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**APPENDIX 1**

**DESCRIPTION OF THE DATA BASE USED IN THE STUDY**

**1.1 DIFFERENT INDUSTRIES AND PRODUCTS IN THE MODEL**

- **Agriculture, forestry and fishing**

This industry represent establishments which are primarily engaged in farming activities, such as the growing of field crops, the raising of livestock and the production of milk, wool and eggs. Establishments rendering agricultural services such as harvesting, baling, threshing and spraying are also classified under this division. Also included are establishments engaged in commercial hunting and game propagation and forestry, logging and fishing.

- **Coal mining**

This industry includes mines that are primarily engaged in producing anthracite, bituminous coal, brown coal and lignite; and coal crushing, pulverising, cleaning, screening and sizing plants, whether or not operated in conjunction with the mines served. Also included are the manufacture of coke and the agglomeration of coal and lignite into briquettes, and other compressed fuels at mining sites.

- **Gold and uranium ore mining**

This sector represents the mining of gold and uranium ore, the dressing, beneficiating and otherwise preparing of such ores. Gold tailings, clean-up works, alluvial gold mining and the reclamation of gold from mine dumps are included. Gold mines also produce sulphuric acid and mine iron pyrites for this purpose as a by-product of gold mining.

- **Other mining**

This industry represent mining activities that relate to the extraction of natural gas, iron ore, non ferrous metals, stone quarrying, diamonds, chemicals, salt, precious and semi-precious stones as well as asbestos.

- **Food**

The food industry includes the production of meat and meat products, fish, fruit and vegetables, oils and fats, dairy products, grain mills, starch and starch products, prepared animal feeds, bakery products, sugar, chocolate, pasta and other food products.

- **Beverages**

The beverage industry includes the beer and malt industries, soft drink and mineral water, as well as the blending of spirits.

- **Tobacco**

This group includes the manufacture of tobacco products such as cigarettes or cigars, pipe tobacco, chewing tobacco or snuff, as well as the manufacture of homogenized or reconstituted tobacco.

- **Textiles**

Represent the spinning, weaving and finishing of textiles industries. It also represents the manufacturing of carpets, rope and other textiles.

- **Wearing apparel**

Includes the manufacturing of knitted and crocheted fabrics, the manufacturing of wearing apparel and the dyeing of fur.

- **Leather and leather products**

This sector includes the tanning and dressing of leather, as well as the manufacturing of leather luggage and handbags.

- **Footwear**

This group includes the manufacture of footwear for all purposes (other than orthopaedic footwear), of any material (other than of asbestos or of textile material lacking applied soles), by any process, including moulding. The materials used may be leather, rubber, plastics, textile materials, wood or other materials and the processes applied may be cutting and sewing, gumming, moulding or any other process. Also included is the manufacture of gaiters, leggings and similar articles and of parts of footwear, such as uppers and parts of uppers, inner and outer soles etc., of any material.

- **Wood and wood products**

Includes industries of saw milling and planing of wood, veneer sheets, plywood, laminated board, particle board, wooden containers, builders carpentry, other products of wood, articles of cork, straw and plaiting materials.

- **Paper and paper products**

This sector represents industries of pulp, paper and paperboard, as well as other articles of paper.

- **Printing, publishing and recording media**

This group includes publishing of books, brochures, musical books, newspapers, journals and periodicals, recorded media, printing and services relating to printing.

- **Coke and refined petroleum products**

Industries that produce coke oven products, petroleum refineries and nuclear fuel industries are included in this sector.

- **Basic chemicals**

This industry represents firms that produce basic chemicals, fertilisers and plastic in primary forms.

- **Other chemicals and man-made fibres**

This group includes the manufacture of insecticides, rodenticides, fungicides, herbicides, anti-sprouting products, plant growth regulators, disinfectants and other agro-chemical products not elsewhere classified. It also includes paints, pharmaceuticals, soap and other chemicals.

- **Rubber products**

Represents those industries that produce rubber tyres, tubes, retreading and other rubber products.

- **Plastic products**

This group includes the manufacture of plastic products such as plates, sheets, film, foil and strip; tubes, pipes and hoses; hose and pipe fittings; self-adhesive plates, sheets, film, foil, tape, strip and other flat shapes; plastic floor, wall or ceiling coverings in rolls or in the form of tiles; or other primary plastic products.

