Macro-Economic Impact Analysis of the South African Broiler industry applying the South African INFORUM Model (SAFRIM).

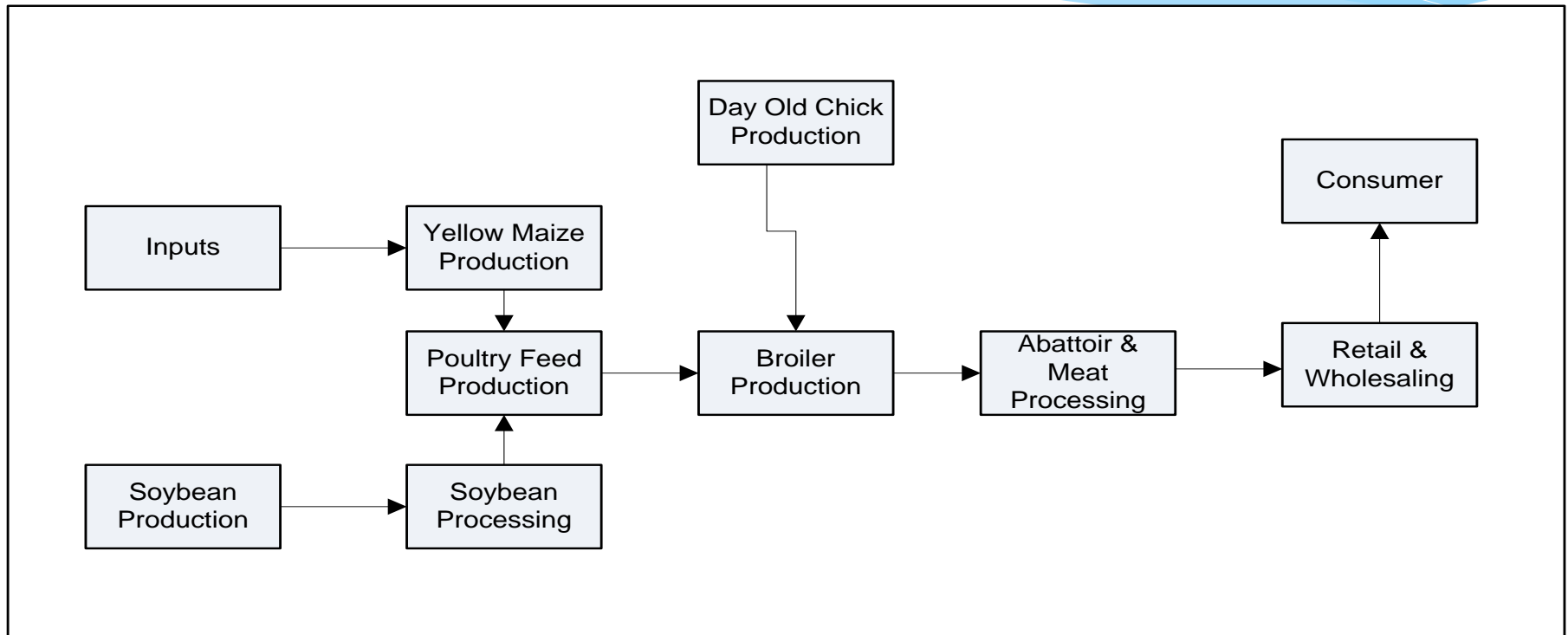**By Christo Joubert, David Mullins and Nomsa Phindile Nkosi**
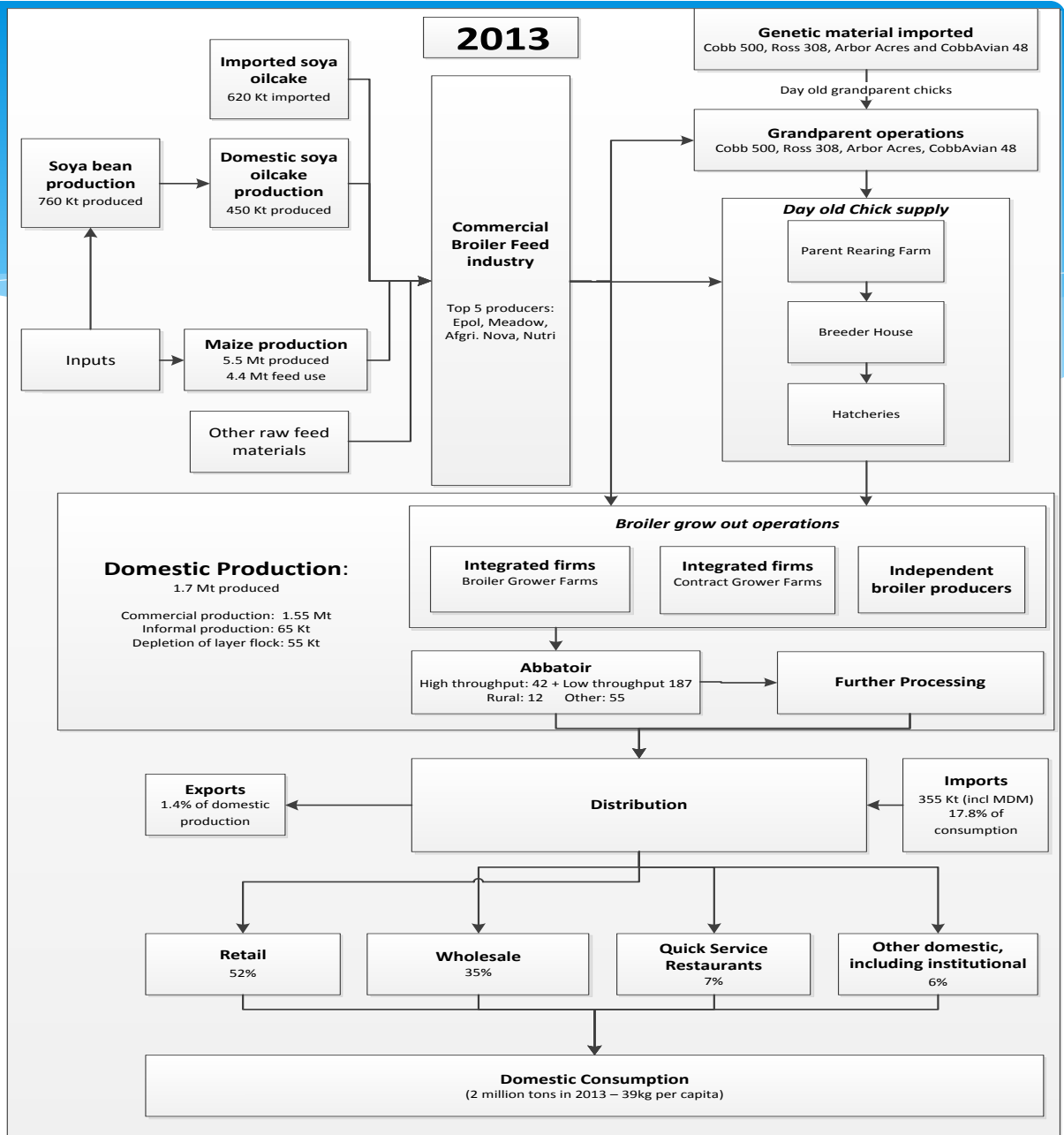
CONTENTS

