The Competitive Status of the South African Wheat Industry

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ERSA working paper 676

April 2017

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April 12, 2017

Abstract

This article investigates the competitiveness of the South African wheat industry and compares it to its major trade partners. Since 1997, the wheat-to-bread value chain has been characterised by concentration of ownership and regulation. This led to concerns that the local wheat market is losing international competitiveness. The competitive status of the wheat industry, and its sub-sectors, is determined through the estimation of the relative trade advantage (RTA). The results revealed declining competitiveness of local wheat producers. Compared to the major global wheat producers, such as Argentina, Australia, Brazil, Canada, Germany and the USA, South Africa's unprocessed wheat industry is uncompetitive. At the same time, South Africa has a competitive advantage in semi-processed wheat, especially wheat flour. The institutional environment enables the importation of raw wheat at lower prices and exports processed wheat flour competitively to the rest of Africa.

1 INTRODUCTION

This study investigates the competitive status of the South African wheat industry and its sub-sectors, and compares it to its most important global trade partners. In order to feed the world's estimated 9.1 billion people by 2050, the Food and Agriculture Organisation (FAO) (2009) estimates that world food production will have to increase by approximately 70%. This implies that agricultural production should at least double while having to contend with a declining rural labour force and rising feedstock demand from the bio-energy market.

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Furthermore, the agricultural industry will have to assist in the development of agriculture-dependent countries, deal with climate change and develop efficient and sustainable production methods (FAO, 2009). In addition to these global challenges, each country and industry has its own identity and therefore its own unique challenges. The South African wheat industry (SAWI) is a good example of an industry influenced by both global and local developments, which, in turn, affect its competitiveness.

As the wheat industry is currently South Africa's second most important field crop, following maize, the wheat industry has to be internationally competitive. Wheat flour, mainly used in the baking of bread, is regarded as the second most important food source in South Africa and therefore plays an important role to ensure sustainable food security (NAMC, 2005). This view is supported by the fact that bread, and especially brown bread, is seen as an essential part of the National School Nutrition Programme to feed the nation (ETU, 2012). Bread, which is the main product of the wheat industry, is also fast becoming a staple food, particularly in informal settlements where people do not have access to electricity and ovens. As a result, wheat consumption has increased relative to maize (Cock, 2009).

The importance of the wheat industry not only lies in its ability to provide food for the nation, but also in the indirect contribution it makes to the local economy through job creation, skills development, income, wealth and poverty alleviation. South Africa therefore needs a viable, efficient and sustainable wheat production sector.

Recent statistics indicate that the production of wheat in South Africa is under severe pressure. Between 1997 and 2016, the land dedicated to wheat plantings has decreased from approximately 1.4 million hectares to 600 000 hectares, while wheat imports, to meet the growing local demand, have increased from 469 000 tons to 1.5 million tons. The decline in production has had a detrimental effect on the sector's ability to provide employment, which has automatically reduced the sector's contribution to economic growth and well-being (Cock, 2009). A decline in food production in any Sub-Saharan African country is cause for concern, especially as these countries are regarded by many as part of the world's future food basket.

Van Schalkwyk and Van Deventer (2005) suggest that the decline in wheat production can be attributed to the current state of South African wheat industry. Until 1997, the industry was characterised by a single marketing channel. This system was controlled by a centralised Wheat Board. They fixed wheat prices and controlled imports and exports. Local millers were obliged to utilise locally produced wheat. The Wheat Board's sole purpose was to protect the local supply chain through the manipulation of prices of imports and exports (Van Schalkwyk & Van Deventer, 2005). Since 1997, market forces were allowed to prevail, which led to the decommissioning of the Wheat Board. This prompted international competitors to penetrate and take up a more prominent role in the South African wheat industry's (SAWI) domestic supply chain (NAMC, 2005). The SA wheat industry, as can be seen in Figure 1, suddenly had to compete with international entities. This did open up more opportunities for the local

industry, but also exposed it to increasing risks in the form of volatile demand and supply conditions and fluctuating prices (Van Schalkwyk & Van Deventer, 2005).

