO member and has reduced most of its quantitative restrictions, except in agriculture sector. Then the country proposed a decrease in its tariffs within five years except on textile and automobile sectors. We can add that South

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Africa has reduced the number of tariffs lines; As Heraut (2005) points out, in the late 1980s, South Africa was the developing country with the highest number of tariffs lines (more than 13000). Many improvements have been realised, reducing the number of tariffs lines to six, and replacing quantitative restrictions on agriculture by tariffs equivalents.

Next table shows the relations between South Africa and the rest of the world. It points out the penetration rate of imports as well as the export intensity. Moreover, it gives export intensity in sectoral production, and the share of each sector in total exports. It is relevant to notice that the two thirds of "other mineral" supply are imported. Moreover, radio equipments and transports equipment also strongly depend on imports. Given this structure, one can think that an increase in imports due to a decrease of tariffs will have strong consequences in these sectors. However, the three main sectors in total imports are the sector of other non iron mineral products(Othnon, 21.2%), the Radio sector (14.7%) and the footwear sector (14.3%).

South Africa exports most of its production of mineral and precious metal, but we can also highlight its exports in hotel and restaurant sectors (14.5%), or in other industries (19.1%). Precious metal and mineral represent 65.2% of total exports of the country.

**Table 1. Structure of the South African trade**

| Secteurs | Part des Importations dans l'offre totale(en %) | Part des importations dans les importations totales (en %) | Part des exportations dans la production totale (en %) | Part des exportations dans les exportations totales (en %) |
|---|---|---|---|---|
| AGRICULTURE | 6.8 | 1.9 | 15.6 | 4.4 |
| COAL | 5.7 | 0.3 | 50.6 | 5.3 |
| GOLD | 0.0 | 0.0 | 92.8 | 14.7 |
| OTHER MINING | 64.5 | 7.1 | 81.4 | 16.0 |
| FOOD | 6.3 | 4.4 | 7.8 | 5.1 |
| TEXTILE | 12.8 | 2.9 | 10.1 | 2.0 |
| FOOTWEAR | 20.5 | 14.4 | 3.2 | 0.1 |
| PETROL | 20.1 | 1.1 | 15.0 | 9.4 |
| OTHER NON IRON MINERAL | 13.7 | 21.2 | 10.6 | 0.8 |
| STEEL | 33.9 | 2.8 | 32.0 | 19.0 |
| ELECTRONIC EQUIPMENTS | 25.3 | 8.7 | 11.9 | 1.0 |
| RADIO | 58.0 | 14.7 | 12.8 | 0.9 |
| TRANSPORT EQUIPMENT | 35.8 | 8.3 | 16.0 | 4.7 |
| OTHER MANUFACTURIES | 15.7 | 0.0 | 19.1 | 7.7 |
| ELECTRICITY | 0.0 | 0.0 | 1.7 | 0.3 |
| WATER | 0.1 | 0.0 | 0.0 | 0.0 |
| CONSTRUCTION | 0.6 | 0.2 | 0.1 | 0.0 |
| TRADE | 0.1 | 0.0 | 0.1 | 0.1 |

| | | | | |
|---|---|---|---|---|
| HOTEL and RESTAURANT | 11.8 | 1.5 | 14.5 | 1.8 |
| TRANSPORT SERVICES | 16.8 | 7.2 | 9.6 | 3.6 |
| COMMUNICATIONS | 5.3 | 1.2 | 3.3 | 0.7 |
| FINANCIAL INTERMEDIATION | 2.0 | 1.2 | 3.7 | 2.0 |
| REAL ESTATE | 0.4 | 0.1 | 0.1 | 0.0 |
| BUSINESS ACTIVITIES | 3.7 | 0.8 | 2.0 | 0.4 |
| Total | | 100.0 | 100.0 | 100.0 |

Source: Computations from SAM, 2001

An external shock on mineral price would have strong effects on the economy. However, South Africa also exports transports services, transports equipments and other industries. As previously mentioned, South Africa has already cut its tariffs. Table 2 gives us the remaining protected sectors.

