THE EFECTIVENESS OF TRADE MAP AS TOOL FOR MEASURING THE TRADE POTENTIAL BETWEEN SOUTH AFRICA AND CHINA

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Abstract

Measuring the trade potential between two countries is an important task both for the national trade analyst as well as for the company researcher. Trade potential is commonly measured using the gravity model, an economic construct. The gravity model, however, is not a perfect model and has its detractors. More recently, the International Trade Centre developed Trade Map an online tool for analysing the trade flows between countries. Although not yet widely used, Trade Map appears to be to good alternative or complementary facility that can be used to measure trade potential. The purpose of this article is to report on the evaluation of Trade Map as a tool for measuring trade potential. In so doing, Trade Map was used to analyse the trade potential between South Africa and China. It was found that Trade Map can provide the international trade researcher with a rich width and depth of information on the trade potential between two countries. It is suggest that Trade Map should be used together with the gravity model to create a more complete analysis of trade potential [180/150]

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1. Introduction

A country's trade potential can be said to be a measure of the scope or capacity of that country to grow its bilateral trade (i.e. imports and exports) with another country or region. Examining the academic literature reveals that trade potential is most commonly measured using the gravity model – an econometric construct (Söderling, 2005; Rahman, Shadat & Das 2006; Armstrong 2007; Proença, Fontoura & Martínez-Galan 2008; De 2009; and Shepotylo 2009). The gravity model is based on the idea that gross trade volumes (exports, imports) between two countries depend on the *sizes* of the two countries in question measured by their respective GDPs, their respective populations, as well as on the *distance* between the two countries measured by both geographic and socio-cultural 'distances' between the two countries (Zaroz & Lehmann 2003; and Leitão 2010).

Although the gravity model is widely used as a measure of trade potential in the literature, there have been some reservations expressed about the model's theoretical foundations (Zaman 2001; and Armstrong 2007). Armstrong (2007), in particular, provides a lengthy discussion of the (mainly theoretical) shortcomings of this model. The author suggests that while the gravity model may be a useful tool to measure the potential for trade between two countries or regions and perhaps even to identify the most suitable countries to trade with, the model's main drawback from a practical perspective is that it provides no clarity on the nature of the potential trade between the two countries; for example, what products should be traded.

This article suggests that there may be an alternative way to measure trade potential, namely by examining the existing trading patterns between two countries or regions in order to see what can be learnt from them. As the trade data that gives rise to trading patterns is available at a product level, such an analysis should highlight which products and product groups have the best chance of success. It is also possible to identify which countries offer the best chance for success given the products that are under investigation. It is argued that this method provides greater insight into and understanding of trade potential than what can be learnt from the gravity model.

The study thus uses the United Nation's International Trade Centre's (ITC's) Trade Map facility to examine the existing trading patterns between South Africa and China with the aim of identifying areas with trade potential. Trade Map is an online, database-driven service run and maintained by the ITC that makes it possible to analyse the trading

patterns between most countries in the world according to the harmonized system (HS) nomenclature (Alvarez & Bijl 2006). The HS nomenclature is a globally accepted customs standard for categorising the products traded between countries (Yu 2008). The article aims to report on the effectiveness of Trade Map as tool for measuring the trade potential between countries.

2. Trade between South Africa and China

The main purpose of this study is to establish whether Trade Map can be used as an alternative (or perhaps additional) tool to the gravity model to determine trade potential. In order to answer this question it is necessary to illustrate the value of the Trade Map tool by attempting to measure the trade potential between two countries. While any two countries could have been chosen for this purpose, South Africa and China were chosen because China has surpassed the United States as South Africa's most important trading partner. In addition, the Department of Trade and Industry (DTI) has indicated its aim of actively attempting to diversify South African exports to China to include more value-added products, through means of a number of inward buying, outward selling, and specialised trade fairs in China (BUSA 2009). It is thus hoped that an analysis of South Africa's trade potential with China using the Trade Map tool will provide some insight into which products South Africa might consider focusing on.

3. The Trade Map tool

Trade Map is a web-based interactive trade data service that provides access to the trade flows of over 220 countries and territories. This trade data includes information on values, quantities, trends, market share, and unit values, both in tabular and graphic format of 5300 products defined at the 2, 4 or 6-digit level of the Harmonised System (HS) for the countries concerned (Anon 2010).