- **Glass and glass products**

This group includes the manufacture of glass in all its forms and articles of glass, including glass used in construction, glassware and glass fibre.

- **Non-metallic minerals**

This industry includes firms that manufacture non-structural, non-refractory ceramic ware, refractory ceramic products, clay and ceramic products. It further includes manufacturers of cement, lime and plaster, articles of concrete and cement as well as other non-metallic mineral products.

- **Basic iron and steel**

Includes the operation of blast furnaces, steel converters, rolling and finishing mills as well as the manufacturers of primary iron and steel products.

- **Basic non-ferrous metals**

This major group includes the manufacture of the precious metals, gold and silver, and metals of the platinum group.

- **Metal products excluding machinery**

This group includes the casting of iron and steel, non-ferrous metals as well as the manufacturing of structural metal products, tanks, reservoirs and similar containers of metal, cutlery and fabricated metals. It also includes the forging, pressing, stamping and roll forming of metal as well as the treatment and coating of metals.

- **Machinery and equipment**

This industry represent the manufacturing of engines, turbines (except aircraft, vehicle and motor cycle engines), pumps, compressors, taps, valves, bearings, gears, driving elements, ovens, furnaces, lifting equipment, agricultural and forestry machinery, machine tools, weapons and ammunition, special purpose machinery, household appliances and accounting and computing machinery.

- **Electrical machinery**

Includes manufacturing of electric motors, generators, transformers, electricity distribution, control apparatus, insulated wire and cable, accumulators, primary cells, primary batteries, electric lamps, lighting equipment and other electrical equipment.

- **Television, radio and communication equipment**

The manufacturing of electronic valves, tubes and other electric components, as well as, television and radio transmitters, television and radio receivers.

- **Professional and scientific equipment**

The manufacturing of medical and surgical equipment, appliances for measuring and checking purposes, industrial process control equipment, photographic equipment, watches and clocks.

- **Motor vehicles, parts and accessories**

Includes the manufacturing of motor vehicles and the bodies for motor vehicles. It further includes the manufacturing of trailers, semi-trailers and other parts and accessories for motor vehicles and their engines.

- **Other transport equipment**

This industry includes the building and repairing of ships, pleasure and sporting boats, railway and tramway locomotives, aircraft, spacecraft, motorcycles, bicycles and other transport equipment.

- **Furniture**

This group includes the manufacture of furniture of all kinds (household, office, hotel, restaurant and institutional furniture; fixtures; bed springs and mattresses), of any material (wood, osier, bamboo, base metal, glass, leather, plastics, etc., other than of stone, concrete or ceramics), for any place (dwellings, hotels, theatres, offices, churches, schools, restaurants, hospitals, ships, aircraft, motor vehicles, etc., other than furniture to which scientific, medical or laboratory equipment is attached) or for such purposes as cooking or dining, sitting or sleeping, storing (including filing cabinets) or displaying, working or resting.

- **Other industries**

This group includes manufacturers of jewellery, musical instruments, sports goods, games and toys as well as the recycling of metal waste and scrap and non-metal waste and scrap.

- **Electricity, gas and steam**

Includes the production, collection and distribution of electricity, the generation thereof as well as the manufacturing of steam and hot water supply.

- **Water supply**

This group includes the collection, purification and distribution of water to household, industrial, commercial and other users.

- **Building construction**

Includes the construction of buildings, homes and other structures.

- **Civil engineering and other construction**

This group includes site preparation, building installation, plumbing, electrical construction, shoplifting, building completion, painting and decoration and other building construction.

- **Wholesale and retail trade**

This industry consists of retail and wholesale trade across all sectors of the South African economy without any exception.

- **Catering and accommodation services**

This group encompass all hotels, camping sites and other provisions for short-stay accommodation. It also include restaurant, bar and canteen services.

- **Transport and storage**

This industry includes railway transport, land transport, passenger and land transport, freight transport by road, transport via pipelines, water transport, sea and coastal transport, inland water transport, air transport, cargo handling, storage and warehousing, other supporting transport activities, travel agency and related activities.

- **Communication**

The group includes national postal activities, courier activities, other national postal activities and telecommunications.