**Tableau 2. Droits de douane par produits**

| Commodities | AGRICULTURE | OTHER MINING | FOOD | TEXTILE | FOOTWEAR | PETROL |
|---|---|---|---|---|---|---|
| Tariffs (in %) | 0.63 | 0.02 | 6.95 | 8.76 | 26.44 | 5.19 |

| Commodities | OTHER IRON NON MINERAL | STEEL | ELECTRONIC EQUIPMENTS | RADIO | TRANSPORT EQUIPMENT | OTHER MANUFACTURIES |
|---|---|---|---|---|---|---|
| Tariffs (in %) | 14.95 | 2.29 | 10.58 | 3.38 | 4.83 | 6.73 |

Source: Computations from SAM, 2001

Then, we can point out that footwear sector is heavily protected with a tariff rate of 26.44%. Then, other mineral and electronic equipments follow. These commodities will be sharply vulnerable to a tariff cut. Moreover, these sectors use a lot of intermediaries' consumptions, meaning that a decrease in the production of these sectors will have consequences on other sectors, notably trade and petrol sectors.

**2- Computable General Equilibrium for South Africa :**

Many CGE models have been built for the South African economy, but to our knowledge, no one deals with affirmative action issues. Most of the models contribute to analysing the impact of trade liberalisation or world price negative shock impacts. Thus, Gelb et al (1992) developed a dynamic one sector CGEM to evaluate the impact of a negative

external shock and the setting of a program of government stimuli. Moreover, many experts of the World Bank have developed CGEM (Van der Mensbrugghe (1995, 2005), Devarajan and Van der Mensbrugghe (2000)) to understand the impacts of trade liberalisation and increases in public spending. Thurlow and Van Seventer (2002) propose a standard CGE modelling framework for South Africa.

Cockburn et al (2005) evaluate gender discrimination on labour market after trade liberalisation. They develop a CGE that takes into account household's home production. They find that trade liberalisation has a better impact on men's salaries than on women's, due to the sectoral employment repartition. Thurlow (2006) finds that trade liberalisation has affected men and women differently and that it has worsened inequality in the country.

Heraut (2005) analyses the impact of trade liberalisation using all the information contained in household's survey. He finds that whatever the closure, neoclassical or Keynesian, trade liberalisation seems to be pro-poor. Employment creation in the formal sector seems to be the cause of this decrease on poverty. In terms on inequality, intra group inequalities decrease whereas inter group increase.

McDonald and Van Schoor (2005) and Essama-Nssah et al. (2007) use a CGE macro-micro framework to understand the structural and distributional consequences of oil price increases for South Africa. Fofana et al. (2007) follow this approach and show that oil price increases would have negative effects on the economy and welfare.

Chitiga and Mabugu (2007) analyse the impact of protection in textile sector on poverty levels, using a dynamic micro simulation CGEM. They find that increasing protections in this sector is not good for the whole economy, welfare decreases and poverty increases.

**3-The model**

Our model is inspired by Decaluwé et al (2001)3 model. We have changed some assumptions for this model. First, our model has two production factors, capital and labour, but to take into account South Africa's specificities, we have disaggregated labour by population group and skill levels so that we end up with twelve different labour categories. Each activity uses both production factors. However, we assume that there is unemployment on each labour market

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[3] Chapitre 9 of Decaluwé, Martens et Savard (2001)

We have also disaggregated households such that we have households by population groups (African, Coloured, Indian and White). Then, we have specified households' consumption with a Linear Expenditure System (LES) of Stone Geary (1954) function, and we assume that transfers between institutions are significant. Finally, we consider that South Africa can not export as much as it wants by introducing an export demand function with determined elasticity.

We also assume that aggregate capital-skilled labour has a CES between capital and skilled labour, but is presumed to be very low (quasi-Leontief, at 0.1). This indicates that capital and skilled labour are complementary: some kinds of physical capital (such as a new type of electronic machinery) cannot be used to produce anything in the absence of skilled people.