Trade Map is a service offered by the ITC for a fee to developed countries, but is free for most developing countries. The Trade Map service is based on the Comtrade trade database maintained by the United Nations Statistics Division (UNStat). This data, in turn, is collected by the United Nations (UN) in co-operation with the Customs & Excise authorities from most countries around the world. Each year these countries submit their trade data to the UN for the past year. The UN then incorporates this data into a database and makes this database available for the world to use. In addition to the Comtrade data, other data incorporated in Trade Map is sourced from the United Nations Conference on Trade and Development (UNCTAD), the World Trade Organisation (WTO) as well as various national sources. Trade Map incorporates several additional calculations into the data that add further insight to the trade taking place between countries.

Trade Map enables the researcher to analyse the imports or exports between one country (e.g. South Africa) and a partner country (e.g. China). The researcher can then either choose to undertake this analysis for all products or for a particular group of products. As was mentioned earlier, the product classification is according to the HS nomenclature. Known formally as the International Convention on the Harmonised Commodity Description and Coding System (or more commonly as the Harmonised System), this nomenclature is a global standard adopted by the World Customs Organisation and is used by more than 200 countries and customs or economic unions throughout the world (de Lange 2007). These countries and unions account for 98% of world trade. It is important to have some understanding of the HS nomenclature as it is this product perspective encapsulated within the nomenclature that is Trade Map's main benefit as a tool for measuring trade potential.

The nomenclature incorporates approximately 5000 commodity groups each identified by a six-digit code arranged in a legal and logical structure. The structure is supported by well-defined rules to achieve uniform classification. The structure is organised according to 22 sections which are further divided into 98 chapters, each identified by a two-digit code (from 01 to 98). Within each chapter, as one delves deeper into the product detail, the product code expands from two digits, to four digits, and eventually to six digits (some countries apply even more detail – up to ten digits – but this is only for their own national purposes). The global standard is six digits. Addendum A illustrates how the HS nomenclature works.

Once a user has logged into Trade Map, the user has a choice of examining the imports or exports between one country (e.g. South Africa) and a partner country (e.g. China). The first option is thus for the researcher to choose between either imports or exports. The second option is to choose a particular product group (either at the two-, four-, or six-digit HS code level). It is also possible for the user to select 'all products' in which case there is no product detail provided at all. The product detail increases as a researcher selects between a two-, four-, or six-digit code. Once the researcher has selected a product category, the next option is to select the first (or base) country to be included in the analysis, followed by a partner country. Once the two countries have been chosen, the researcher then has the choice of selecting between 'trade indicators' or 'time series' data.

Selecting 'trade indicator' data provides the researcher with three broad views of the data, namely:

- South Africa's exports to China: This view indicates the actual US dollar value of South Africa's exports to China for the most recent year for which there is complete data (currently, 2008). This view

also provides an indication of the growth (or decline) in South Africa's exports of the product in question to China for the past five years, as well as the share of these exports to China in terms of South Africa's total exports.

- China's imports from the world. At the same time the researcher can see the US dollar value of China's imports of the product in question to the world, the growth (or decline) of China's imports of the product in question for the past five years, and China's imports from the world as a percentage share of world imports.
- South Africa's exports to the world. Finally, the researcher is able to view the US dollar value of South Africa's exports to the world of the product in question, as well as the growth (or decline) of South Africa's exports to the world for the past five years, and South Africa's share of world exports for this product.

Choosing the 'time series' option, the researcher can now see the same above three views of the data, but for a selected period of time (currently from 2001 to 2009, although 2009 is not yet a complete series of data). All of this data can be downloaded as an Excel file and analysed separately.

While the literature does provide examples of international trade researchers that have used the Trade Map tool to assess the trade or market potential of countries from the perspective of a supplying country (Meyer & Breitenbach 2004; Kalaba, Sandrey & Ernst van Seventer 2005; Daya 2005; Sebei 2006; Daya 2006; Sebei 2007; Weerahewa 2009), no articles or discussions could be found where the Trade Map tool is evaluated in its own right as a tool for measuring trade potential. In 2006, an official and formal evaluation was undertaken of the ITC by a consortium of mainly Danish consultants. One of the aspects of the activities of the ITC that the consultants looked at was Trade Map, but they acknowledged that 'With such a large number of products, it was not possible to evaluate all products individually.' Nevertheless, they surveyed a number of trade support institutions who responded favourable with respect to their experience with Trade Map. It was also reported that USAid, a major organisation involved with trade analysis, uses the Trade Map tool. Other course, the ITC, the developers of the Trade Map tool, also provides some discussion of the Trade Map tool for trade assessment purposes, but this is more promotional in nature.