- **Finance and insurance**

Includes activities by the central bank, other monetary intermediation, financial intermediation, lease financing and other credit granting. It further includes insurance and pension funding, life insurance, pension funding, medical aid funding.

- **Business services**

This group includes all activities that are auxiliary to financial intermediation, except insurance and pension funding.

- **Medical, dental and other health and veterinary services**

Encompass all hospital, medical and other human health activities. It also includes supplementary health services or paramedical staff, clinics, nursing services, chiropractors, veterinary services and social work activities.

- **Other community, social and personal services**

Includes all other medical and human health services that are not included with the medical, dental and other health industry.

- **Other producers**

This group includes washing and dry-cleaning of textiles and fur products. It further includes hairdressing and other beauty treatments as well as funeral and related activities.

## **1.2 THE DIFFERENT TYPES OF LABOUR THAT ARE DISTINGUISHED WITHIN THE MODEL**

Given the description of the 45 different industries that are distinguished in the model, the four different types of labour that are employed in these industries are:

- **Highly skilled**

Occupations that are included in the highly skilled category include professional, semi-professional and technical occupations, as well as managerial, executive, administrative, and certain transport occupations.

- **Skilled**

Skilled occupations include clerical, sales, transport and service occupations. It also encompasses farmers and farm managers, artisans, apprentices and production foremen and supervisors.

- **Semi- and unskilled**

This group includes all occupations that are neither highly skilled nor skilled.

- **Labour employed in the informal sector**



The table below summarises the number of workers of each skill type that are employed within each industry:

**Table A1: Number of workers employed within each industry**

<i>Industry</i>	<i>H</i>	<i>S</i>	<i>SS</i>	<i>I</i>	<i>Industry</i>	<i>H</i>	<i>S</i>	<i>SS</i>	<i>I</i>
Agric	16,919	35,840	713,496	28,509	MetProd	8,149	28,825	65,816	3,824
Coal	2,908	12,712	30,711	1,724	Macheq	9,522	25,648	32,878	2,532
Gold	5,381	19,218	178,996	7,575	ElecMach	14,179	17,983	47,617	2,968
Othmin	7,078	29,426	121,457	5,877	Telv	2,466	3,128	8,282	516
Food	10,390	59,819	84,323	5,750	ProfEq	1,006	1,276	3,380	211
Bev	3,460	8,836	14,106	982	MotVeh	13,315	24,411	39,812	2,885
Tob	279	713	1,138	79	OthTrnsp	1,872	3,432	5,597	406
Text	2,726	8,248	42,428	1,987	Furn	2,315	11,332	31,255	1,671
Wear	5,621	17,611	109,633	4,943	OthInd	1,553	8,133	9,278	706
Leath	270	1,348	6,278	294	Elect	16,525	23,316	24,436	13,526
Foot	370	815	11,573	475	WatSup	1,933	2,727	2,858	280
Wood	2,407	26,756	44,915	2,756	BuildCnst	6,605	23,238	89,163	64,090
Paper	3,349	12,488	25,998	1,557	Civil	5,539	19,487	74,769	17,873
Print	11,092	34,706	15,012	2,262	WhSale	103,163	569,032	169,889	167,501
Coke	2,984	5,190	5,581	512	CatAcc	14,432	107,755	41,683	6,097
BasChem	3,852	8,785	15,100	1,032	TranspStor	14,996	113,474	51,779	95,785
OthChem	11,499	26,919	28,823	2,502	Com	9,806	46,215	24,646	3,001
RubProd	1,177	2,852	8,692	473	FinIns	52,991	133,239	7,289	30,805
PlastProd	5,280	12,795	38,995	2,123	BusServ	60,731	195,184	55,765	114,986
Glass	500	1,336	5,027	255	MedDent	34,099	36,183	1,569	11,884
NonMetMin	2,503	6,688	25,169	1,278	OthComServ	50,162	66,388	3,065	49,879
BasIrSt	4,839	13,203	21,549	1,473	OthProd	38,534	266,500	19,147	109,130
BasNFer	1,443	3,938	6,427	439					
<b>Total number of workers employed:</b>									
Highly skilled					1107836				
Skilled					2729498				
Semi-skilled and unskilled					3444628				
Informal					1019922				

Source; SAM 2001

### 1.3 THE DIFFERENT EXPORT DESTINATIONS, TYPES OF INVESTMENTS AND GOVERNMENT EXPENDITURES THAT ARE DISTINGUISHED WITHIN THE 2001 SAM.