The structure of the presentation is as follows:

* Overview of the Broiler industry in South Africa
* Challenges and sustainability in the Broiler industry – Import protection debate
* Description of the Case Study – The impact of relaxing import restrictions
* Methodology
* Preliminary Results of the Case Study
* Conclusions

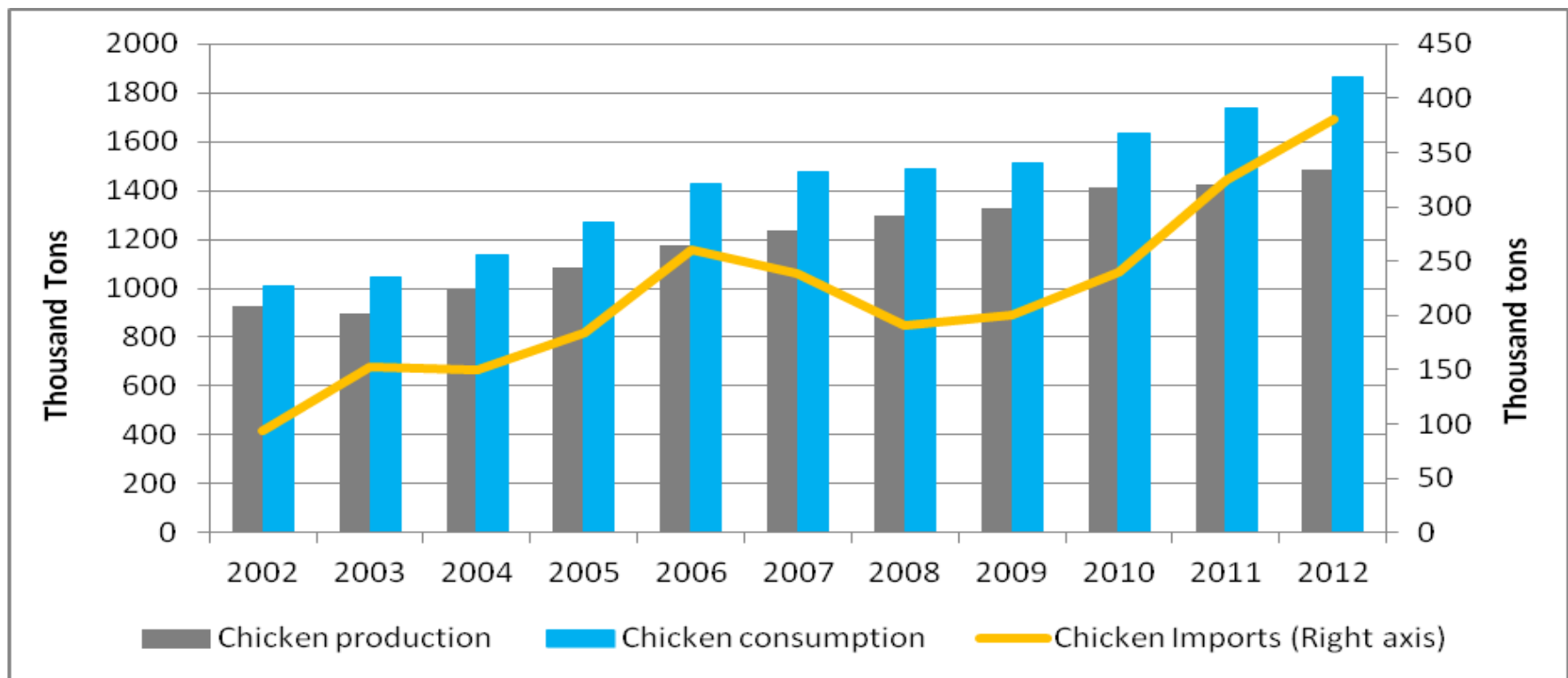# Overview of the Broiler industry in South Africa: Integrated Food System

Source: Own compilation

Overview of the Broiler industry in South Africa: Detailed value chain

2013

Genetic material imported
Cobb 500, Ross 308, Arbor Acres and CobbAvian 48

Imported soya oilcake
620 Kt imported

Day old grandparent chicks

Soya bean production
760 Kt produced

Domestic soya oilcake production
450 Kt produced

Grandparent operations
Cobb 500, Ross 308, Arbor Acres, CobbAvian 48

Commercial Broiler Feed industry

Top 5 producers: Epol, Meadow, Afgri. Nova, Nutri

Day old Chick supply

Parent Rearing Farm

Breeder House

Hatcheries

Inputs

Maize production
5.5 Mt produced
4.4 Mt feed use

Other raw feed materials

Broiler grow out operations

Domestic Production:
1.7 Mt produced

Commercial production: 1.55 Mt
Informal production: 65 Kt
Depletion of layer flock: 55 Kt

Integrated firms
Broiler Grower Farms

Integrated firms
Contract Grower Farms

Independent broiler producers

Abbatoir
High throughput: 42 + Low throughput 187
Rural: 12   Other: 55

Further Processing

Exports
1.4% of domestic production

Distribution

Imports
355 Kt (incl MDM)
17.8% of consumption

Retail
52%

Wholesale
35%

Quick Service Restaurants
7%

Other domestic, including institutional
6%

Domestic Consumption
(2 million tons in 2013 – 39kg per capita)