4. Methodology

The methodology that was used to determine South Africa's trade potential with China was to examine South Africa's trade with China using the 'trade indicators' option within Trade Map for 'all products'. The analysis was done from the perspective of South Africa's exports to China; South Africa's imports from China were ignored for this article, although examining South Africa's imports from China would have followed a similar process. As the gravity model looks at bilateral trade flows, perhaps this study should have included both an export and import perspective, but seeing that the DTI's focus is almost exclusively on exports, it was felt that this would be sufficient to highlight the value of the Trade Map tool, the main aim of this study.

This analysis was undertaken at the six-digit HS code level as this is the most detailed level of product information available within Trade Map. The resultant data reflected 697 different product categories currently being exported from South Africa to China in 2008. This data was then saved as an Excel file and the following views distilled from the data (in each instance, only the top 20 results were analysed for the sake of brevity):

- South Africa's major exports to China according to US dollar value (see Table 1)
- South Africa's exports to China experiencing the biggest growth over the past five years (see Table 2)
- South Africa's exports to China of a particular product group as a percentage share of South Africa's total exports of the product in question (see Table 3)
- South Africa's exports to China of a particular product group in the instances where China is experiencing very high levels of growth in imports of the products in question from the World (see Table 4)
- South Africa's exports to China of a particular product group in the instances where China is the major importer of the product in question from the World (see Table 5)
- Finally, Trade Map produces an indicate trade potential view of the trade data flows which has been computed based on the following logic, which is valid for each six-digit product: The offer is represented by the exports of the selected country to the world, while the demand is represented by the imports of the selected partner country from the world. The minimum between the two from which the bilateral trade is subtracted is the indicative potential trade. (see Table 6)

The relevant tables corresponding to each of the above-mentioned views are outlined below:

Table 1. **South Africa's major exports to China according to US dollar value**

HS Code (6)	Product label	South Africa's exports to China		
		Value in 2008, USD thousand	Annual growth in value between 2004-2008, %, p.a.	Share in South Africa's exports, %
260112	Iron ores & concentrates, other than roasted iron pyrites, agglomerated	**961970**	40	41.1
260200	Manganese ores and concentrates etc	**654138**	108	34.4
261000	Chromium ores and concentrates	**585874**	166	64.1
720241	Ferro-chromium containing by weight more than 4% of carbon	**327450**	111	9.6
711011	Platinum unwrought or in powder form	**222917**		6.2
260300	Copper ores and concentrates	**135454**	207	37.9
740400	Waste and scrap, copper or copper alloy	**112671**	69	23.5
270900	Petroleum oils and oils obtained from bituminous minerals, crude	**99018**		37.0
510111	Greasy shorn wool, not carded or combed	**68406**	382	49.4
721932	Flat rolled prod, stainless steel, cold rolled, width >/=600mm,3mm<4.75mm	**68196**	91	50.3
390210	Polypropylene	**66938**	109	22.3
750610	Plates, sheet, strip and foil, nickel, not alloyed	**65956**	36	38.2
721912	Flat rolled prod, stainless steel, hot rolled, in coil, width >/=600mm, 4.75<10mm	**63058**	23	53.5
260111	Iron ores & concentrates, other than roasted iron pyrites, non-agglomerated	**58259**	428	99.9
720230	Ferro-silico-manganese	**50063**		9.2
760612	Plate, sheet or strip, aluminium alloy, rectangular or square, exceeding 0.2mm thick	**47831**	12	7.9
290513	Butan-1-ol (N-butyl alcohol)	**46579**	32	28.6

Source: Trade Map, ITC (www.trademap.org)

Table 2. South Africa's exports to China experiencing the biggest growth over the past five years