**1.3.1 Export destinations:** Distinction is made between exports to East Asia and the Pacific, East and Southern Africa excluding the SADC, the SADC, Rest of Europe excluding EU, EU, NAFTA, Eastern Europe and Central Asia, West Africa, Middle East, Americas excluding NAFTA, North Africa, South Asia and unspecified export destinations.

**1.3.2 Government expenditure:** Distinction is made between general administration-, defence-, law and order-, education-, health-, social-, economic- and other expenditures.

**1.3.3 Fixed investment:** Distinction is made between investment expenditure of firms on non-residential property, construction, transport equipment, machinery, as well as the transfer costs that are associated with this type of expenditure. Household fixed expenditure is categorised into residential and transfer cost expenditure, while government fixed expenditure is categorised as residential, construction and investment expenditure on machinery.

As stated in Chapter 8, these individual export destinations, types of investment and government expenditures are aggregated into aggregated exports, government expenditure and fixed investment.

**APPENDIX TWO:  
ECONOMETRIC RESULTS FOR ELASTICITY ESTIMATION**

**2.1 RESULTS FROM THE ESTIMATION OF THE CES PRIMARY FACTOR  
SUBSTITUTION PARAMETER.**

**Table A2.1: Statistical results from CES parameter estimation**

<i>Industry</i>	<i>Coefficient</i>	<i>t-statistic</i>	<i>ADF</i>	<i>Cusum<sup>2</sup></i>	<i>R<sup>2</sup></i>
Agric	0.74	11.63	-4.30	Pass	85.06
Coal	0.38	9.36	-3.10	Pass	74.4
Gold	0.42	10.85	-3.18	Pass	90.8
Othmin	0.29	2.47	-3.77	Pass	85.0
Food	0.34	4.04	-5.05	Pass	95.5
Bev	0.28	2.34	-4.09	Pass	93.9
Tob	0.66	0.13	-3.24	Pass	48.5
Text	0.66	17.58	-2.58	Fail	91.15
Wear	0.78	22.85	-2.66	Pass	95.4
Leath	1.02	8.48	-3.64	Fail	79.6
Foot	0.81	12.83	-2.70	Fail	85.44
Wood	0.38	8.08	-2.79	Fail	68.5
Paper	0.36	8.05	-4.39	Pass	92.6
Print	0.61	21.15	-3.02	Pass	93.7
Coke	0.28	4.65	-2.41*	Pass	79.0
BasChem	0.83	9.50	-3.14	Pass	91.8
OthChem	0.27	2.30	-3.35	Fail	97.6
RubProd	0.85	10.06	-2.66	Pass	91.49
PlastProd	0.73	10.93	-3.91	Fail	95.65
Glass	0.72	10.68	-3.20	Fail	97.38
NonMetMin	0.69	4.03	-2.59*	Fail	87.26
BasIrSt	1.01	8.18	-3.18	Fail	96.98
BasNFer	0.81	4.57	-2.55*	Fail	97.39
MetProd	0.91	17.35	-3.36	Pass	92.24
Macheq	0.77	13.02	-2.99	Fail	88.32
ElecMach	0.66				
Telv	0.83	10.04	-3.35	Pass	
ProfEq	0.77	8.10	-3.81	Pass	77.7
MotVeh	0.66	1.43	-3.24	Fail	91.17
OthTrnsp	0.91	13.65	-1.87	Pass	49.97
Furn	0.58	5.12	-2.63	Fail	86.13
OthInd	0.66			Fail	59.14
Elect	0.26	12.91	-3.34	Fail	84.76
WatSup	0.173	3.76	-3.21	Pass	84.18
BuildCnst	1.05	23.85	-4.07	Pass	97.87
Civil	0.91	14.49	-2.91	Pass	94.4
WhSale	0.74	7.68	-2.93	Pass	66.29
CatAcc	0.5	3.08	-3.42	Pass	77.06
TranspStor	0.66	6.63	-3.44	Pass	98.6
Com	1.45	12.26	-3.70	Pass	97.86
FinIns	0.34	3.40	-3.32	Pass	27.86
BusServ	0.29	2.21	-3.49	Fail	87.28
MedDent	0.35	8.11	-3.53	Fail	98.12
OthComServ	0.66				
OthProd	0.66	205.03	-1.84	Pass	99.99