The NAMC (2004) and Sosland (2011) elaborated on the findings of Van Schalkwyk and Van Deventer (2005), and suggested that market concentration could be the reason for the declining wheat production in South Africa. They argued that the decommissioning of the Wheat Board and the subsequent liberalisation of the market had several unintended consequences, especially the need to compete internationally. This necessitates higher efficiency and subsequently led to a decline in the number of wheat buyers from 137 mills in 1997 to 65 mills in 2011 (NAMC, 2004; Sosland, 2011). This, coupled with the fact that the major millers integrated vertically into the wheat supply chain, created a great deal of concentration among wheat buyers in the country. Cock (2009) confirms this by stating that deregulation caused the wheat-to-bread value chain to be marked by concentration of ownership and regulation along the full length of the chain, from storage and milling to baking and retail. This prompted the notion that the increased concentration in the local wheat market influenced competitiveness of the industry, especially where South Africa now has to operate in a global environment (Van der Merwe, 2016).

To research this problem, the competitive status of the South African wheat industry is determined in this article. The next section provides a literature review on competitiveness and methodologies to measure competitiveness. The results of the estimated relative competitive advantage of the wheat industry are then reported, discussed and compared to the competitiveness of South Africa's most important competing nations in the international wheat industry.

2   LITERATURE STUDY

The concept of competitiveness in traditional trade theories has over the past decades grown in importance. Theory states that if the relative opportunity costs of producing goods differ among countries, potential gains can be made from specialisation and trade leading to comparative advantage (Vignes & Smith, 2005). The underlying assumptions associated with free trade include perfect competition with efficient markets, homogeneous products, universal access to technology with no learning costs, no externalities or scale economies, technically efficient firms and full employment of resources. In view of this, the focus has shifted towards competitive advantage (Cho & Moon, 2013).

The competitive advantage of a specific industry, sector or product can be expressed as competitive when compared to similar industries, sectors or products in relation to price and/or quality. According to Porter (1998), the first and most fundamental principle to attain competitiveness is to define and measure it. The Organisation for Economic Co-operation and Development (OECD) defines competitiveness as the "ability of companies, industries, regions, nations, and supranational regions to generate, while being and remaining exposed to international competition, relatively high factor income and factor employment lev-

els on a sustainable basis" (Hatzichronologou, 1996:20; Aleksiev, 2011:8; Celac, 2014:4). The European Commission similarly defines competitiveness as "a sustained growth in the standards of living of a nation or region, and as low a level of involuntary unemployment as possible" (European Commission, 2009). This implies that there is no single definition of competitiveness in economic literature. According to Frohberg and Hartman (1997), the difficulty in defining competitiveness stems from the fact that it has various dimensions. For the purpose of this study, the competitiveness of the wheat industry will be defined as the ability of the industry to capture some market share, and generate wealth and employment in the international competitive environment.

Porter (1998) and Esterhuizen (2006) highlighted the importance to quantify competitiveness. Several methodologies can be used to determine the competitive status of an industry (Frohberg & Hartman, 1997). Most frequently employed methodologies apply the real exchange rate, foreign direct investment, and market share indicators – which all differ widely in their approach and data requirements. One indisputable and overarching characteristic of all the methodologies is, however, that they provide relative measures, making comparisons with a base value.

Although the real exchange rate generally applies to the whole economy, several studies have used it to determine the competitiveness of specific sectors. Within this context, Frohberg and Hartman (1997) defined the real exchange rate as the ratio of the price index of tradable commodities to that of nontradable ones. Data are easily available for this measure, but the main shortcoming is that it measures the price of demand, excluding intermediate goods and factor prices.

Foreign direct investment is regarded as a partial substitute for exports and a way of overcoming trade barriers in destination countries. Such investments often mirror the competitiveness of the donor country; however, they can also point to the competitive advantage of the recipient country, region or sector.

In addition to these methodologies, several indicators have been developed to measure competitiveness based on market and trade information. Although this is not without its challenges, one advantage of using trade data is that demand and supply responses are considered simultaneously (Frohberg & Hartman, 1997). Another advantage is that the costs of marketing and transport to and from ports are also considered. International competitiveness of a country or sector can therefore be determined by studying the structure of its foreign trade (Bernatonyte & Normantiene, 2009).

Various methods can be used to establish the extent of foreign trade, including the Balassa index, Donges and Riedel index, Hine and Greenaway method, and Sapir method. The indicator of the revealed comparative advantage (RCA) provides the most concise picture of foreign trade (Visser *et al.,* 2015). The RCA concept was first introduced by Liesner (1958), but refined and popularised by Balassa (1989:44-61) and came to be known as the 'Balassa index'. It has been widely used in empirical studies to identify a country's weak and strong export sectors by calculating a relative export advantage index (RXA). This index, however, only considers the exports and neglected the import advantage of a

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particular country or sector. An alternative method was therefore developed by Volrath in 1991, called the relative trade advantage (RTA). The RTA expands on the RCA by incorporating a relative import advantage index (RMA) and subtracting it from the export advantage (RXA) to arrive at the RTA index.

