

Zimbabwe: Investments, credibility, and the dynamics following trade liberalisation

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Abstract

A CGE model for Zimbabwe is used to analyse the short and medium-run dynamics following trade liberalisation. Special focus is on the investment response and on the possibility of reform reversal. When the reform is credible the export sector will invest, while investments will be withheld if reform is not credible.

The strength of the investment response proves to be of significance both in the short and the medium run. In the short run increased investments implies a worsening of the trade balance. In the medium run there are gains as increased investments in the exportables sector implies growth and improved trade balance.

Finally, the model illustrates inconsistency problems and the possibility of self-fulfilling failure of reform. Both are factors that conceivably have contributed to the failure of Zimbabwe's trade reform. *Keywords: Trade reform, credibility, Zimbabwe, CGE model*

1 Introduction

In 1990, Zimbabwe started the implementation of its structural adjustment programme ESAP (Government of Zimbabwe 1991). The programme contained all the standard elements: Deregulation of markets, privatisation, fiscal discipline, and trade liberalisation. The ambitions of ESAP have to date only to a limited extent been carried out. The fiscal deficit is for example still far from being in accordance with the programme. The liberalisation of trade, on the other hand, has been implemented somewhat faster than planned.

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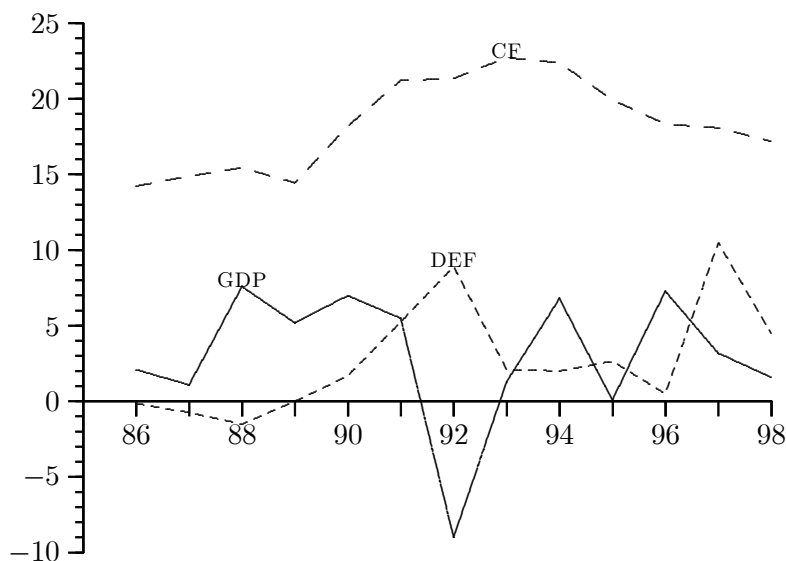
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Trade liberalisation is a key element of the structural adjustment efforts all over the developing world. In the standard neo-classical theory of trade the comparative advantage rationale for free trade follows more or less by assumption. In the later years, the literature on endogenous growth has resulted in additional arguments for free trade. These arguments build on assumptions about spillover effects and economies of scale or benefits from increased technological progress and innovations, as competition increases. It is further assumed that gains are realised when trade is liberalised, as trade controls themselves take up scarce government resources and entails unproductive rent-seeking.

The liberalisation in Zimbabwe started in 1990 by a stepwise dismantling of a detailed system of multiple exchange rates, export bonus schemes, quotas, and licenses. By 1994, one year ahead of the plan most controls were removed and the exchange rate was uniform.

Despite these dramatic changes in trade policy, Zimbabwe's economic performance of the 90's does not show significant improvements. Figure 1 illustrates the development

Figure 1: Zimbabwe - Main economic indicators, percent



of GDP growth rate, the current account balance, DEF, and fixed capital formation, CF, both in percentage of GDP.¹ The growth in the reform years has not improved compared to the late 80's, even when ignoring the drought year 1992. The current account balance has deteriorated as the slight surplus of the 80's has been turned to a deficit, most dramatically following the food imports in the drought years. A temporary

¹The data sources are Central Statistical Office (1990 and 1997), Barclay's Bank of Zimbabwe and the World Bank.

positive sign was the rise in the investment ratio; possibly reflecting improved investment opportunities. This increase in investments has not led to increased production and capacity utilisation has declined. The reduced capacity utilisation can be attributed to the reduction in domestic demand following the removal of trade protection. The shift in demand, away from the domestic producers, also explains the deteriorating current account balance. Additional evidence of this demand shift is a 12% drop from 1990 to 1996 in the production index for the manufacturing sector. Hence, Figure 1 can be read as a condensed representation of the standard story about short-run contraction following trade liberalisation: When trade controls are removed imports explode while exports, constrained by capacity, only grow modestly. Hence, the current account balance deteriorates and total production drops. Over time, provided that new investments are taking place in the exporting sectors, there may be improvements in the current account balance and possibly stronger growth. In Zimbabwe, however, this optimistic scenario has not materialised. The investment response seems only to have been temporary and the economy has deteriorated year by year after the start of reform.

The reasons for this failure are many; both economic and not the least political. The present work concentrates on the interaction between some important economic and political factors. The analysis contains both results directly relevant for the Zimbabwean experience but also results of a more exploratory nature. I use a computable general equilibrium model to give a stylised analysis of dynamic consequences of trade reform. Special focus is on the investment response, expectations, and the credibility of reform. The work extends the analysis of short-run consequences of reform carried out by Rattsø and Torvik (1998b). In order to study medium run dynamics, I modify the original model by including investment functions and capital dynamics.