HS Code (6)	Product label	South Africa's exports to China		
		Value in 2008, USD thousand	Annual growth in value between 2004-2008, %, p.a.	Share in South Africa's exports, %
261590	Niobium, tantalum and vanadium ores and concentrates	3067	**512**	4.6
260111	Iron ores & concentrates, other than roasted iron pyrites, non-agglomerated	58259	**428**	99.9
510111	Greasy shorn wool, not carded or combed	68406	**382**	49.4
240110	Tobacco, unmanufactured, not stemmed or stripped	2177	**348**	67.0
400220	Butadiene rubber	1591	**298**	3.0
392329	Sacks and bags (including cones) of plastics nes	505	**275**	3.0
285000	Hydrides, nitrides, azides, silicides & borides	9471	**247**	9.9
901420	Instruments & appliances for aeronautical/space navigation (other than compasses)	1841	**218**	10.2
820559	Tools for masons, watchmakers, miners and hand tools nes	127	**209**	2.6
260300	Copper ores and concentrates	135454	**207**	37.9

901590	Parts and accessories for use with the apparatus of heading No 90.15	247	**201**	16.4
282540	Nickel oxides and hydroxides	809	**197**	99.8
392350	Stoppers, lids, caps and other closures of plastics	30	**188**	0.2
903289	Automatic regulating or controlling instruments and apparatus, nes	2400	**187**	7.2
842389	Weighing machinery, nes	222	**175**	6.0
730900	Reservoirs, tanks, vats & containers, with a capacity >300L (ex compressed gas type)	529	**173**	2.8
850490	Parts of electrical transformers, static converters and inductors	479	**171**	3.6
261000	Chromium ores and concentrates	585874	**166**	64.1
842890	Lifting, handling, loading or unloading machinery nes	30	**166**	0.2
847330	Parts & accessories of automatic data processing machines & units thereof	354	**163**	0.4

Source: Trade Map, ITC (www.trademap.org)

Table 3. South Africa's exports to China of a particular product group as a percentage share of South Africa's total exports of the product in question

HS Code (6)	Product Label	South Africa's exports to China		
		Value in 2008, USD thousand	Annual growth in value between 2004-2008, %, p.a.	Share in South Africa's exports, %
260111	Iron ores & concentrates, other than roasted iron pyrites, non-agglomerated	58259	428	**99.9**
282540	Nickel oxides and hydroxides	809	197	**99.8**
150420	Fish fats & oils & their fractions excluding liver, refined/not, not chemically modified	1058	56	**88.4**
240110	Tobacco, unmanufactured, not stemmed or stripped	2177	348	**67.0**
261000	Chromium ores and concentrates	585874	166	**64.1**
251612	Granite, merely cut, by sawing or otherwise, into blocks etc	4132	36	**54.1**
721932	Flat rolled prod, stainless steel, cold rolled, width >/= 600mm, 3 mm < 4.75mm	68196	91	**50.3**
520832	Plain weave cotton fabric,>/=85%,>100g/m= to 200g/m=, dyed	90	74	**50.2**
230120	Flour, meal & pellet of fish, crustaceans, mollusks / other aqua invertebrates, unfit human consumption	8990	37	**49.7**
510111	Greasy shorn wool, not carded or combed	68406	382	**49.4**
621133	Men's/boy's garments nes, of man-made fibres, not knitted	1455	100	**49.3**
410210	Sheep or lamb skins, raw, with wool on, nes	9068	83	**47.9**
260112	Iron ores & concentrates, other than roasted iron pyrites, agglomerated	961970	40	**41.1**
410799	Leather "including parchment-dressed leather" of the portions, strips	2409	159	**40.7**
750610	Plates, sheet, strip and foil, nickel, not alloyed	65956	36	**38.2**
260300	Copper ores and concentrates	135454	207	**37.9**
470329	Chemical wood pulp, soda / sulphate, non-coniferous, semi-bleached / bleached, nes	29386	142	**34.6**
260200	Manganese ores and concentrates etc	654138	108	**34.4**
410390	Raw hides and skins of animals, nes	3754	88	**31.7**
961800	Tailors' dummies/lay figures; automation & other animated displays for window	123	115	**31.5**

Source: Trade Map, ITC (www.trademap.org)

Table 4. South Africa's exports to China of a particular product group in the instances where China is experiencing very high levels of growth in imports of the product in question from the World and where South Africa has a good growth (>45%) in exporting the product to China over the past five years