The RTA method takes both exports and imports into consideration, and is therefore superior and a more comprehensive measure of competitiveness than those methods that only consider exports or imports (Volrath, 1991). In view of this, the RTA index approach will be used to determine the competitive status of the South African wheat industry. This will provide an indication of whether the wheat industry is internationally competitive within the current local and international market environment.

3 METHODOLOGY

3.1 Approach

In terms of the relative trade advantage method (RTA), competitive advantage is indicated by the trade performance of individual commodities, supply chains and countries in the sense that each commodity's trade pattern reflects relative market costs as well as differences in non-price competitive factors, such as government policies (Volrath, 1991). Furthermore, it is necessary to determine how successful the sector was in selling its products over time in the local and global market relative to competitors. The RTA method measures competitiveness under real-world conditions, including uneven economic "playing fields", distorted economies and varying trade regimes. It is therefore considered to be best suited for measuring the competitive status in the intended study (Volrath, 1991, as adapted by Esterhuizen, 2006).

The relative trade advantage (RTA) is calculated as the difference between the relative export advantage (RXA) and relative import advantage (RMA) and formulated as:

$$RTA = RXA - RMA \tag{1}$$

The calculation of the RXA and RMA is based on the basic revealed comparative advantage (RCA), which expresses competitiveness as the share of wheat exports in the country relative to the share of total wheat exports in the world:

$$RCA = (SA\ wheat\ exports/Total\ SA\ exports)\ / $$
$$(World\ wheat\ exports/Total\ world\ exports)$$

Similarly, RXA measures export (X) RCA as:

$$RXA = (X_{cw}/X_c)/(X_{Gw}/X_G) \tag{2}$$

and RMA import (M) RCA as:

$$RMA = (M_{cw}/M_c)/(M_{Gw}/M_G) \tag{3}$$

where:

c = country and G = world, of a particular product or industry w = wheat.

Positive RTA values are an indication that the wheat industry or wheat products are competitive compared to international peers. Negative values signify a lack of competitiveness, while zero indicates marginal competitiveness.

3.2 Data used

The RTA is a relative measure determining the competitive status of the wheat industry and therefore necessitates establishing the success of each section of the supply chain trading its products, relative to the other sections. This approach is designed to identify the section of the supply chain that is uncompetitive. To this end, import and export data are needed for each section of the chain, with the product in each section of the chain representing that section. For instance, wheat will represent the unprocessed section of the wheat supply chain, wheat flour the semi-processed section, and pasta, bread and pastry the processed section.

To enable comparisons with international competitors, the RTAs of wheat, and its sub-sectors, of Argentina, Brazil, Australia, Canada, Germany and the United States (USA) are also calculated. This will also indicate where South African wheat fits in relative to its peers in the international community.

The most recent trade data providing import and export values from 1992 to 2012 were drawn from the United Nations' Comtrade database, and used to determine changes in the competitive status of South Africa's wheat industry and its international peers, respectively. The period under review also indicated how competitiveness has changed following the deregulation of the wheat industry since 1997.

4 RESEARCH RESULTS

The competitive status of the South African wheat industry was assessed in this study. The relative trade advantage indices (RTA) were estimated for wheat, wheat flour, pasta, bread and pastry, biscuits, bran and residues, and the results are provided in Table 1. The competitive position of unprocessed, semi-processed and processed wheat is illustrated in Figures 1 and 2. The study also estimated the competitive advantage of the wheat industry and its sub-sectors of South Africa's most important trade partners. The competitive positions of unprocessed wheat of these countries are compared to South Africa in Table 2.

The current research found that South Africa's wheat industry is not competitive and its position had deteriorated since the decommissioning of the Wheat Board in the late 1990s. The results indicated that the wheat industry is uncompetitive, both with regard to unprocessed and processed products. It is obvious that products with a short shelf life, such as bread and pastry, cannot be traded

through distance and time, and are therefore not internationally competitive. Where specialised imported wheat is required and export opportunities limited, such as pasta, the industry also loses competitiveness. Brans and residue are mostly regarded as by-products and waste and receive little attention. It seems that brans and biscuits could be competitive as its RTAs were positive in some years (see Table 1), but these indices are so close to zero that it would be better to class these sub-sectors as marginal.