Overview of the Broiler industry in South Africa: Production, consumption and imports

Overview of the Broiler industry in South Africa: Global trade
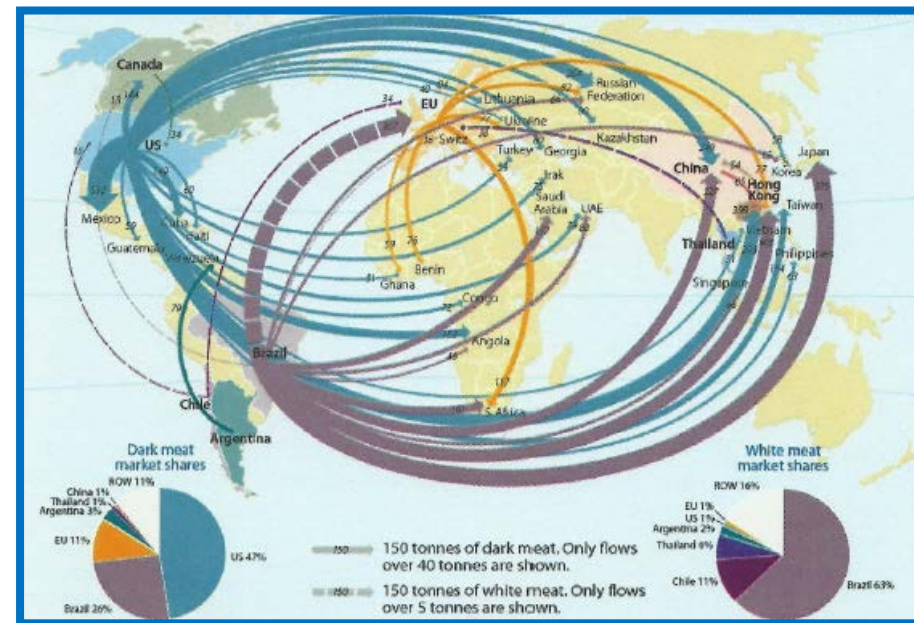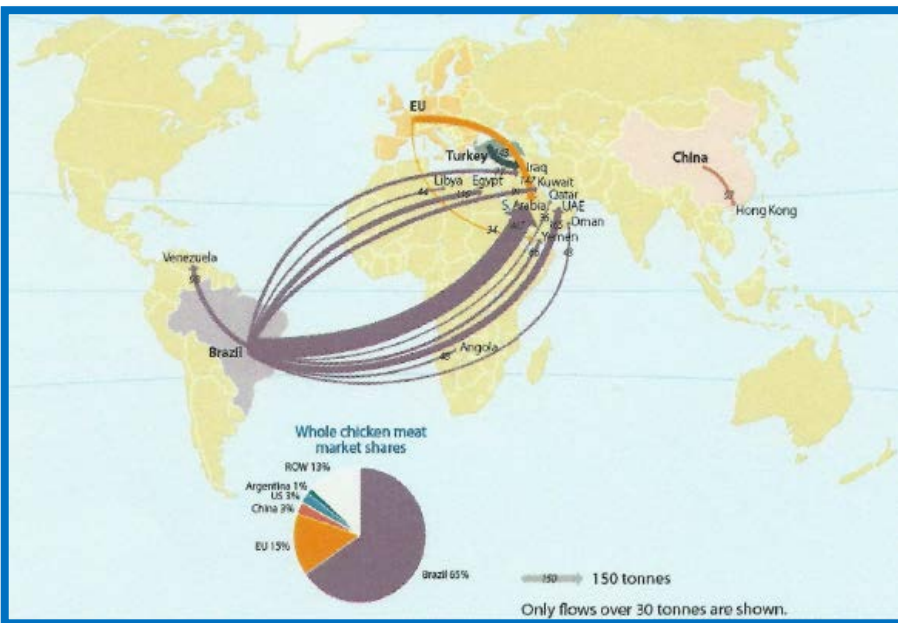
Major Exporters
• USA
• Brazil