Source: Own calculations

## 2.2 STATISTICAL RESULTS FOR THE ESTIMATED ARMINGTON ELASTICITIES OF THE 45 SOUTH AFRICAN INDUSTRIES

**Table A2.2: Statistical results from Armington parameter estimation**

<i>Industry</i>	<i>Coefficient</i>	<i>t-statistic</i>	<i>ADF</i>	<i>Cusum</i> <sup>2</sup>	<i>R</i> <sup>2</sup>
Agric	0.318	1.99	-3.24	Pass	23.8
Coal	1.423	3.41	-2.01	Pass	58.6
Gold	No imports				
Othmin	NS	8.18	-1.45	Pass	10.43
Food	1.14	7.54	-3.57	Pass	77.7
Bev	0.68	5.06	-4.98	Pass	53.51
Tob	0.73	9.29	-4.91	Pass	75.32
Text	1.24	14.00	-3.14	Pass	87.77
Wear	0.68	7.33	-2.51	Pass	67.46
Leath	1.83	10.90	-2.94	Pass	92.31
Foot	NS	1.37	-1.03	Pass	27.72
Wood	0.37	3.11	-3.15	Pass	75.35
Paper					
Print	0.42	4.32	-3.38	Pass	32.45
Coke	0.47	1.97	-2.68	Pass	30.82
BasChem	0.56	6.07	-2.36*	Pass	90.44
OthChem	0.71	7.73	-2.76	Pass	96.07
RubProd	1.00	6.69	-3.58	Fail	94.70
PlastProd	NC	1.50	-1.22	Fail	6.99
Glass	0.35	8.88	-3.43	Pass	17.30
NonMetMin	NC	3.01	-1.63	Fail	29.20
BasIrSt	NS	1.90		Fail	31.25
BasNFer	NC	2.64	-1.28	Pass	35.40
MetProd	0.85	11.59	-5.18	Fail	83.91
Macheq	1.07	9.29	-4.02	Pass	84.18
ElecMach	NS	5.94	-2.93	Pass	53.35
Telv	0.91	5.24	-4.78	Pass	87.80
ProfEq	0.99	5.59	-3.24	Pass	53.65
MotVeh	0.71	4.73	-2.72	Fail	62.63
OthTrnsp	1.37	8.96	-3.27	Fail	76.94
Furn	0.75	2.80	-3.20	Pass	87.91
OthInd	0.43	3.02	-3.69	Pass	70.86
Elect	NS	-1.22	-2.25	Fail	6.41
WatSup	No imports				
BuildCnst	1.57	4.12	-3.02	Pass	36.15
Civil	2.84	7.58	-3.40	Pass	65.71
WhSale	NS	2.11	-1.93	Fail	12.95
CatAcc	NS	-2.78	-2.49	Pass	39.17
TranspStor	1.17	7.08	-2.20*	Pass	75.3
Com	NS	-2.95	-2.94	Pass	29.16
FinIns	NS	-0.70	-3.40	Pass	82.93
BusServ	0.98	6.13	-2.90	Pass	91.02
MedDent	1.05	3.57	-3.81	Pass	88.45
OthComServ	NS				
OthProd	0.65	6.22	-3.49	Pass	56.37