The dynamics following trade reform is as follows: Trade liberalisation shifts relative prices in the favour of the export sector, on the expense of the other sectors, leading to immediate contraction and a worsening of the current account balance. As increased profits in the export sector induces investments, the periods following reform shows growth and a gradually improving current account. The investment response, however, is dependent on the credibility of the reform. I.e. whether agents expect that the reform is continued or reversed. As Dixit among others have shown there will be *...a zone of inaction and caution before reorienting capital in response to relative price shifts.* (1989 p.309) Hence, the positive effects of trade reform does only materialise in the long run and only if there is a positive investment response. The investment response, in turn, is

positive only if the reform is perceived as credible. The important question is therefore: Which factors may undermine the credibility of a trade reform? In this analysis I focus on lack of consistency in the reform programme as the reason for a lack of credibility. I.e. if the reform puts stress on fundamental economic and political constraints the reform will be reversed. These constraints may be limitations on acceptable wage and unemployment levels or a balance of payments constraint. The latter constraint, caused by limits to external financing, has proven to be highly relevant for Zimbabwe.

In the spring 2000 Zimbabwe experienced the most serious economic and political turmoil for years. Among other things, an overvalued exchange rate and severe foreign exchange shortage led to a shortage of fuel and electricity and a partial reintroduction of foreign exchange controls. This reversal of the trade reform, due to the foreign exchange shortage, has dramatically reduced profitability in private business. If agents foresaw this development it is no wonder why investments were sluggish throughout the 90's. A low credibility of reform (ex post proven to be well founded) can therefore explain the weak investment response and dismal economic performance in Zimbabwe. In this paper I explore in detail how expectations about reform reversal may affect investments and economic performance. In particular I illustrate how a failure of reform may be a result of self-fulfilling expectations. The argument is as follows: Expectations about future foreign exchange shortages and reform reversal lowers investments and generates subsequently the foreign exchange shortage.

The analysis focuses on trade reform and is not intended to be a detailed evaluation of all aspects of the structural adjustment effort in Zimbabwe. Other dimensions of reform and expectations are taken as exogenous and therefore left out of the analysis. This allows me to quantify the economic consequences of trade reforms in isolation, providing an illustrative exploration of some important mechanisms contributing to the failure of Zimbabwe's trade reform.

The structure of the paper is as follows: Section 2 presents the computable general equilibrium model. Section 3 contains analysis of the dynamics following trade reform. In Section 4 the short run consistency is discussed while Section 5 contains discussion of medium run consistency and the possibility of self-fulfilling expectations. Section 6 contains conclusion and possible extensions. Finally, appendices contain technical documentation.

2 A CGE model of sectoral balance

I use a computable general equilibrium (CGE) model to analyse the interactions between production sectors and the determination of the income distribution. The model is based on a social accounting matrix (SAM) including five production sectors and the four functional income groups: Small scale farmers, unskilled workers, skilled workers, and profit earners. The SAM allows disaggregation of domestic and imported intermediates, final domestic deliveries, and foreign trade. The SAM for 1985 is documented by Rattsø and Torvik (1992) and utilises official data sources such as the National Income and Expenditure Report and the Input-Output Matrix of 1980. The original CGE model is constructed by Davies, Rattsø and Torvik (1994), who apply the model in counterfactual analysis of the sources of growth fluctuation. They also apply the model in Rattsø and Torvik (1998 a and b). In the present version capital stocks are calibrated and investment demand functions are included in order to analyse the medium-run effects of trade liberalisation. The details of the modifications are documented in Appendix B.

The economic adjustment mechanisms are determined by the market equilibrium of the five sectors (numbered 1 to 5) and the macro closure. The assumptions about market clearing are conventional:

1. Food agriculture – exogenous supply, fixed world price, export of residual output
2. Services – cost-plus-pricing, demand determined output adjustment
3. Construction – demand/supply interaction, flex price adjustment
4. Exportables – fixed world price, export of residual output
5. Importables – demand/supply interaction, initially protected, flex price adjustment

The supply side is important for understanding price and output responses. The production technology of construction, importables, and exportables are nested CES functions in skilled labour, unskilled labour, domestic intermediates, imported intermediates, and capital. Skilled labour is in short supply and the wage rate adjusts to achieve equilibrium. Excess supply prevails in the market for unskilled labour and the wage is set exogenously. In each period the sectors have rising supply curves because of fixed sectoral capital stocks. The model includes the following main linkages: (1) Deliveries between sectors of investment and intermediate goods. (2) Income

distribution effects on savings and consumption. (3) Effects from profitability on investment demand.

The original CGE in Davies et al. (1994) contains a stylised modelling of the pre-liberalisation import rationing system: First, available foreign exchange is allocated to satisfy priority needs (investment goods, intermediates for the exportables sector, and food). Second, the importables sector is protected as competing imports is constrained. Third, any remaining foreign exchange is allocated as policy-determined shares (a) to meet requirements of intermediates for construction and importables for imported and (b) to non-competitive consumer imports.

Imported inputs to export production have priority, and as the sector is not rationed in the factor market it has a conventional supply curve determined by marginal cost. The import compression of importables and construction forces these sectors to substitute towards domestic goods, resulting in an inefficient mix of inputs. As a result the marginal cost curve gets a kink, increasing the price, when the rationing starts to bite. Implicit rents are created because of this increased convexity of the marginal cost curve. The import-rationing system also implies protection of domestic final-goods markets. The import compression almost eliminates both importables and non-competitive consumer-goods imports.

In the present specification, the modelling of the rationing system is simplified. The key features of the system are retained by the introduction of price wedges on the price of rationed imports (all imported finished goods and intermediate goods for construction and importables). These wedges are in most respects working as tariffs. As the wedges are mimicking the existence of quotas, however, the rents associated with the wedges are assumed to accrue to the holders of quotas. Hence, the rents from imported intermediates accrue to profit earners while the rents from imported consumer goods accrue to the consumers. This modelling of the rationing system facilitates a transparent analysis of trade liberalisation, as these two wedges capture the tightness of the trade regime.