South Africa does, however, have a competitive advantage in the production of wheat flour (Table 1). This is mainly because South Africa imports wheat from abroad, as local supply is limited. This also suppresses the price of lower grades, enabling the industry to process flour and export it competitively to Africa. It also reflects the potential impact of increased market concentration on the industry's competitiveness and consequently the decline in production. The competitiveness of all products declined since 1997 when the Wheat Board was dismantled. Wheat flour registered a significant decline from the early to mid-2000s, but then recovered from 2007 to 2012.

Strict cultivar standards set by the technical research committee (RTC) of the South African wheat industry are too high, rendering the wheat industry internationally uncompetitive. There is a negative correlation between wheat quality and the yield of wheat. It suppresses income to farmers and other producers by between 12.8 and 19.03% and encourages the importation of lower grades. As the local market is relatively small, prices are dictated by the lowest import parity prices on global markets. As the standards for local wheat cultivars are higher than for imported wheat, lower imported grains do not have to adhere to these standards. The free market system encourages competition and higher productivity, but it does not reflect quality efficiently.

The competitive position of the unprocessed wheat industry was found to be uncompetitive. The unprocessed wheat industry was found to be uncompetitive. The research reported a general downward trend from 1997 to 2012, with a spike in 2001. Recently, the unprocessed wheat industry saw its competitiveness drop to its lowest level in 20 years, as illustrated in Figure 2.

The trends in the RTA indices for unprocessed, semi-processed and processed wheat of Argentina, Australia, Brazil, Canada, Germany and the USA are shown in Figures A1 to A6 of the Annexure, while Table 2 compares their competitive indices of unprocessed wheat with South Africa. In the majority of cases, the processed wheat industries are marginally competitive, with most of the values being close to zero. The only real exception is the processed wheat industry in Germany, with pasta being highly uncompetitive (see Figure A5). This means that more pasta is imported into Germany than exported, which can be attributed to factors such as close proximity to major pasta-producing countries. Similarly, South Africa's processed wheat industry is marginally competitive, with most of the values close to zero (see Table 1). A significant difference in competitiveness is, however, noticeable in the unprocessed and semi-processed wheat industries.

Trends in the RTA indices for the unprocessed and semi-processed wheat industries in South Africa differ much from its peer countries. In all peer coun-

tries, there is a close correlation between the competitiveness of the unprocessed and semi-processed wheat industries. When the unprocessed industry is competitive, the semi-processed industries follow, and *vice versa* (see annexure). In the case of Brazil, for instance, the fact that the unprocessed wheat was regarded as uncompetitive meant that the semi-processed wheat industry was also uncompetitive (see Figure A2). In all the other peer countries, the unprocessed wheat industry was regarded as competitive, resulting in their semi-processed wheat industries being competitive (see Figures A1 to A6).

The RTA index values of South Africa differ from its trade partners. South Africa is a wheat importing country, and the RTA index value of the unprocessed wheat industry is negative, highlighting that fact that it is uncompetitive. However, a positive RTA index value is reported for wheat flour, indicating that South Africa is competitive in this sector (see Figure 1 & 2). This means that South Africa is importing unprocessed wheat, processing it, and then exporting the wheat flour mainly to African countries such as Zimbabwe, Mozambique and the Democratic Republic of Congo (Van der Merwe, 2015:68).

The uncompetitive position is largely attributable to the fact that the milling industry in South Africa (semi-processed) is highly concentrated with only four large companies dominating the market. These large millers have a competitive advantage in terms of economies of scale, finance, skills and ability to cope with price volatility, which enable them to import, process and export larger quantities of wheat than smaller millers. This system creates direct and indirect benefits for the milling industry, but also has the potential to seriously harm local producers. This is reflected in the results obtained from the analysis as shown in Table 1.

Although the current research provided much more detail and also studied the sub-sectors of the industry in detail, the findings are mostly in line with previous related studies. Nieuwoudt (1986:37) studied competitive trends between 1947 and 1980 and found that the wheat industry has been relatively competitive due to high wheat prices, a favourable exchange rate and mild inflation before the decommissioning of the Wheat Board. Kleynhans (1998:504) found that the competitive position declined during the 1980s, but was still positive. Since 2000, Visser *et al.* (2015) found that sectoral competiveness declined. These all confirm the findings of the current research.