Figure 1 : Structure of the production and labour market
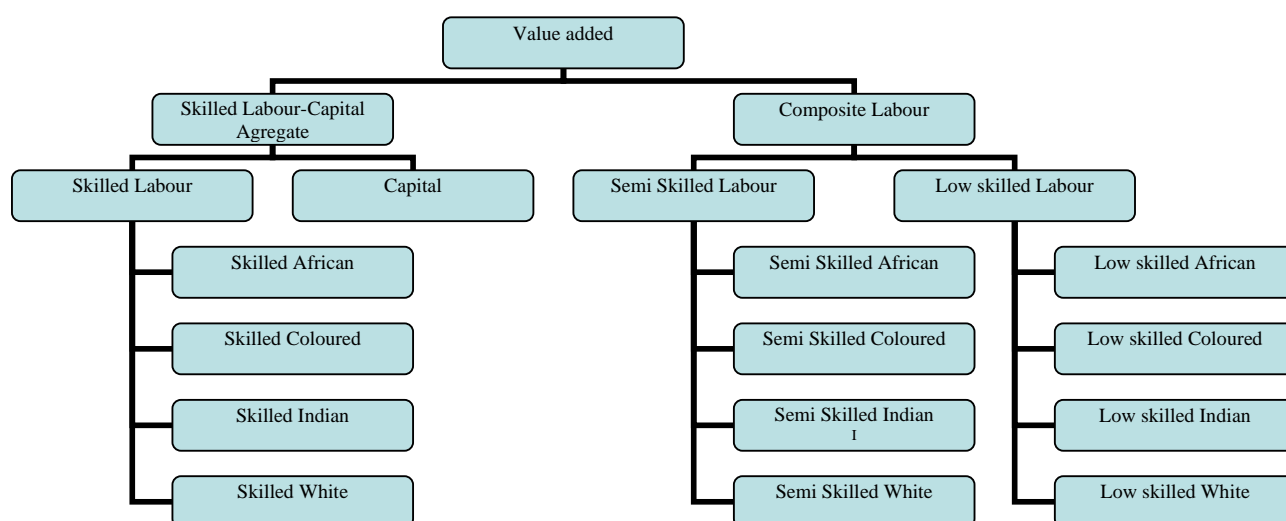


In order to model student behaviour, we will use a logistic function as suggest by Bourguignon et al (2006). Students are classified into three educational sectors (primary, secondary and post-secondary). Each year, a student graduates (dip), drops out (aban) or repeats a grade (red). Moreover, we assume that when a student graduates, she can go on studying (contdip) or enter the labour market (quitdip).

What determines the student behaviour?

We assume that a student's decision is influenced by three variables:

(a) The quality of the school, a variable which is directly linked to government spending. Indeed, if the government decides to increase the number of primary school

teachers, we would expect improved quality due to a lower student to teacher ratio. Such an improvement in school quality would offer students more incentive to stay in school.

(b) The wage differential between semi-skilled and low-skilled labour. If the mean semi-skilled wage is sufficiently higher than the low-skilled one, the expectation of a higher income would act as an incentive for the student to continue their studies.

(c) The wage differential between semi-skilled and skilled labour. Continuing on to more advanced schooling would become more attractive if the mean skilled wage is sufficiently higher than the semi-skilled one.

Two other components of the intermediate variable each represent the future opportunities of earnings offered by more education. Evaluating the mean wages was accomplished by computing the balanced means by skill levels. It is through the variations of these variables that we will analyse the impacts of differential wages on students' behaviours.

These changes in student's behaviours have impacts on labour supply. Indeed, we assume labour supplies depend on labour supply the previous year plus the volume of students that enter the labour market depending on his success at school. For instance, skilled supply will be determined by skilled supply at the previous year plus students that graduated tertiary and decide to enter the labour market.

## 4- Data

### 4.1 Parameters of the model

We use the same Social Accounting Matrix as Cockburn et al (2005) based on 2001 data. We took the same elasticity and Frisch parameter as them. For Armington elasticities, we use Lee Gibson (2003).

To insert education sectors, we disaggregate the "general government" sector into three education sectors (primary, secondary and post-secondary) and government without education, called SERN in our work. We made this disaggregation using UNDP data for 2001.

The model has 28 activities, which 24 are tradable. These 24 commodities can be sold on domestic market or be exported. The whole production of non tradable sectors (general government + education sectors) is consumed by government.