The investment demand functions in the case of credible reform are conventional, containing positive dependence on the profit rate (see for example Rosensweig and Taylor 1990). This assumption is also standard in much of the neo-Keynesian growth literature (e.g. Robinson 1962).² One justification is that the current profit rate is

²In a developing country like Zimbabwe, an additional mechanism may add to the significance of the profit rate. As pointed out by Taylor (1991), developing countries have often highly controlled

taken as a proxy for Tobin's Q ; the present value of future returns (Tobin 1969). As Keynes said: investors practice is [...]to take the existing situation and to project it into the future, modified only to the extent that we have more or less definite reasons for expecting a change (1936, p. 148). But what are the consequences when investors indeed have a *definite reasons for expecting a change*? Building on Dixit's (1989) argument, the investment response will be weak when the credibility of reform is weak. According to Rodrik: *Trade reform is frequently met with scepticism on the part of private sector. The Argentine reform of the late 1979s, for example, had such low credibility that it is reported many enterprise managers apparently chose not to respond.* (1992 p. 90). A reversal lowers present value of future profits, lowering Tobin's Q . Hence if reversal is expected, Q will be low even though present return is high. The main focus of the paper is the linkage between credibility of reform and investment response. In the analysis I distinguish between two scenarios. One where reform is credible and investment responds and one when reform is non credible and investments do not respond.

Investment goods are supplied by the construction sector, by domestically produced importables, and by imports. Collier and Gunning's (1996) study of African trade liberalisation shows that the investment composition is responsive to shifting relative prices, hence the composition of investment is assumed to show some scope for substitution. The exact specification of investment demand and composition is presented in Appendix B.

The analysis focuses on production capacity and the dynamics in fixed capital stock and leaves out other, possibly important, dynamic effects. The consequences of accumulation of debt and financial wealth on the hands of government, private sector, and the foreign sector are not accounted for. Over time these asset changes will change the flow of interest payments and hence affect income levels and the current account. Moreover, changing wealth will possibly affect the saving/consumption decision directly. Unskilled wage is likely to change over time, depending on the unemployment rate. In addition, given a substantial export growth, the export sector will probably experience declining prices and bump into capacity constraints (e.g. arable land, exploitable mines). Inclusion of these and other dynamic effects could to some extent modify the present medium-run results and improve on the realism. They are left out, however, in order to focus on the important linkage between credibility, investment, and growth.

and/or poorly developed financial sectors. Current profits are therefore the prime source of financing investments.

3 Modelling trade reform

The starting point for the analysis of trade reforms is the Zimbabwean economy of the 80s, characterised by extensive import controls. Further, following the methodology in Collier and Gunning (1992), the simplifying assumption is made that the economy had reached a stationary steady state given the controls. In 1990 Zimbabwe had been through 10 years with a stable control regime and the economic growth was levelling out, hence a steady state assumption seems reasonable.

Instead of calibrating the model to reproduce the actual Zimbabwean development of the 90's, I take the steady state as the benchmark. The benchmark thus represents the hypothetical dynamic path of the economy in the absence of reform. The choice of benchmark can be justified for two reasons. First, I'm concerned with the quantitative effects of the credibility of reform, *ceteris paribus*. The actual level of credibility is unobservable and a well-founded calibration to the actual development would therefore prove difficult if not impossible. Second, the simulated numbers are all reported as percentage deviations from the benchmark. Due to a well behaving model, these ratios are not much affected by the actual choice of benchmark.

Trade liberalisation is modelled as a removal of import controls by setting the wedges to zero from one period to the next. The main consequence of reform is increased imports, reduction in GDP and a worsening of the current account balance. In order to limit the current account deterioration the trade liberalisation can be accompanied by exchange rate depreciation. Again following Collier and Gunning, two stylised regimes are analysed:

1. Fixed exchange rate regime. The current account balance adjusts freely financed by aid and loan.
2. Flexible exchange rate regime. The exchange rate adjusts keeping the current account balance unchanged.

In either regime trade liberalisation has implications for profit rates and hence for investment incentives. The dynamics following reform is determined by whether investments respond to the changing profit rates. Two investment response scenarios, determined by the credibility of reform, are analysed. The two investment scenarios are:

1. Reform is not credible. Investment levels and capital stocks are unaffected by

reform, as it is expected that the reform will be reversed, re-establishing the historic profit rates.

2. Reform is credible. Capital accumulation is endogenous, responding to changes in profit rates.

These two investment scenarios within the two exchange rate regimes define four polar cases. The emphasis on these four cases, each representing a stylised configuration of assumptions, enables a clear-cut analysis clarifying the main alternatives and trade-offs. Actual reforms will as a rule lay somewhere in between these extremes. As in Zimbabwe, trade reform typically entails both depreciation of the exchange rate and a worsening of the current account balance. Reversals do not necessarily imply reversal to the pre reform levels. Partial reversals are often observed and so are reversals that more than offsets the interim reform. In other cases the ‘reversal’ takes the form of failing to implement an announced second stage of reform. Zimbabwe provides examples of several degrees of reversal. The reintroduction of trade controls in 1999-2000 is an example of a partial reversal while the failure to solve the fiscal balance problems is an example of unfulfilled promises.

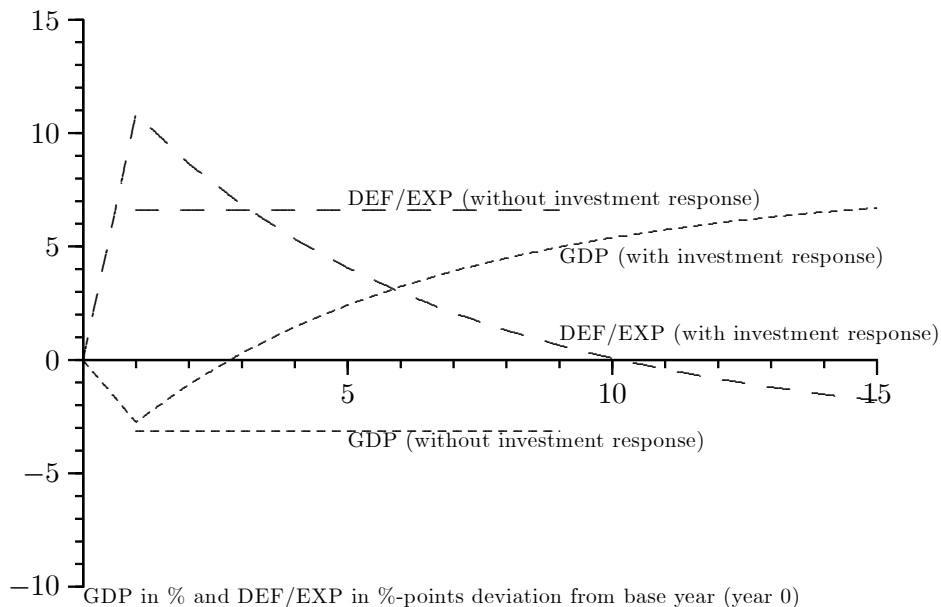
3.1 Fixed exchanged rate

The first regime to be analysed is trade liberalisation in the case of fixed exchange rate. When the exchange rate is fixed the relative price of most imported goods will drop substantially giving a worsening of the current account balance. Hence, this regime requires that sufficient external financing, in the form of loan or aid, is available to fill in the increased deficit. The first scenario to be studied within this regime is the case where investments are fixed.