Global Trade
USD$ 17,9

Products
•`Whole bird frozen products
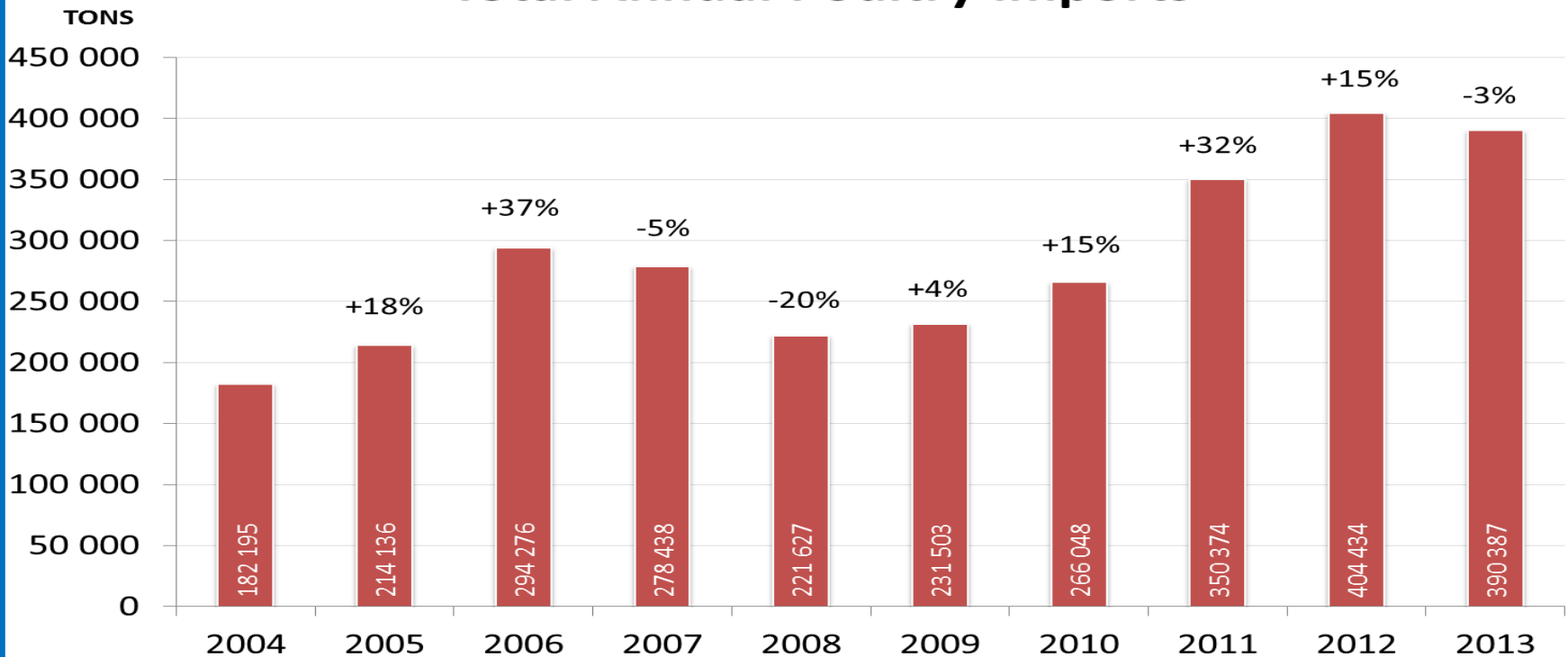• Raw products (IQF cuts)
• Processed meat