To calibrate unemployment rates, we use the Labor Force Survey (2001) and use a wage curve (Blanchflower and Oswald, (1995)) given the elasticities computed by Kingdon and Knight (2006).

## 4. 2 - Calibration of education behaviour for base year

In order to determine students' behaviours in the base year we presume that a student may graduate (*dip*), drop out (*aban*) or repeat (*red*). When a student graduates, he/she may continue studying (*contdip*) or decide to leave school (*quitdip*). We use 2001 data to determine the share of students in each of these groups. Our work is based on numerous studies and reports, which have been used to help calibrate the results as close as possible to the true values.

Anderson et al (2001) observe that Indian and White students have the same graduation rate in the younger cohorts. Louw et al (2006) use the 2001 census to estimate that the share of the cohort born in 1980, which is 21 years old in the base year. The portion of this cohort finishing primary school is about 96% for Indian and White, 89% for Coloured and 82% for African. These data were also used by Van der Berg in 2007, for the Ministerial Committee on learner retention in South Africa. He also highlights the magnitude of this difference in primary school achievement: White students are fourteen percentage points ahead of African students.

The dropout and repetition rates also need to be determined. Case and Deaton (1999) show that the main problem for African students in primary education is not dropping out, as is often argued, but is repeated grades. They estimate that an African gets 0.61 attainment years of schooling per year, whereas this figure is 0.76 for Coloured, 0.88 for White and 0.95 for Indian. These figures lead to the conclusion that repeating grades is a bigger problem than dropping out in primary school. The 2001 "Education at a Glance" report reaches a similar conclusion.

Since the sum of the graduation, repetition and dropout rates must equal one, the information that the African graduation rate is 0.82 can be used to infer a repetition rate of 0.12 and the dropout rate is 0.06. The Coloured graduation rate is 0.89, leading to a repetition rate of 0.08 and dropout rate of 0.03. Indian and White are assumed to have the same behaviour for primary school, with a graduation rate of 0.96, a repetition rate of 0.03 and a dropout rate of 0.01.

According to the Department of Education (2007), Van der Berg (2007) and OECD (2008), 95% of students continue on after graduating from primary school. We use this figure to calibrate the behaviour contdip, which measures the share of students who continue on after graduation. The assumed options for a graduating student are to continue in school (contdip) or to leave the education system and enter the labour market (quitdip), the sum of which is equal to 1. To our knowledge, there are no studies indicating that this share differs across population groups. Thus, quitdip is assumed to be 0.05 for each population group in primary school.

Having defined the behaviours of interest for primary school, it is time to move on to secondary school. The pass rate on the Matric exams is used as the graduation rate in secondary school. The results shows that the graduation rates for African and Coloured students are structurally low, at 0.28 and 0.37, compared to 0.72 for Indian students and 0.69 for White students (Louw et al, 2006; DoE, 2007). According to these authors, inequality in education is greatest in secondary school.

We have based our work on studies by the DoE (2007) and Louw et al (2006 to determinate the dropout and repetition rates in secondary school. They suggest that the dropout rate is high for Coloured students because they tend to enter the labour market earlier than other population groups. This is probably because this group is more urbanised than African students and is more in touch with labour markets. The DoE states that the mean dropout rate is 18%, which is assumed to be higher for African and Coloured students than for Indian and White students. Moreover, according to this report, we know that the repetition rate is still high for African students, and that repeating grades is often a prelude to dropping out. However, Louw et al (2006) estimated that the average dropout rate was 25%. A similar evaluation is used to measure the dropout rates for each population group.

We fix the graduation rate for African students in secondary school, while the repetition rate is 0.40, and the dropout rate is 0.32. For Coloured students, the graduation rate is 0.37, the repetition rate is 0.30 and the dropout rate is 0.33. For Indian students, the graduation rate is 0.72, the repetition rate is 0.17 and the dropout rate is 0.11. Finally the graduation rate is 0.69 for White students, and their repetition and dropout rates are 0.18 and 0.13.