Not credible reform and no investment response The immediate consequence is an increase in the demand for imports while the demand for importables and other domestically produced goods drops. The developments for production and the current account deficit are captured by the horizontal lines in Figure 2 (the effect on other variables are found in Appendix A). The trade deficit in proportion to exports (DEF/EXP) increases by about 7 percentage points compared to the benchmark. As a mirror image of the deteriorating current account, GDP drops by about 3%, as domestic demand drops.

The increased trade deficit comes as imports increase. Finished goods imports contribute the most with consumer imports increasing by 170% while other finished

Figure 2: Dynamics given fixed exchange rate



goods imports increase by 80%. The import expansion primarily goes at the expense of production in the services and in the importable sector, both contracting by about 7%. Demand for services goes down, as imports increases. Domestic production of importables goes down as a direct result of increased imports. The construction sector, producing investment goods, experiences a slight growth of 1%. The growth comes as the composition of investment turns towards domestically produced goods following the increased access to imported intermediates.³ Agricultural small-scale production is unaffected as its production is determined by capacity. The export sector output grows by 8%, an expansion that is due to reduced cost of production. The reduction in factor prices is a result of two effects: First, the cost of production in the previously rationed sectors decline, reducing the price of domestically produced inputs; second, the over all contraction reduces demand for all factors of production, including skilled labour.

The trade reform also has significant implications for the income distribution. Trade liberalisation cuts away the rents accruing to the holder of import licenses, primarily profit earners. Hence, trade liberalisation implies a shift in the income distribution from profit earners to wage earners. Under the classical assumption, about savings rates being highest for profit earners, effective demand increases. Added to this comes an expansionary effect via the fiscal balance. Profit income is an important tax

³Note that the accessibility of imported investment goods is not affected by reform as these imports had priority in the rationed trade regime.

base for the government. When expenditure is fixed the fiscal deficit increases 1 to 1 when the government revenue declines, following the reduction in profits.⁴ These expansionary income distribution effects moderate the contractionary effect from the increased imports. As already noted, however, the net effect is contraction as GDP drops by 3%.

This scenario was characterised by exogenous investments. The effects are thus comparable to the results in Rattsø and Torvik (1998) capturing the short-run consequences of trade reform.⁵ Without shifts in the capital stock the story ends in the first period after reform. Thus, without investments responding, and as long as other exogenous factors do not change, the contraction and worsened current account balance will be the prevailing effect of trade reform. When reform is credible and investors respond to the shifts in relative prices, however, the dynamics will be different.

Credible reform and positive investment response As a result of the demand shifts following trade reform, also the profit rates change. The expansion in the export sector gives higher profits. In the importable sector, which is most hurt by removal of trade barriers, the profit rate decreases. When reform is credible, investments in each sector are increasing functions of the profit rates. Capital accumulation increases in the export sector and decreases in the importable sector.

The short run effect depends on the total investment demand. The net effect is not a priori clear as investments go up in some sectors and decline in others. Under the present assumptions there is an overall increase in the level of investments. About half the investment goods are imported and increased investments inevitably worsen the current account balance. This effect is clearly illustrated in Figure 2. The dashed curve labelled DEF/EXP captures the dynamics of the ratio of current account to exports. Compared to the case without investment response, the increased imports of investment goods adds 4 percentage points to the worsening of the deficit ratio. The increased investment demand is also partially directed towards the domestic suppliers. This has a significant effect on the construction sector that increases production by 5%. This expansionary effect also shows up in the GDP figures and the recession is moderated by 0.4 percentage points, compared to the case with fixed investments. This slight

⁴This effect, following from the government's short run savings rate of unity, is also pointed out by Krugman and Taylor (1978).

⁵Their contractionary effect is somewhat lower as they assume that savings-rates goes down following liberalisation. The rationale is that a consumption boom follows from the increased availability of imports.

expansion reduces exports, as domestic expansion both results in a real appreciation and increased domestic use of exportables.

In addition to these short-run demand effects, the investment response also affects the dynamics of the economy following reform. The investment response in the export sector is critical for the medium-run dynamics. The export sector, facing a fixed world market price, increases its output year by year as capital accumulates. This growth stimulates the other sectors as both consumption and the supply of intermediate goods increases. Hence, overall GDP grows steadily after the first setback. From year 3 and onward there is an improvement compared to the starting point.

The medium-run (and possibly long-run) result of trade reform when capital accumulation responds, is increased production and improved current account balance. As the liberalisation implies an instant import boom, the short run effects are recession and worsening of the current account balance. The strength of the investment response is critical for how fast the positive effects of liberalisation materialise. If the investment is not responsive the economy will remain in the state with depressed production and worsened current account balance. After seven years GDP is 7% higher and the current account deficit to export ratio is 5%-points lower if reform is credible than if reform is not credible. I will return to these medium run dynamics in Section 5.