The competitive position of processed agricultural products was lower than unprocessed products during the 1980s (Kleynhans, 1998:504), but in contrast the current study found that the unprocessed wheat is now an uncompetitive industry. The uncompetitive position is largely attributable to the fact that the milling industry in South Africa (semi-processed) is highly concentrated (Louw, Troskie & Geyser, 2013) and this led to strict cultivar standards set by the wheat industry. In the following section the article are summarised and some conclusions are made.

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5 SUMMARY AND CONCLUSION

This study revealed that South Africa has a competitive advantage in the production of wheat flour, but the unprocessed wheat industry is internationally uncompetitive. This decline in competitiveness can be due to several factors, but the results show that the increase in market concentration coincides with a decrease in the competitiveness of local wheat producers. This can largely be contributed to the decommissioning of the Wheat Board. In this regard, the decline in the number of hectares devoted to the production of wheat can be explained by a decline in the competitiveness of primary producers compared to their international counterparts. Farmers' inability to adapt to a free market system in the absence of the protection they grew accustomed to during the Wheat Board era raises concerns about the institutional environment in which these producers operate.

When the values of the South African relative trade advantage (RTA) indices are compared with those of peer countries, a similar picture emerges, highlighting the institutional environment in which producers operate. What is evident is that South Africa is the only country that has an uncompetitive unprocessed wheat industry alongside a competitive semi-processed wheat industry. The practical implication is that the institutional environment is such that the secondary industry imports raw wheat at lower cost than locally available, processes it into wheat flour, and exports it to other African countries. This is of concern to local producers as their industry is rapidly declining, especially in the face of excellent wheat exporting sectors in Africa.

Although the availability and expansion of the African market is exciting, it is important that the exact causes of the declining competitiveness of the entire wheat industry in South Africa are further investigated, as well as the extent to which each factor contributes to the fundamental problem, and also the underlying causes of the problem.

Certain quality-related factors controlled by the institutional framework of the wheat industry can potentially affect the competitiveness of the industry, as they are negatively correlated with yield and will thus affect productivity negatively. This will negatively affect the financial sustainability of wheat producers in South Africa. Therefore, prescribed wheat quality standards, as set by the institutional environment, and prices received can potentially be the major reasons why the unprocessed wheat sector in South Africa is uncompetitive, while the semi-processed industry is still competitive. It is important that the wheat industry addresses these findings.

For South African producers to compete on a level playing field and be financially sustainable, government policies need to put in place a framework that will allow producers to either be compensated for the higher quality wheat or be allowed to produce lower quality wheat that is linked to higher yields. It is thus recommended that a further study be conducted aimed at standardising the prices paid for imported and locally-produced wheat, which must be linked to quality. To achieve this, a scorecard can be developed with the sole purpose of determining the exact quality of a specific batch of wheat – irrespective of

whether it is locally produced or imported. Such a scorecard should include the relative importance of all important characteristics, which must be determined by all stakeholders in the wheat industry. Price differences can then be determined solely on the basis of the difference in quality and not the area where the wheat is produced.

Another recommendation flowing from the findings of this study is to allow local producers to produce wheat of a similar quality to that of imported wheat, or at least of a similar quality to that demanded by the market. This will improve the competitive status of the unprocessed wheat industry in South Africa to be financially sustainable and globally competitive.

References

[1] Aleksiev, A. (2011). Competitiveness, productivity and efficiency of wheat production in Bulgaria. *Trakia Journal of Sciences*, 9(3), pp 7-17.

[2] Balassa, B. (1989). *Comparative Advantage, Trade Policy and Economic Development*. London: Harvester Wheatsheaf. 187p.

[3] Bernatonyte, D., & Normantiene, A. (2009). Estimation of Trade Specialisation: the Case of the Baltic States. Economics of Engineering Decisions. *Inzinerine Ekonomika-Engineering Economics,* 2, pp. 9-11.

[4] Celac, M. (2014). *The Impact of devaluation through price and non-price competitiveness on trade balance*. Master thesis. Prague: Charles University.

[5] Cho, D, & Moon, H. (2013). *From Adam Smith to Michael Porter, Evolution of competitiveness theory*. Singapore: World Scientific.

[6] Cock, J. (2009). *Declining food safety in South Africa: Monopolies on the bread market*. The Global Crisis and Africa: Struggles for Alternatives. RLS Conference, November 2009.