The share of graduating students who continue on to post-secondary school is relatively low, particularly among Coloured graduates, who are more likely to enter the labour market than other groups. Louw et al (2006) show that there is a strong difference in White

and Indian behaviours, the latter of which appear to be deterred by high post-secondary school fees. The portion of African secondary school graduates who continue (contdip) is 0.6, and those who graduate but do not continue with schooling is 0.4. The shares are respectively 0.4 and 0.6 for Coloured, 0.7 and 0.3 for Indian, and finally 0.9 of White students continue after graduating secondary school, leaving a portion of 0.1 who choose otherwise.

We now have to calibrate data at the post-secondary level. This data is not available, but the figures can be reasonably deduced using the dataset that provided the information for primary and secondary school students. According to Van der Berg (2007), White students perform better than the others at the post-secondary level, which has a higher dropout rate than in earlier schooling, especially for Africans. Throughout their school years, South African students can repeat grades a maximum of four times. According to the OECD (2008), 15% of students fall into this category and are thus ineligible for any further schooling. This information indicates that there are many drop out in post secondary levels du to this law.

The post-secondary graduation rate for African students is 0.35, while the repetition rate is 0.25 and the dropout rate is 0.4. The repetition rate is also high for Coloured students, at 0.28, but the graduation rate is 0.42, whereas the dropout rate is 0.3. For Indian students, the graduation rate is 0.77, the repetition rate is 0.17 and the dropout rate is 0.2. Finally, the graduation rate is 0.88 for White students, while the repetition and dropout rates are 0.03 and 0.10. Post-secondary education is the last stage of formal schooling, such that *quitdip* is one, and *contdip* is zero for each population group.

Previous studies not only allowed us to build the behaviour database, but were also useful in making it consistent with the 2001 labour market. Table 18 summarizes student behaviours: note that these behaviours can change across time depending on education policies.

**Table 3 : Students' behaviours in the base year**

| Behaviour by cycle | | African | Coloured | Indian | White |
|---|---|---|---|---|---|
| Graduate (dip) | Primary | 0.82 | 0.89 | 0.96 | 0.96 |
| | Secondary | 0.28 | 0.37 | 0.72 | 0.69 |
| | Post-secondary | 0.35 | 0.42 | 0.77 | 0.88 |
| Drop out (aban) | Primary | 0.06 | 0.03 | 0.01 | 0.01 |
| | Secondary | 0.32 | 0.33 | 0.11 | 0.13 |
| | Post-secondary | 0.40 | 0.30 | 0.20 | 0.10 |
| Repeat (red) | Primary | 0.12 | 0.08 | 0.03 | 0.03 |
| | Secondary | 0.40 | 0.3 | 0.17 | 0.18 |
| | Post-secondary | 0.25 | 0.28 | 0.03 | 0.03 |
| Leave diploma (quitdip) | Primary | 0.05 | 0.05 | 0.05 | 0.05 |
| | Secondary | 0.40 | 0.60 | 0.30 | 0.10 |
| | Post-secondary | 1 | 1 | 1 | 1 |
| Continue diploma (contdip) | Primary | 0.95 | 0.95 | 0.95 | 0.95 |
| | Secondary | 0.60 | 0.40 | 0.70 | 0.90 |
| | Post-secondary | 0 | 0 | 0 | 0 |

For each level of education and for each population group, a student can graduate (dip), repeat (red) or drop out (aban) such that the sum of these three shares is equal to one. The decision to leave (quitdip) or to continue (contdip) in the education system after graduating are also presented. For example, among Indian students in primary schooling in the base year, 96% graduate, 3% repeat and 1% drop out.

Once the data base built we calibrated the logistic function following Bourguignon et al (2006) assumptions.

## 5- Scenarios and results

We intend to evaluate the impact in short and long term three total trade liberalisations and its impact on economy given government policies. In the first scenario, the governement does not offset the decrease in its tariffs income; in other words, government savings is endogenous and there is no fiscal policies set up. In the two other scenarios, we assume that government savings is fixed. To maintain its income tariffs constant, in the second scenario we assume that government sets up an indirect tax on products. In the third scenario, we assume that government does not want to increase fiscal pressure on households, and so, to maintain its deficit constant, government reduces its public spending.

The aim of this paper is to show that a decrease in public spending in education[4] will have strong consequences in long run on education system, the labour market and finally the whole economy. The target of this third scenario is to understand the impacts that a decrease in public spending would have.