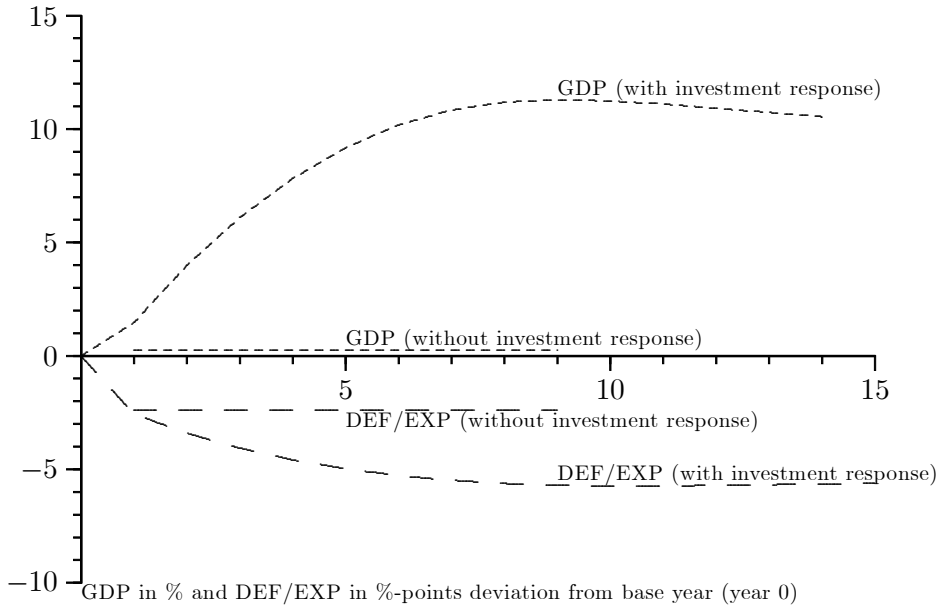
3.2 Trade liberalisation with flexible exchange rate

Balance of payment problems can, at least in principle, be solved by combining the reform with a devaluation. In that case the closure of the model is changed as the current account balance is exogenously fixed at its pre reform level and the currency floats in order to bring exports and imports in accordance with the foreign exchange constraint. A real depreciation of the currency increases the competitiveness by reducing domestic costs relative to the world market price level. Exchange rate depreciation is tantamount to a reduction in the real wage of unskilled workers. Hence, the unskilled workers will eventually carry the burden of remaining the current account at status quo level. Dynamic patterns following trade liberalisation when the exchange rate is flexible is illustrated in Figure 3. ⁶

Not credible reform and no investment response Again the horizontal lines capture the case without investment response. As long as investments are fixed, the trade liberalisation requires a real depreciation of 26% when the current account balance

⁶The effect on other variables, including the real exchange rate, are found in Appendix A.

Figure 3: Dynamics given flexible exchange rate



is to remain unchanged. This partly stimulates exports and partly moderates the increase in import demand. Exportables production increases by 12%, almost a doubling compared to the case with fixed exchange rate. The other sectors are also helped by the depreciation as their competitiveness in the domestic market improves. The output response following the depreciation more than offsets the recession analysed in the previous section and GDP grows by 0.25%. The increased exports also shows up in the DEF/EXP ratio, which improves by 2.4 percentage points. The devaluation moderates the income distribution effects of trade liberalisation. The slight output expansion increases the demand for skilled labour increasing their wage while the depreciation directly reduces the real wage of unskilled workers. The profit income increases helped by increased profits in the export sector, and as profits rise also tax revenues rise. As the depreciation increases the price of agricultural goods, also small-scale agricultural income increases. Hence, the prime loser is the unskilled labour. The price of food is determined by the world market and the purchasing power for the unskilled workers in terms of food will decline in the same magnitude as the depreciation, i.e. by 26%.

Credible reform and positive investment response When trade liberalisation is combined with depreciation the positive effect on the profit rate in the export sector is strengthened. As a result of the substantial increase in the price of imported capital goods, profit rates in the rest of the economy decline.⁷ The increased investments in

⁷The profit rate is defined as current profits relative to the replacement value of the capital stock.

exportables dominate and overall investments increase. In the case of fixed exchange rate the short-run effect of increased investments was a deteriorating current account balance. When the current account balance is fixed increasing import demand must be met by depreciation. Hence, the leakage represented by the import is neutralised and all demand expansions are channelled directly or indirectly to the domestic market. As about half the investment goods are imported a substantial depreciation is required when investments increase. A total depreciation of 36% is needed to offset both the effects of trade liberalisation and the increased import demand generated by the increased investment. This strong depreciation stimulates GDP as exportables production increases further and as the other sectors experience modest demand increases due to substitution effects. The construction sector, being the main domestic supplier of investment goods, increases production by 6.4%. Over time exports grow with positive repercussions to the rest of the economy. Hence, exports and GDP grows over time allowing a gradual appreciation.

Also in this regime the difference in the medium-run between credible and not credible reform is substantial. After seven years GDP is 11% higher if investment responds to the reform.

4 Short run consistency

When the exchange rate is fixed the short run consequence of trade liberalisation is a worsening of the current account. If the funds are not available for the financing of the deficit, the country must cut into its reserves. This is a limited source and if the deficit gets sufficiently big the trade liberalisation is not sustainable. Following Rodrik (1991 p. 238) *Countries may then have no choice but to abort the reform when the reserves fall below a certain threshold.* This illustrates one important consistency problem of trade reform. Without the access to sufficient financing, a trade liberalisation giving a substantial worsening of the current account balance will not be viable. Agents that take this into account will not consider the reform as credible. They will therefore fail to respond to the new incentives by investing and trade liberalisation will by default not be credible. The chance of running into a short run consistency problem is higher the stronger the overall investment response. A trade reform that stimulates total investments requires substantial imports of investment goods on top of the imports directly following from reform. Hence, depending on the foreign exchange constraint, it may be the case that only trade reforms that fail to stimulate investments are consistent

with the short run foreign exchange constraint. In that case reform can only be sustained if it is perceived as not credible. Hence, the following paradoxical situation can arise: Reform will be sustainable, given the financing constraint, only if it is regarded as not credible.⁸