Major importers
• Asia
• Middle East
• Russia
• Africa
• EU

Challenges and sustainability in the Broiler industry – Import protection debate: Total imports
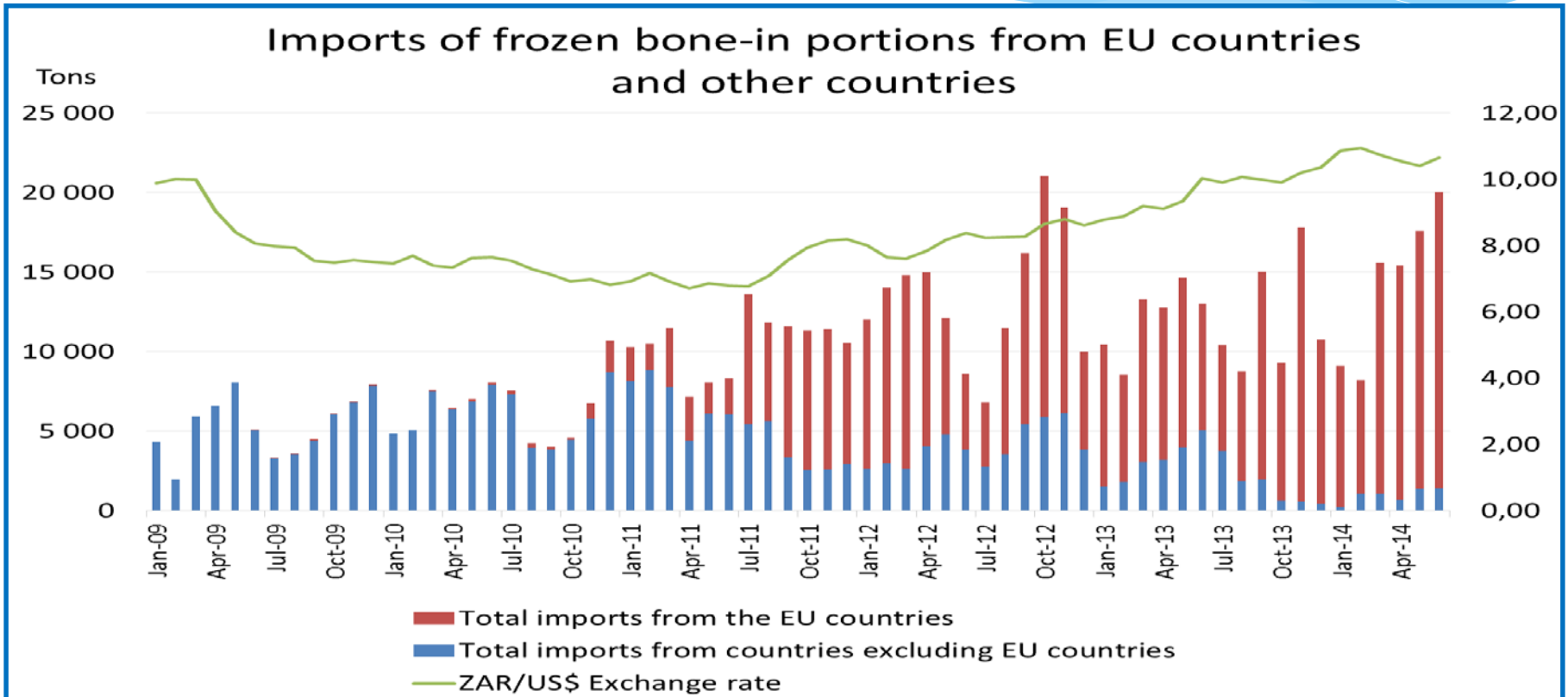

Total Annual Poultry Imports

TONS

Year	Value	Change
2004	182 195	
2005	214 136	+18%
2006	294 276	+37%
2007	278 438	-5%
2008	221 627	-20%
2009	231 503	+4%
2010	266 048	+15%
2011	350 374	+32%
2012	404 434	+15%
2013	390 387	-3%

Source: SARS

Source: Lovell, 2014

Challenges and sustainability in the Broiler industry – Import protection debate: Imports

Imports of frozen bone-in portions from EU countries and other countries

Legend:
- Total imports from the EU countries
- Total imports from countries excluding EU countries
- ZAR/US$ Exchange rate