Before going through the results, it is relevant to be clearer on the hypothesis we maded.  To analyse the impact of a decrease in tariffs rate, we use a dynamic recursive CGEM. The exchange rate is fixed and is the numeraire of the model. World prices are fixed. Labour supplies are fixed at the first period and then depend on students achievements. Capital demand is specific and exogenous at the first period, and then grows given the new investments made in the activity[5].

**4-1: In short term**

4-1-1: Impacts on government's income and the relations with the rest of the world :

The removal of tariffs leads, *ceteris paribus*, to two direct consequences:

-On the one hand, receipts will decrease. This decrease in the receipts leads to a decrease in government's income as well as a decrease in its savings if any mechanism is set up to balance the cut of duty receipts. That is what happens in the first scenario, government's income decreases by -3.1% and its savings damages strongly (-16.6%). In the two other scenarios, by hypothesis, public deficit remains constant.

-On the other hand, import prices are decreasing and this decrease will be stronger for former protected sectors. We expect that imports would increase, notably in footwear sector (+39.05%), in textile sector (+7.2%) and in electronic equipments (+4.6%). Moreover, the price of imports is decreasing, and this fall off will be greater for former protected sectors.

Former protected sectors will have to adjust to price decreasing, and so, they will have to decrease their price to remain competitive. Given that, we expect a decrease of production in some of these sectors, as well as a decrease of the working force.  The decrease of the production in these sectors will decrease in the same proportions intermediaries consumptions, that will have a strong impact for trade sector.

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[4] Government will reduce its spending in the four activities  in proportion of the initial repartition.
[5] We choose Bourguignon *et al* (1989) specification for the accumulation demand function

Current account balance is fixed by hypothesis, the increase in imports must be joined to an increase of exports. We also assumed that South Africa can not export as much as it wants, meaning that to export more, South Africa has to be more competitive. In other words, local producers have to decrease their prices.

4-1-2: Impacts institutions' income and total investment:

We saw that producers have to be competitive to export more. Thus, whatever the scenario, it infers that the work force decreases. It comes that wage rates are decreasing and unemployment rates are increasing.

Given the decrease in the wage rate, households' income decrease as well as their savings, which is a proportion of their disposable income.

In the second scenario, we introduced an indirect tax on products. In other words, households do not really benefit from the decrease of import prices because they have to pay a new tax. In this scenario, the decrease of households' consumption is greater than in the other.

Firm's income is mainly composed by capital income. We know that, given the numbers of firings, capital is relatively more abundant than labour. In the same way, the price decrease leads to a decrease of marginal productivity of capital; its return rate is decreasing. Thus, firm's income is decreasing as well as its savings. Whatever the scenario analysed, total investment is decreasing (Table 4), and the decrease is stronger in the first scenario given the damage of public savings.

**Table 3 : Impact on total investment in % for the 3 scénarios**

|                              | Scénario 1 | Scénario 2 | Scénario 3 |
|------------------------------|------------|------------|------------|
| Variation of total investment | -22.6%     | -9.02%     | -5.3%      |

4-1-3: Impact on education system:

Previous effects are traditionnaly observed in short term for a trade liberalisation. Our aim is to analyse what happens on education system, and notably if government has to reduce its spendings in education to keep is deficit constant. Moreover, we know that trade liberalisation can have effects on wage rates (due to labour market effects:hiring or firings), and these changes can have effects on students behaviours. Indeed, as wage rate variations create

incentives for students to go on studying or to enter the labour market, it is interesting to see how trade liberalisation affects students' behaviours.

We saw that students' behaviour is determined by the supply of education services (assumed exogenous in the two first scenarios), wage differential between skilled and semi skilled, and wage differential between semi skilled and unskilled. As education supply is assumed fixed in the two first scenarios, only these two variables can infer any changes on students' behaviours.

In the two first scenarios, public spending is fixed at the first period and then increase at the population rate. Effects on education in these two scenarios are very low: given the decrease of mean wage rate, and the fact that mean skilled wage rate decreases more than mean semi skilled wage rate, we can notice that the share of students that leaves secondary to enter the labour market is increasing slightly.