The flexible exchange rate regime solved the financing problem of the fixed exchange rate regime. A depreciation in the range 25-36%, however, cuts drastically into unskilled workers real wages. Hence, by a depreciation the short-run financing problem is transformed into a possibly destabilising deprivation of a large section of the population. The short run consistency problems of the fixed exchange rate regime can resurface as social unrest and strikes if the real wage drop gets to big. These mechanisms may in part explain the 1998 food riots in Zimbabwe following the December 1997 depreciation. Such unrest may in some cases force the government to reverse the trade liberalisation. In that case, reform can only be made credible if the government is known to be firmly committed to liberalisation. The cost of a firm government, however, can be continued strikes and unrest that may seriously depress investments as it generates contraction and cuts into profits. Thus, short-run consistency problems can take many forms and reforms can bump into many constraints. If these constraints can not be relaxed, the difficult (and sometimes impossible) policy challenge is to create a reform design that steers clear of all of them. Zimbabwe has not at all managed this delicate balance. The Mugabe government's response to the growing opposition in 1998 was promises of land reform. The chaos following these promises had catastrophic consequences both for investments and production.

5 Expectations, investment response, and self-fulfilling failure

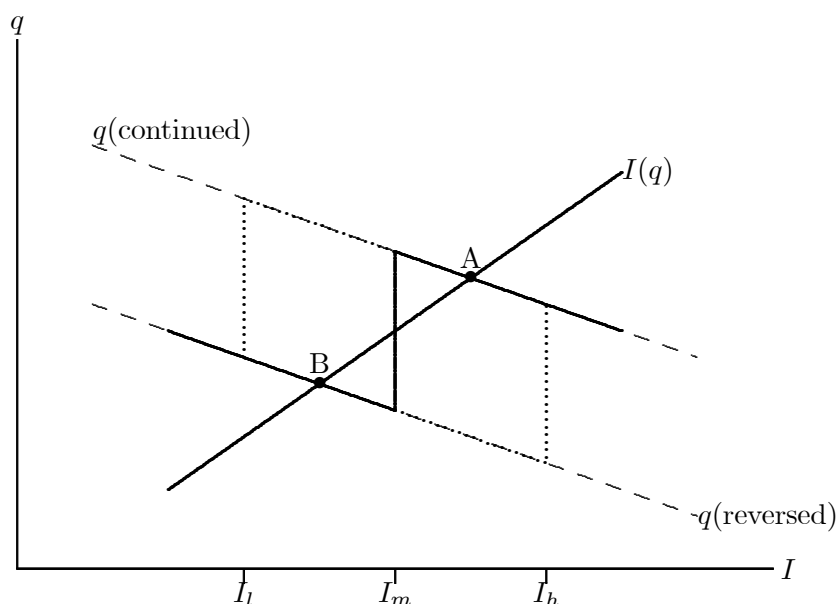
The analysis above illustrates how the investment response is critical for the effects of trade liberalisation both in the short-run and the medium-run: (1) In the short run a positive investment response generates increased demand for imports. When the exchange rate is fixed this substantially worsens the current account balance. If the current account balance is to be held constant, a substantial devaluation is required, depressing unskilled wages. (2) In the medium run a positive investment response generates growth and is a prerequisite for an improved trade balance. It has already been shown that trade reform in several ways can imply short-run inconsistencies. Thus,

⁸This paradoxical situation can be solved by introducing (as in Rodrik 1991) a subjective probability of cancellation that is an increasing function of the trade deficit. Assuming further that the investment response is a decreasing function of the probability of cancellation makes interior solutions possible.

if the trade reform is not internally consistent and must be reversed it is perceived as not credible.

The abortion of reform may also be the result of self-fulfilling expectations. That is, trade reform succeeds if it is expected to succeed while it fails if it is expected to fail. The reason for the failure can be the lack of foreign exchange. In the fixed exchange rate regime a positive investment response is required for the current account balance to improve over time. If the current account balance fails to improve the government may be forced to reinstate the trade controls. Hence, expectations about failure may prove self-fulfilling as the lack of investment response it self generates prolonged trade deficit leading to the abortion of reform. A stylised representation of the argument is provided in Figure 4. Let I_m along the horizontal axes represent the critical investment

Figure 4: Completion or cancellation of reform



limit. When $I < I_m$ the current account comes under pressure and the trade controls are reintroduced, i.e. reform is reversed. When $I > I_m$, however, the current account is under control and reform is continued. The figure's vertical axes, q , represents Tobin's marginal Q; the marginal lifetime return to investments. The dashed lines illustrates that q is negatively affected by reform reversal and, due to decreasing returns to scale, q is also decreasing in the level of investment. The solid Z-formed curve gives q as a function of investments when also accounting for the I_m constraint. Because of reform reversal q will drop substantially when I falls below I_m . The $I(q)$ -line captures the positively sloped investment function. When reform is credible q will be high and

investments will be high and equilibrium is in A. When reform is not credible both q is low and equilibrium is in B. Equilibrium B corresponds to the benchmark level of investment in the CGE model. The figure illustrates the possibility of dual equilibria:

- Self-fulfilling success (A): Reform continuation is expected. The investment response and export growth is therefore strong. As a result the reform is continued. Hence, the expectations about continuation are fulfilled.
- Self-fulfilling failure (B): Reform reversal is expected. There is only a weak investment response and prolonged current account problems. As a result reform is cancelled and the trade controls reintroduced. Hence, the expectations about reform reversal are fulfilled.

The same mechanism is formulated in following way by Rodrik *..., trade reforms that lack credibility may prove difficult to sustain. First of all, macro economic balances will come under further stress, forcing some of the best intentioned governments to abort the reform process.* (1992 p. 93) In game theoretic terms the possibility of a self-fulfilling failure is a result of a co-ordination problem. Sen (1967) has labelled this kind of co-ordination problem in many person games ‘the assurance problem’: *To get out of the problem all that is necessary is that each individual is assured that the others are doing the “right” thing, and then it is one’s own interest also to do the “right” thing.* (p. 122). Faced with a potential assurance problem the challenge for the policy makers is to induce the private agents to co-ordinate. The problem can alternatively be solved by designing a reform package that can be sustained *even* when reform has low credibility. As discussed in detail in Mehlum (2000) a gradual programme is one way of achieving such a robust reform. In a stylised model it is shown that if reform implementation is sufficiently gradual the sustainability of the programme is not dependent on an immediate investment response. Hence, a gradual reform may be sustainable even if it is perceived as not credible and will therefore not fail as a result of self-fulfilling expectations. In Figure 4 such a robust policy is illustrated by shifting the critical I from I_m to I_l . When the critical investment is sufficiently low the vertical segment of the $q(I)$ curve is shifted to the left removing equilibrium B. Expectations no longer matters as only the successful equilibrium A remains.