Source: Lovell, 2014

# Challenges and sustainability in the Broiler industry – Import protection debate: Tariffs

HS Classification Code	Description	General Tariff	EU Tariff	SADC Tariff
02071100	Fowls, not cut in pieces, fresh or chilled	0 %	0 %	0 %
02071210	Fowls, not cut in pieces, frozen, mechanically deboned	0 %	0 %	0 %
02071220	Fowls, not cut in pieces, frozen, carcass with cuts removed	31 %	0 %	0 %
02071290	Fowls, not cut in pieces, frozen, other	82 %	0 %	0 %
02071300	Fowls, cuts and offal, fresh or chilled	0 %	0 %	0 %
02071410	Fowls, cuts and offal, frozen, boneless cuts	12 %	0 %	0 %
02071420	Fowls, cuts and offal, frozen, offal	30 %	0 %	0 %
02071490	Fowls, cuts and offal, frozen, other	37 %	0 %	0 %
02071490	Fowls, cuts and offal, frozen, other originating and imported from USA	Anti-dumping tariffs on products originating from the USA: 940 c/kg		

Source: SARS (2014)

Description of the Case Study – The impact of relaxing import restrictions.

* Current average import tariff for the various broiler meat cuts is about 25%.

* The current production of broiler is 1667 million tons

* Phasing the tariff out will have an impact of 10% in the 2013 production.

* Meaning local production will decrease by about 166 700 tons and that imports will increase by the same amount.

Dynamic and inter-related workings of the SAFRIM Model
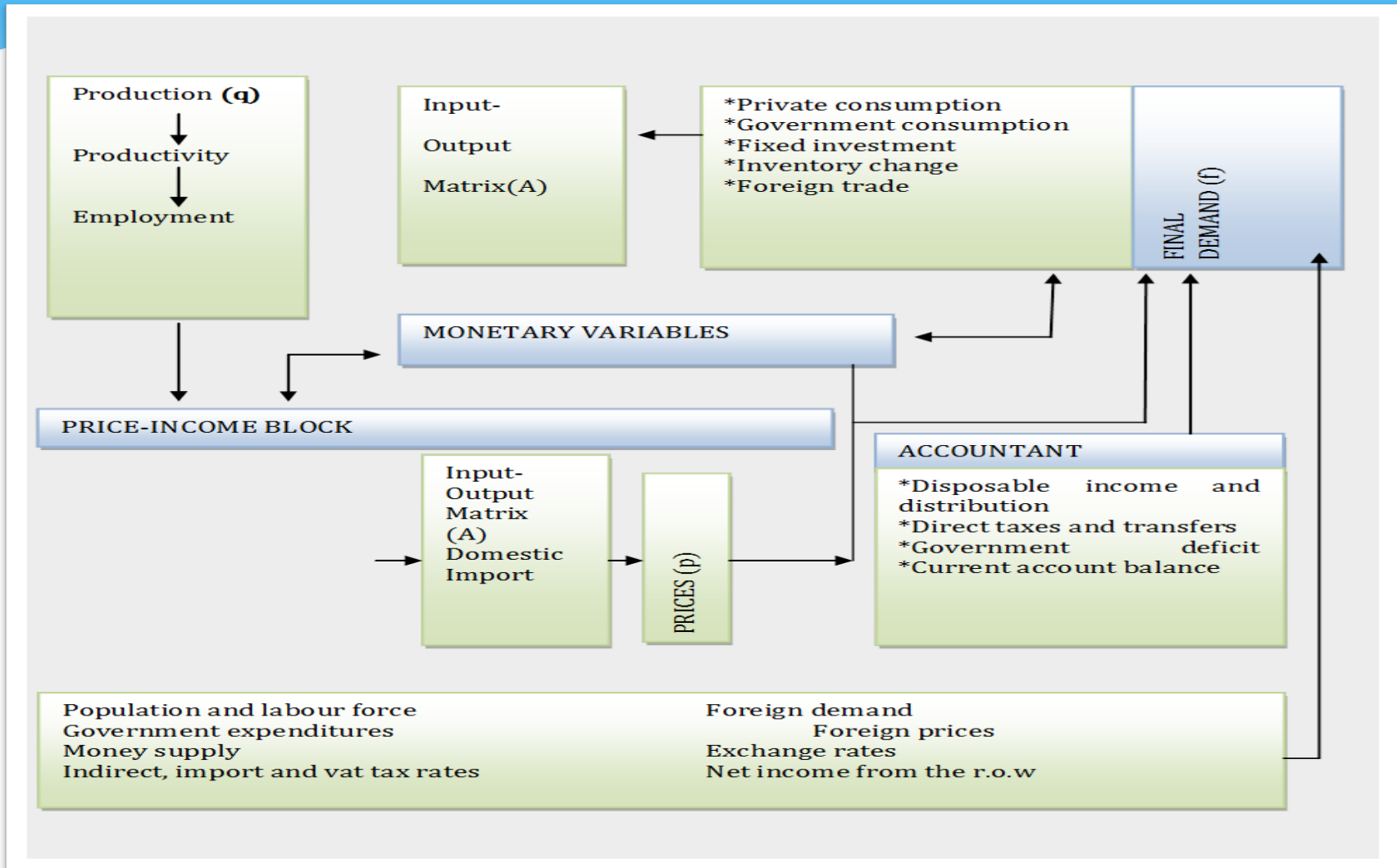
Forecasting the Baseline Scenario
- fundamental economic imperatives/rules -