HS Code (6)	Product label	South Africa's exports to China			China's imports from the world		
		Value in 2008, USD thousand	Annual growth in value between 2004-2008, %, p.a.	Share in South Africa's exports, %	Value in 2008, USD thousand	Annual growth in value between 2004-2008, %, p.a.	Share in world imports, %
260400	Nickel ores and concentrates	710	142	1.4	2050357	**193**	52.9
700319	Cast glass sheets non-wired nes	38	45	0.4	156579	**136**	23.1
220421	Grape wines nes, including fortified & grape must, unfermented by adding alcohol in container	3790	82	0.6	275851	**88**	1.2
854229	Electronic integrated circuits, monolithic, analogue or analogue and digital	120	71	1.1	129269500	**83**	34.6
720241	Ferro-chromium containing by weight more than 4% of carbon	327450	111	9.6	1460182	**78**	15.3
851790	Parts of electrical apparatus for line telephone or line telegraphy	93	53	0.5	13574510	**77**	17.6
261790	Ores and concentrates nes	978	104	19.1	9955	**72**	21.8
810590	Cobalt and articles thereof, nes	97	104	1.3	24561	**64**	5.6
261000	Chromium ores and concentrates	585874	166	64.1	2709689	**63**	67.9
720421	Waste and scrap, stainless steel	3116	89	9.2	681246	**62**	6.1
220410	Grape wines, sparkling	36	126	0.2	20374	**62**	0.3
854441	Electric conductors, for a voltage not exceeding 80 V, fitted with connectors	27	129	0.2	1889942	**61**	9.4
970300	Original sculptures and statuary, in any material	134	113	1.9	2589	**55**	0.1
250850	Andalusite, kyanite and sillimanite	4425	122	9.9	8038	**53**	5.6
940161	Seats with wooden frames, upholstered nes	62	83	0.8	48306	**53**	0.3
260200	Manganese ores and concentrates etc	654138	108	34.4	3466740	**52**	39.9

Source: Trade Map, ITC (www.trademap.org)

Table 5. South Africa's exports to China of a particular product group in the instances where China is a major importer of the product in question from the World and where South Africa has a good growth record (>30%) in exporting the product to China over the past five years

HS Code (6)	Product Label	South Africa's exports to China			China's imports from world		
		Value in 2008, USD thousand	Annual growth in value between 2004-2008, %, p.a.	Share in South Africa's exports, %	Value in 2008, USD thousand	Annual growth in value between 2004-2008, %, p.a.	Share in world imports, %
261000	Chromium ores and concentrates	585874	166	64.1	2709689	63	**67.9**
510111	Greasy shorn wool, not carded or combed	68406	382	49.4	1534703	14	**66.4**
260111	Iron ores & concentrates, other than roasted iron pyrites, non-agglomerated	58259	428	99.9	57069520	49	**63.4**
260400	Nickel ores and concentrates	710	142	1.4	2050357	193	**52.9**

410210	Sheep or lamb skins, raw, with wool on, nes	9068	83	47.9	329345	13	**51.2**
470730	Waste and scrap of paper/paperboard made mainly of mechanical pulp, nes	73	136	6.0	1624711	29	**49.7**
391590	Plastics waste and scrap, nes	737	49	30.9	1932178	32	**45.6**
260200	Manganese ores and concentrates etc	654138	108	34.4	3466740	52	**39.9**
230120	Flour, meal & pellet of fish, crustaceans, mollusks, other aqua invertebrates, unfit for human consumption	8990	37	49.7	1399059	12	**37.1**
251611	Granite, crude or roughly trimmed	5837	35	7.1	619194	14	**36.9**
854229	Electronic integrated circuits, monolithic, analogue or analogue and digital	120	71	1.1	129269500	83	**34.6**
290514	Butanols, nes	2551	60	24.9	197561	19	**33.5**
750610	Plates, sheet, strip and foil, nickel, not alloyed	65956	36	38.2	98895	25	**33.4**
290513	Butan-1-ol (N-butyl alcohol)	46579	32	28.6	352109	21	**31.4**
740400	Waste and scrap, copper or copper alloy	112671	69	23.5	5970255	28	**30.0**
470311	Chemical wood pulp, soda or sulphate, coniferous, unbleached	5160	32	21.5	269612	3	**28.9**
853400	Printed circuits	127	79	11.7	11064650	23	**28.0**
261590	Niobium, tantalum and vanadium ores and concentrates	3067	512	4.6	98184	9	**27.6**
282540	Nickel oxides and hydroxides	809	197	99.8	68170	-1	**26.5**
260300	Copper ores and concentrates	135454	207	37.9	9930444	47	**26.26**
510539	Fine animal hair, carded or combed (excluding wool and hair of Kashmir)	8433	37	22.6	30583	2	**25.84**