In Zimbabwe the foreign exchange shortage in 1999-2000 and the reluctance to devalue have led to reintroduction of trade controls. The consequences have been serious. Instead of reintroducing the old elaborate system of licensing the government

has constrained imports wherever it could. The result has been shortage of fuel and electricity as the government has limited the supply of foreign exchange to Zimbabwe Electricity Supply Authority and the national oil procurement company. In addition water and telecommunication has been hurt as imported spares are in short supply. The deteriorating supply of all these essential factors of production have seriously hurt profitability in private business. Hence, if not a total reversal, the Zimbabwean ad hoc rationing policy have seriously damaged profitability. The above analysis suggests that if these problems were expected by the Zimbabwean investors it provides an explanation of the weak investment response throughout the 1990's. Whether the reform was bound to fail or the failure was a product of self-fulfilling expectations is another question. The main result of the numerical analysis above is that expectations and the ex post credibility of reform matters a lot for the subsequent economic performance. Dual equilibria and self-fulfilling expectations are therefore among the candidates contributing to explaining Zimbabwe's poor economic performance in the 1990's. Poorly managed policy is obviously another important factor explaining the reversal. A strong investment response would perhaps not have been sufficient to secure the viability of the reforms. In that case the reform reversal was unavoidable and agents looking forward would realize that investment could never pay off. In Figure 4 an unavoidable failure like this is illustrated by the case where I_h is the critical investment level. In that case only equilibrium B remains; everyone knows that reversal is the inevitable outcome and investments are therefore low. Whether it is the self-fulfilling failure or inevitable failure story that best fits Zimbabwe remains an open question. What the present analysis has shown is that the balance of payment problems and the subsequent foreign exchange rationing in Zimbabwe in the late 90's in part both can *explain* and can *be explained by* the weak investment response throughout the 90's. The question is whether this vicious circle can be held responsible for the dismal performance.

The self-fulfilling mechanism relied on whether reform over time solved the foreign exchange problem or not. This story is relevant in the fixed exchange rate regime. Another mechanism, also relevant for a country in Zimbabwe's situation, arises in the fixed current account regime, where a substantial depreciation was required following trade reform. Given positive investment response the exchange rate appreciates over time. Without investment response, however, the exchange rate will remain at its highly depreciated level. Depreciation is in effect a reduction of the unskilled workers's real wage. These workers's patience may be limited and given a weak investment response

the real wage will remain depressed. This may eventually generate a political pressure sufficient to force the government to abort the programme. Again, the lack of investment response, due to low credibility, may it self generate the cancellation of reform.

The relevance of this latter mechanism was clearly demonstrated in the argument between the World Banks Wolfenson and IMF's Camdessus over the release of balance of payment support for Zimbabwe. The World Bank argued as follows: "Without balance-of payments support, government may try to prevent a further fall of the Zimbabwe dollar by fixing the exchange rate and imposing import and price controls. This will reverse seven years of policy reforms supported by the IMF and the Bank. Social unrest will be hard to contain" (Financial Gazette 1999).

A third example can be the so-called honeymoon hypotheses (Williamson 1994). According to this hypothesis, the voters's patience is limited and the reform government has to generate positive results within a certain time span, otherwise they are replaced by conservatives who restore the old trade regime. Consider the case where trade liberalisation is reversed if the GDP figures, after a honeymoon period of 3 years, do not show growth. If the economy is on a growth path, however, reform is continued. As seen in Figures 2 and 3, in either regime the condition for continuation will only be met if investments have responded sufficiently to the reform.

6 Conclusion

Trade liberalisation in Zimbabwe is analysed using a CGE model. The analysis reveals that the short term consequence of trade liberalisation is contraction and a worsening of the current account balance. This fit well with the experience in Zimbabwe as illustrated in Figure 1. However, if the trade liberalisation had been accompanied by a sufficient devaluation these adverse effects could have been counteracted. Devaluation is not a problem-free solution as it implies a reduction in unskilled workers's wages. These adverse effects may be part of the explanation behind the Zimbabwean government resistance to devalue as trade was liberalised.

Trade liberalisation increases the profitability in the export sector. To the extent that investments are stimulated, the result is increased exports and growth. Hence, the potential gains from trade liberalisation materialise only over time, as exploitation of the new opportunities requires capital accumulation. A positive investment response is crucial in order for this to happen. If investors have doubts about the credibility of reform, the investment response will be weak and the negative short-run effects will

prevail. Therefore, trade liberalisation needs to be credible in order to be successful. The investor's confidence in the reform viability is thus decisive for the success of reform. Hence, to cite Kalecki: *The businessman remains the medium through which the intervention is conducted. If he does not feel confidence in the political situation he will not be bribed into investment.* (1943 p.143)

The credibility of reform can be undermined for a variety of reasons. The trade liberalisation may by default be inconsistent with other economic constraints (e.g. foreign financing constraints). The low credibility of trade reform may also be a result of self-fulfilling expectations. Several possible self-fulfilling mechanisms are explored in the analysis. One example, particularly relevant for Zimbabwe, is the case where reform is aborted if it over time fails to generate improvements in the current account balance. If reform is considered not credible investments will be low, there will be no export growth and the reform will be cancelled.

In the present analysis the self-fulfilling mechanisms are resulting from the linkage between expectations, investments and export performance. However, as several authors have pointed out (for example Calvo 1988 and Collier and Gunning 1992 and van Wijnbergen 1992), a temporary trade liberalisation generates a scope for speculative hoarding of the temporarily cheap imports. Such hoarding worsens the current account balance and may indeed make the trade liberalisation a temporary event. Import hoarding has an additional negative impact if the accumulation of import stocks crowd out fixed capital formation. These and other mechanisms, left out of the present analysis, should be considered in a more thorough description of trade reform.