In the third scenario, we assumed that government keeps is deficit constant by decreasing its public spending. But we know that public spending in education plays a key role in students' behaviours. Thus, to balance a loose of duty receipts, government reduces its spending, that leads to a decrease of the quality of education in each sector (-2.77%). This decrease of the quality is followed by an increase of drop out and repetition rates and a decrease of graduation rate for each level of education. In the same way, the share of students that leave school after primary and enter the labour market is decreasing, whatever the population group (see Table 5).

**Table 4 : Impact of trade libéralisation on students' behaviours in short term (scenario 3[6])**

| Behaviour by cycle | | African | Coloured | Indian | White |
|---|---|---|---|---|---|
| Graduate (dip) | Primary | -0,24 | -0,11 | -0,10 | -0,10 |
| | Secondary | -1,43 | -1,35 | -0,42 | -0,58 |
| | Post-secondary | -1,43 | -1,19 | -0,39 | -0,23 |
| Drop out (aban) | Primary | 3,33 | 3,33 | 10,00 | 10,00 |
| | Secondary | 0,94 | 1,21 | 2,73 | 2,31 |
| | Post-secondary | 1,00 | 1,33 | 1,50 | 2,00 |
| Repeat (red) | Primary | 0,0 | 0,0 | 0,0 | 0,0 |
| | Secondary | 0,50 | 0,33 | 0,00 | 0,00 |
| | Post-secondary | 0,40 | 0,36 | 0,00 | 0,00 |
| Continue          diploma | Primary | -0,11 | -0,11 | -0,11 | -0,11 |

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[6]We only present results for the third scenario given that changes in the two first are really very low.

| (contdip) | | | | | |
|-----------|-----------|-------|-------|-------|-------|
| | Secondary | -0,67 | -1,25 | -0,43 | -0,11 |

In the short term, effects of total trade liberalisation are harmful for the South African economy as in education sectors. If in the first scenario the damage of public spending make available savings resources decrease, in the two other scenario, the firing lead to a decrease in wage rate and so a decrease in households income. Effects on education are greater in the third scenario, the decrease in public spending is added to the changes in relative wages.

Let's see what happens in long term:

4-2 : In the long term

Do students' behaviours change in the long run? In other words, wage variations are they such that they affect students' behaviours? To answer, let's see what occurs in productive sectors after a total remove of tariffs.

In the first scenario, we have the same mechanisms as in the short term. Thus, the loss of receipts from duties generates a decrease in government's income, as well as its savings. This has a very negative impact on total investment, as expected. As far as education sectors are concerned, linked to a fall of skilled wage rate, the share of students that go on tertiary (to become skilled) is decreasing.

In the second scenario, effects on education are very similar to what observed previously. Indeed, the share of students that goes on after primary and secondary decrease slightly. It is actually in the third scenario that effects on education are stronger. Regarding the rest of the economy, we have the same effects as in the short run.

Education sector faces in long run to a sharp decrease of its resources, meaning that the number of teachers is decreasing, or schools are closing. This decrease leads a decline of quality in education system. With fewer teachers for pupils, classroom not improved, students are not incentive to stay at school. As in short run, we observe that drop out rates and repetition rates are increasing, and graduation rate is decreasing.

**5- Conclusion :**

The aim of this paper was to determine if trade liberalisation had an impact on students' behaviours in order to go on studying or entering the labour market. We wanted to analyse this impact through two transmission channels, differential wage rates and public spending in education. In the two first scenarios, only wage rates changes are taken into account. We found that given the decrease of skilled wage rate, the share of students that would leave school after secondary and enter the labour market would increase. In the third scenario, the impact on wages and the impact on public spending lead to big changes in students' behaviours. Indeed, to maintain its deficit constant, government decreases its public spending (in education sectors as well as in other public sectors). This decrease generates a strong decrease in school quality making students drop out or repeat. We can conclude that the variations of public spending have a stronger effect on students' behaviours than wage rate changes. Then, given our results, we can say that a trade liberalisation policy that would lead government to decrease its public spending would have harmful consequences on education sectors as well as the whole economy.

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