Source: Trade Map, ITC (www.trademap.org)

Table 6. The indicative trade potential for trade between South Africa and China

HS Code (6)	Product Label	South Africa's exports to China			Indicative potential trade, USD thousand*
		Value in 2008, USD thousand	Annual growth in value between 2004-2008, %, p.a.	Share in South Africa's exports, %	
260112	Iron ores & concentrates, other than roasted iron pyrites, agglomerated	961970	40	41.15	**1375572**
260200	Manganese ores and concentrates etc	654138	108	34.49	**1242305**
711011	Platinum unwrought or in powder form	222917		6.23	**1164468**
720241	Ferro-chromium containing by weight more than 4% of carbon	327450	111	9.61	**1132732**
842139	Filtering or purifying machinery and apparatus for gases nes	14998	6	0.51	**708899**
710239	Diamonds non-industrial nes excluding mounted or set diamonds	273	8	0.04	**706934**
760612	Plate, sheet or strip, aluminium alloy, rectangular or square, exceeding 0.2mm thick	47831	12	7.97	**552561**
711019	Platinum in other semi-manufactured forms	28272	23	1.08	**411473**
940190	Parts of seats other than those of heading No 94.02	750	33	0.19	**388079**
470200	Chemical wood pulp, dissolving grades	24739	46	6.12	**379465**
740400	Waste and scrap, copper or copper alloy	112671	69	23.55	**365828**
261000	Chromium ores and concentrates	585874	166	64.13	**327712**
220421	Grape wines nes, including fortified & grape must, unfermented by adding alcohol in container	3790	82	0.69	**272061**

721933	Flat rolled prod, stainless steel, cold rolled, 600mm wide, 1mm < 3mm	10169	16	3.85	**253937**
390210	Polypropylene	66938	109	22.33	**232877**
760110	Aluminium unwrought, not alloyed	9164	-38	0.68	**224871**
260300	Copper ores and concentrates	135454	207	37.96	**221369**
870899	Motor vehicle parts nes	2637	-33	1.27	**204335**
720110	Pig iron, non-alloy, containing by weight	6288	35	2.56	**187475**
261400	Titanium ores and concentrates	5878		1.44	**174825**
840999	Parts for diesel and semi-diesel engines	239	64	0.16	**151827**
847490	Pts of sorting / screening / mixing / crushing / grinding / washing / agglomerating machine, etc	3884	49	1.65	**149649**
310520	Fertilizers containing nitrogen, phosphorus & potassium in packs weighing	109	62	0.07	**149177**
261510	Zirconium ores and concentrates	31672	8	17.74	**146904**
870892	Mufflers and exhaust pipes for motor vehicles	941	29	0.37	**144214**
880330	Aircraft parts nes	2364	30	1.7	**136406**
290513	Butan-1-ol (N-butyl alcohol)	46579	32	28.61	**116237**
721921	Flat rolled prod, stainless steel, hot rolled, nic >/= 600mm wide, over 10mm thick	22984	77	13.31	**109853**
721934	Flat rolled prod, stainless steel, cold rolled , width >/= 600mm, 0.5mm < 1mm	5858	38	5.25	**105800**
843149	Parts of cranes, work-trucks, shovels, and other construction machinery	611	90	0.7	**86325**
847330	Parts & accessories of automatic data processing machines & units thereof	354	163	0.46	**77163**
251611	Granite, crude or roughly trimmed	5837	35	7.11	**76244**
731210	Stranded wire, ropes & cables of iron or steel, not electrically insulated	244	47	0.34	**71275**
732690	Articles, iron or steel, nes	1005	23	1.4	**70612**
510111	Greasy shorn wool, not carded or combed	68406	382	49.42	**70022**

Source: Trade Map, ITC (www.trademap.org)

*The offer is represented by the exports of the selected country to the world, while the demand is represented by the imports of the selected partner country from the world. The minimum between the two from which the bilateral trade is subtracted is the indicative potential trade.