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A Results from the model simulations

Table 1: Fixed exchange rate scenario (Percentage deviation from year 0)

Investments	fixed	endogenous response			
Year	1	1	3	5	7
GDP					
Services	-6.5	-6.2	-3.2	-1.2	0.3
Construction	1.1	5.3	8.0	9.6	10.5
Exportables	6.8	6.5	14.4	20.0	24.0
Importables	-6.4	-5.2	-2.6	-0.8	0.6
Total	-3.1	-2.7	0.3	2.4	3.9
Private investments	0.0	14.8	16.9	17.4	17.4
Private consumption	1.2	1.6	5.1	7.5	9.3
Unskilled employment	-5.3	-4.6	-0.1	3.1	5.2
Imports	18.3	22.1	29.1	33.7	36.7
Exports	10.2	9.6	19.0	25.7	30.4

Table 2: Flexible exchange rate scenario (Percentage deviation from year 0)

Investments	fixed	endogenous response			
Year	1	1	3	5	7
GDP					
Services	-1.4	0.4	4.5	7.0	8.1
Construction	3.6	6.4	12.1	15.6	17.0
Exportables	12.2	13.4	25.3	33.9	39.3
Importables	-4.5	-3.3	1.3	4.5	6.3
Total	0.3	1.5	6.1	9.2	10.8
Private investments	0.0	13.9	22.5	26.7	26.6
Private consumption	3.6	4.6	10.1	14.0	16.3
Unskilled employment	1.8	4.4	11.5	15.9	17.7
Imports	17.7	19.5	32.6	42.0	47.8
Exports	16.6	17.9	31.8	42.0	48.4
Exchange rate	26.2	36.2	28.6	21.9	15.5

B Modelling investment demand

The model is an extended version of the CGE model (the full liberalisation specification) in Rattsø and Torvik (1998a). The primary extension is the inclusion of sector specific investment functions and import price wedges mimicking import quotas. Sectorwise capital stocks and production functions are calibrated in order to investigate the effect of shifting investments on capital accumulation and production dynamics. In this appendix these extensions are documented in detail. Davies, Rattsø and Torvik (1994) and Rattsø and Torvik (1992, 1998a and 1998 b) contains details about the complete model not covered here. Details on calibration is available from the author.

The production function for sector 1 is assumed to be of constant return to capital type, while the other production functions follows the original specification given in Davies et al.

The capital accumulation is given by

$$K_{i,t+1} = (1 - \Delta) K_{i,t} + CF_i$$

where CF_i is the gross fixed capital formation in sector i and K is the capital stock. Following Rosensweig and Taylor (1990), investment demand in each sector is assumed to be increasing in the rate of return to capital in each sector. This formulation is also in accordance with the findings in Jenkins's (1998) study of the determinants of investments in Zimbabwe. Hence, the following log linear investment function for sector i is assumed

$$\ln(CF_i) = g_i + \lambda_i \ln\left(\frac{Y_{Zi}}{PK_i \cdot K_i}\right) \quad (i = 1 \dots 5)$$

where PK is the price index for capital goods, g is a constant term while λ is the elasticity of investment demand, assumed to be one when reform is credible and zero if reform is not credible.

The distribution of investment on civil engineering (CI), buildings (BU), and equipment (EQ) is determined by a CES aggregate. Given sector i 's total investment demand CF_i , the demand for each good follows from the following equations, where $J_{k,i}$ is the demand of good k from sector i , PJ_i^C is the price index of the composite investment good, P_k is the price of capital good k , $\pi_{k,i}$ is distribution parameter and ϕ

is the elasticity of substitution in the investment aggregate

$$J_{k,i} = \pi_{k,i}^\phi \left(\frac{P_k}{PJ_i^C} \right)^{-\phi} CF_i \quad (k = CI, BU, EQ \quad i = 1 \dots 5)$$

$$PJ_i^C = \left[\sum_{k=CI, BU, EQ} \pi_{k,i}^\phi P_k^{1-\phi} \right]^{\frac{1}{1-\phi}}$$

A second step determines the demand directed towards each sector and towards imports. The following fixed coefficient B-matrix (with elements $BM_{h,k}$) is used

$$J_k = \sum_{i=1}^5 J_{k,i} \quad (k = CI, BU, EQ)$$

$$J_h = \underline{J}_h + \sum_{k=CI, BU, EQ} (BM_{h,k} \cdot J_k) \quad (h = 0, 3, 5)$$

J_0 , J_3 , and J_5 are capital goods supplied by imports, construction sector, and importables sector respectively. The \underline{J} s are constant terms, calibrated to reproduce the base year values. The parameters of this B-matrix are assumed to be constant and unaffected by shifting relative prices. This B matrix is also used to compute the price indexes for the different goods, hence

$$P_k = BM_{0,k} \cdot e \cdot P_{0j}^* + BM_{3,k} \cdot P_3 + BM_{5,k} \cdot P_5 \quad (k = CI, BU, EQ)$$

Finally, the overall price index of capital is derived

$$PK = \frac{\sum_{k=CI, BU, EQ} (P_k \cdot J_k)}{\sum_{k=CI, BU, EQ} (J_k)}$$

The returns to capital are given by

$$\begin{aligned} Y_{z1} &= \tau_1 P_1 X_1 \\ Y_{z2} &= \tau_2 B_2 X_2 \\ Y_{zi} &= \left[P_i X_i \frac{1}{1+t_i} - B_i X_i \right] \quad (i = 3, 4, 5) \end{aligned}$$

where τ_1 is the income share of capital in agriculture, τ_2 is the mark-up in services, t_i is

the indirect tax rate, X_i is output, and B_i the average variable cost. These are assumed to be the returns relevant for investment demand. Although import quota rents are part of profits, changes in these rents are assumed not to affect investments.