* There should be an acceptable measure (not exceeding ±4% of the GDP) of balance on the current account of the balance of payments;

* No fundamental obstructions to obtain foreign capital;

* Positive growth of the world economy; and

* South Africa's population growth by taking into account the negative effects of HIV/Aids.

Methodology

- **Backward Linkages**
  - A. Construction phase (investment impact)
  - B. Operational impact
  - C. Changes in the production structure

- **Forward Linkages**
  - D. Price impact

- **Balancing constraints**

Methodology

fdc = pcec + invc + govc + exc - imc +

fdrc + trcc + capex_tot   (1)

Where:

fdc	= total final demand
pcec	= private consumption expenditure
invc the	= investment (investment excluding investment in mitigation measures)
govc	= government
exc	= exports
imc	= imports
fdrc	= residual
trcc	= transfer costs
capex_tot	= total net investment of the various mitigation measures

Methodology

$$outc = (!(I-AMC) * fdc) + oper\_imp \qquad (2)$$

Where:

outc   = total output (production)

!(I-AMC)   = inverse matrix

fdc   = total final demand

oper_imp   = total net operational impact of the various mitigation measures

Methodology

The identity below explains were additional cost or savings are added in the model.

$$fdc = pcec + invc + govc + exc - imc + fdrc + trcc + price\_b \qquad (3)$$

Where:

fdc	= total final demand
pcec	= private consumption expenditure
invc	= investment (investment excluding investment in the mitigation measures)
govc	= government
exc	= exports
imc	= imports
fdrc	= residual
trcc	= transfer costs
Price_b	= increase in consumer spending power from relaxing the tariffs

Methodology
- Balancing constraints -

Technical adjustment to compare scenario with base case.

The deficit on the current account of balance of payments as a percentage of the country's overall economic activity (GDP), was taken as a controlling measure demonstrating the ability of the economy to financially carry the burden of a particular mitigation option.

Balance was achieved by changing the interest rate.

Preliminary Results of case study
- Average GDP and employment Impact over the period (2013-2033)

	Additional (Net) Investment Impact (Construction Impact)	Additional (Net) Operational Cost	Government Income Loss	Impact increase in personal disposable income (consumption expenditure)	Total Incremental Impact	Total Dynamic Impact Before Balance of Payments Adjustment	Total Dynamic Impact After Balance of Payments Adjustment
GDP	2 531 810	2 531 041	2 531 694	2 535 602		2 533 738	2 525 462
Baseline	2 532 438	2 532 438	2 532 438	2 532 438		2 532 438	2 532 438
Difference	-629	-1 397	-744	3 164	393	1 300	-6 977
Employmnet	16 220 620	16 206 239	16 218 691	16 247 496		16 220 784	16 175 904
Baseline	16 226 233	16 226 233	16 226 233	16 226 233		16 226 233	16 226 233
Difference	-5 613	-19 994	-7 542	21 263	-11 887	-5 449	-50 329

Summary and conclusions

* The objective of the analysis was to estimate the macro-economic impact of the relaxing of import restrictions on the broiler industry for the period 2013 to 2033.

* The results of the scenario show clearly that the positive effects that the consumers will receive due to cheaper broiler prices will be overwhelmed by the negative effects which relate to the effects that the broiler industry has to bear.

The End

* Thank You