5. Findings

The above data can lead to the following assertions about the trade potential between South Africa and China:

- South Africa exports primarily raw materials and particularly mineral products to China – see Table 1. South Africa exports large volumes of manganese, chromium, ferro-chromium, copper and iron ores to China (in each instance, over US$50 million and with growth rates for the period 2004 to 2008 of around the 100%). The only non-minerals that appear in the top-20 list of exports to China are polypropylene (109% growth), bytol alchohol (32% growth), and greasy shorn wool (382% growth). Also in the top-20 list are a few low value-added products such nickel and aluminium plates, as well as rolled stainless steel sheets. The data would suggest that South Africa is seen as major source of raw material supply for the Chinese manufacturing sector.
- The exports to China experiencing the greatest growth as reflected in Table 2, include niobin, tantalum and vanadium ores (512% growth), iron ores (428% growth), greasy shorn wool (382% growth), tobacco (348% growth), butadiene rubber (298% growth), sacks and bags of plastics (275% growth), hydrides, nitrides, azides, silicides, and borides (247% growth), instruments and appliances for aeronautical/space navigation (218% growth), tools for masons (209% growth), copper ores (207% growth), and parts and accessories for surveying instruments and appliances (201% growth). In most instances (except for tools for masons and the parts and accessories for surveying instruments and appliances), the

US dollar value of South Africa's exports to China is quite substantial and in excess of US$ 1 million. The fact that products such as butadiene rubber, plastic bags and sacks, instruments and appliances for the aeronautical/space industry and parts and accessories for surveying instruments are experiencing such significant growth is heartening. It suggests that it is possible for South Africa to become a supplier of technology products and higher value-added products to the Chinese markets.

- Table 3 highlights those products for which China as a destination represents approximately 50% of South Africa's total exports. These products include iron ores (almost 100%), nickel oxides and hydroxides (almost 100%), fish fats and oils (88%), tobacco (67%), chromium ores (67%), cut granite (54%), cold rolled stainless steel (50%), plain weave cotton fabric (50% - although this export item is small in dollar value), and flour, meal and pellets of fish (50%). For these product groups, South Africa appears to be very dependent on the Chinese market.
- Table 4 highlights those products being imported by China and that have experienced very high import growth rates over the past five years (>50%) and for which South Africa is currently a supplier (with export growth rates of >45%). These products include chromium ores, nickel ores, electric conductors, grape wines sparkling, andalusite, kyanite and sillimanite, original sculptures, manganese ores, cobalt, and other ores. Other products that fall within this classification include cast glass sheets, grape wines, electronic integrated circuits, and parts of electrical apparatus for line telephone or line telegraphy.
- Table 5 highlights the fact that China is a major importer from the World (> 30%) of chromium ores, greasy shorn wool, iron ores, nickel ores, sheep or lamb skins, waste and scrap of paper, plastics waste and scrap, manganese ores, flour, meal and pellets of fish, crustaceans, mollusks and other aqua invertebrates, electronic integrated circuits, butanols, nickel plates and sheets, butyl alcohol, as well as waste and scrap of copper. At the same time, South Africa is a regular and growing exporter of these products to China (> 30% growth over the past five years).
- Finally, the indicative trade potential view provided by Trade Map is a very useful tool for estimating the trade potential between countries. Trade Map defines indicative trade potential as the lower of the value a selected country exports to the world or the value the partner country imports from the world minus the current trade between the two countries under review. The trade potential is indicative only and serves as a departure point for further research. It gives an overview of the complementarities of the two economies. If one examines Table 6, it is clear that the ten product groups that the reflect the highest trade potential are: iron ores, manganese ores, unwrought or powdered platinum, ferro-chromium, gas filtering and purifying machinery, non-industrial diamonds, aluminium plates or sheets, platinum in semi-manufactured work, parts of seats, and chemical wood pulp.

6. Discussion

The discussion has two components; the first briefly addresses the findings on the trade potential between South Africa and China, while the second addresses the question of the Trade Map's usefulness as a tool for measuring trade potential, the main aim that this article reports on. In the first regard, the findings sketch a picture of South Africa as a major supplier of raw materials for the Chinese manufacturing colossus. Given the size and growth of the Chinese economy [Ref], it is not surprising that China has become South Africa's major trade partner. The heavy emphasis on raw material supplies suggests, however, that the relationship is a 'pull relationship' with China simply sourcing what it needs from South Africa, rather than a 'push relationship' with South Africa building sustainable markets in China. Indeed, there has been some criticism of a new form of colonialism occurring in Africa and South Africa, with China investing in this region with primary purpose of securing future raw materials to fuel its manufacturing sector. This is evidenced in the trade data.