### 2.3 STATISTICAL RESULTS FOR THE ESTIMATED HOUSEHOLD EXPENDITURE ELASTICITIES OF THE 45 SOUTH AFRICAN INDUSTRIES

**Table A2.3: Statistical results from household expenditure elasticity estimation**

<i>Industry</i>	<i>Coefficient</i>	<i>t-statistic</i>	<i>ADF</i>	<i>Cusum</i> <sup>2</sup>	<i>R</i> <sup>2</sup>
Agric	0.99	9.73	-3.70	Pass	93.2
Coal	1.72	7.20	-2.68	0	80.0
Gold	0	0	0	0	0
Othmin	0	0	0	Fail	0
Food	0.96	15.17	-2.75	Pass	91.22
Bev	1	8.44	-2.04*	Fail	93.54
Tob	-0.1	-2.55	-2.21*	Fail	71.90
Text	0.43	3.13	-2.19*	Pass	85.39
Wear	0.25	2.75	-3.88	Pass	86.57
Leath	0.42	1.48	-1.65	Fail	73.17
Foot	0.68	11.39	-1.26	Fail	82.57
Wood	0.65	3.98	-4.85	Pass	91.13
Paper	1.11	5.13	-2.43*	Pass	48.14
Print	0.75	13.67	-3.44	Pass	93.02
Coke	1.62	15.54	-4.59	Fail	91.91
BasChem	1.69	8.13	-3.24	Fail	74.89
OthChem	1.17	15.82	-1.97	Fail	93.17
RubProd	0.35	4.57	-2.52	Fail	43.52
PlastProd	0.71	5.07	-2.71	Pass	90.31
Glass	0.83	4.13	-2.88	Pass	90.18
NonMetMin	1.58	6.68	-1.87	Fail	95.26
BasIrSt	0	0	0	0	0
BasNFer	0	0	0	0	0
MetProd	0.86	8.68	-4.00	Fail	91.90
Macheq	0.72	4.37	-3.23	Fail	81.13
ElecMach	0.03	0.20	-2.13	Fail	86.93
Telv	2.24	8.51	-3.95	Fail	96.07
ProfEq	1.2	3.49	-2.32*	Fail	71.34
MotVeh	1.2	3.49	-2.32*	Pass	71.34
OthTrnsp	1.41	3.31	-2.45*	Pass	81.45
Furn	1.85	4.83	-2.24*	Pass	79.13
OthInd	0.19	2.26	-4.45	Pass	15.66
Elect	1.46	8.58	-2.87	Fail	96.83
WatSup	0.62	2.70	-2.90	Fail	51.39
BuildCnst	0	0	0	0	0
Civil	0	0	0	0	0
WhSale	0.81	18.49	-3.28	Pass	92.20
CatAcc	0.9	8.15	-2.33*	Pass	85.85
TranspStor	1.68	30.93	-1.97*	Fail	97.15
Com	2.31	22.29	-3.04	Fail	94.97
FinIns	1.84	10.93	-2.44	Fail	92.76
BusServ	1.28	8.20	-2.46	Fail	96.54
MedDent	1.83	20.96	-3.87	Pass	96.22
OthComServ	0.72	18.35	-2.25*	Fail	92.09
OthProd	0.72			Fail	

APPENDIX 3

A STYLISTED MACRO MODEL WHICH IS USEFUL FOR ANALYSING RESULTS FROM  
A CGE MODEL SUCH AS ORANI

(Source: Adams, 2003)

Level equations:

$$Y^{MP} = C + I + G + (X - M) \quad (1)$$

$$Y^{FC} = F_Y(L, K) \quad (2)$$

$$Y^{MP} = Y^{FC} + Y^{TAX} \quad (3)$$

$$P^C C = P_{GDP}^{FC} Y^{FC} \times \Omega \quad (4)$$

$$\frac{C}{G} = \Gamma \quad (5)$$

$$M = F_M(Y^{MP}, RER) \quad (6)$$

$$X = F_X(-RER) \times Y_W \quad (7)$$

$$\frac{I}{K} = G_I\left(\frac{ROR}{ROR^{REQ}}\right) \quad (8)$$

$$RER = \frac{P_{GDP}^{MP}}{(\phi P_w)} \quad (9)$$

$$P_{GDP}^{MP} = P_{GDP}^{FC}(1 + T) \quad (10)$$

$$TOT = \frac{1}{\{F_{TOT}(X) \times P_w\}} \quad (11)$$

$$\frac{P^C}{P_{GDP}^{MP}} = \frac{1}{F_{PGDP}(TOT)} \quad (12)$$

$$\frac{K}{L} = F_{KL}\left(\frac{RP_L}{RP_K}\right) \quad (13)$$

$$RP_L^{S_L} = RP_K^{-S_K} \quad (14)$$

$$RP_L = F_{RP_L}\left(RW, \frac{1}{TOT}, (1 + T)\right) \quad (15)$$

$$RP_K = F_{RP_K}\left(ROR, \frac{1}{TOT}, (1 + T)\right) \quad (16)$$