At the same time, there is also evidence of 'pockets' of value-added exports that suggest that South Africa could, with time, become a meaningful exporter of high-end products to China. From a national perspective, this will require some proactive effort to promote South African manufactured exports to China. It may require further trade analysis (perhaps using Trade Map) to identify specific product groups where South Africa can grow its value-added exports to China, as well as providing incentives such financial support for trade missions, trade fair participation and individual market research. The DTI should be urged to negotiate a trade agreement with China that will benefit manufacturers in both countries and also to encourage the Chinese authorities to invest in South Africa, not only to secure their long-term raw material supplies, but also to cooperate in joint manufacture in higher value-added areas.

With respect to the role of Trade Map as tool for measuring trade potential, the findings outlined above suggest that Trade Map can provide the international trade researcher with a rich width and depth of information on the trade potential between two countries. Using Trade Map, the researcher is able to identify the current range of products being exported from South Africa to China; the growth (or decline) in the trade between the two countries for every product; and the share that these exports to China have of South Africa's total exports to the world. This data reflects the current state of affairs and provides a baseline for estimating future trade potential. For example, if South Africa is currently exporting a product to China, it can be expected (although it obviously is not certain) that South Africa will again export the product to China the coming year and if the product has been experiencing a growth or decline, that the growth or decline will continue. From a national point-of-view the DTI may want to take proactive steps to take advantage of a growth pattern or strive to reverse a decline.

The researcher is also able to identify China's imports from the world for the products in question. The assumption is that if China is a leading world importer of a particular product that this represents an opportunity also for South Africa, especially if South Africa is already exporting the product to China. Furthermore, the growth or decline in the imports of the product into China indicates whether the opportunity is growing or declining for South Africa. Once again, the share that China's imports of a particular product has of world imports indicates whether China is a leading importer of the product or at least a significant importer (and hence market) of the product in question.

The third view that Trade Map offers the researcher, namely of South Africa's exports of the products concerned, was not highlighted in this article, but does add another dimension to an analysis of trade potential as it indicates whether South Africa is a serious supplier of the product in question. From both the point-of-view of the national researcher or a company researcher, this is useful information to know. If South Africa is an important global supplier of the product, then this fact underscores the potential for trade with China, assuming that China is, in turn

The indicative trade potential view that Trade Map offers the researcher is very useful and serves as an objective measure of trade potential, but as the ITC itself points out, this is not perfect forecasting. Nevertheless, it provides the researcher with an idea of which product groups have substantial trade potential. It is then up to the researcher to explore this opportunity further.

As far as the experiences of other researchers are concerned, it seems that they have found the Trade Map tool very useful in analysing trade potential. The South Africa National Department of Agriculture, for one has used Trade Map extensively to identify the trade potential for agricultural products in other Southern African countries (Daya 2005; Sebei 2006; Daya 2006; Sebei 2007). Meyer and Breitenbach in their analysis of the market potential for South African apples, report that 'The information provided by the Trademap analysis in combination with feedback and business information from the business sector … provide the best basis for building export strategies.' Other organisations that have used Trade Map for trade analysis purposes include; the Caribbean and Regional Negotiating Machinery, USAid, the Organisation for Economic Co-operation and Development and the World Bank Institute [Ref].

7. Conclusion

This article reports on the role that Trade Map, a trade analysis tool developed by the ITC, can play as a means of measuring trade potential. The Trade Map tool was used in a practical context to examine the trade potential between South Africa and China. The usefulness of this tool was then reported on in the above discussion. The conclusion that can be drawn from this exercise is that Trade Map is, indeed, a very powerful tool for the trade analyst, whether at national or company level. It provides the analyst with multiple views of the trade flows between countries and enables the researcher to undertake this analysis at the six-digit HS code level, thus providing the researcher with a great deal of product detail. While Trade Map is not a perfect tool and also has some limitations, if used together with the gravity model, it should provide the international trade researcher with a more complete analysis of trade potential.

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