[7] Doyer, O.T. (2002). *An inquiry into evolving supply chain governance structures in South African agribusinesses*. PhD thesis, Pretoria: University of Pretoria.

[8] ETU. (2012). *Education and Training Unit for Democracy and Development*. Government Programs and Policies. National School Nutrition Programs. www.etu.org.za. (Accessed 20 June 2016).

[9] FAO. (2009). *Feeding the world in 2050*. World Summit on Food Security. Rome 16-18 November 2009, pp. 1-4. http://ftp.fao.org/docrep/fao/meeting/018/k6021e.pdf. (Accessed 20 June 2016).

[10] Frohberg, K. & Hartman, M. (1997). *Comparing Measures of Competitiveness*. IAMO Discussion Paper No 2, Halle/Saale.

[11] Hatzichronoglou, T. (1996). *Globalisation and Competitiveness: Relevant Indicators.* OECD Science, Technology and Industry Working Papers, 1996/5, Organisation for Economic Co-operation and Development, Paris: OECD Publishing.

[12] Kleynhans, E.P.J. (1998). Komparatiewe Voordeel in die Landbou. *South African Journal of Economic and Management Sciences.* SAJEMS NS 1(3), pp. 498-512.

[13] Lehlohla, P. (2003). *Strategic Plan 2003/04 – 2005/06.* Pretoria: Statistics South Africa. http://www.gov.za/sites/www.gov.za/files/StatsSA_strategic_ plan_2004_0.pdf (Accessed 20 June 2016).

[14] Louw, A., Troskie, G., & Geyser, M. (2013). Small millers' and bakers' perceptions of the limitations of agro-processing development in the wheat-milling industry and baking industries in rural areas in South Africa. *Agrekon,* 52(3), pp. 101-122.

[15] NAMC. (2005). *Competitiveness in the International Agricultural Industry.* National Agricultural Marketing Council, Private Bag X935, Pretoria, 0001.

[16] Nieuwoudt, W.L. (1986). The Competitive position of South African agriculture: An analysis of supply and demand. *Agrekon.* 25(3), pp. 31-38.

[17] Porter, M.E. (1998). *Microeconomic competitiveness: Findings from the 1999 Executive Survey. Global Competitiveness Report 1999.* (pp. 30-53). Geneva: World Economic Forum.

[18] Sosland, M. (2011). Success in South Africa. *World Grain.* Jan. 2011:40-58. http://www.nxtbook.com/sosland/wg/2011_01_01/index.php#/4 (Accessed 20 June 2016).

[19] United Nations Statistics Division. (2015). *UN COMTRADE. International Merchandise Trade Statistics.* United Nations Statistics Division, New York. Available online at: http://comtrade.un.org/

[20] Van der Merwe, J. (2016). Streng kultivarnorme knou koringinkomste. *Landbouweekblad,* 5 Feb., pp. 34 -35.

[21] Van der Merwe, J.M. (2015). *Quality, pricing and the performance of the wheat industry in South Africa.* Ph.D. thesis (Agricultural Economics), Potchefstroom: North-West University.

[22] Van Schalkwyk, H.D., & Van Deventer, C.S. (2005). *The Profitability and Competitiveness of the South African Wheat Industry.* Aginfo trading as AMT (PTY) LTD.

[23] Visser, M., Pisa, N.M., Kleynhans, E.P.J. & Wait, R. (2015). Identifying the comparative advantage of products and industries of South Africa's Mpumalanga Province. *Southern African Business Review.* 19(2), pp. 27-50.

[24] Vignes, L.D., & Smith, K. (2005). *Measuring the competitiveness of the Trinidad and Tobago Economy.* Paper presented at the Caribbean Centre for Monetary Studies (CCMS) Conference held in Nassau, Bahamas. 1-4 Nov.

[25] Volrath, T.L. (1991). A theoretical evaluation of alternative trade intensity measures of Revealed Comparative Advantage. *Weltwirtschaftliches Archiv,* 127(2), pp. 265-280.

TABLE 1: Relative Trade Advantage: South Africa Wheat Industry

	Wheat flour	Pasta	Bread and pastry	Biscuits	Brans and residues	Unprocessed	Processed Total
1992	4.34	-0.05	0.19	0.65	-	-0.68	-0.29
1993	4.81	-0.27	0.14	0.51	-	-1.83	-0.98
1994	1.67	-0.57	0.11	0.36	-1.85	-1.03	-0.47
1995	2.12	-0.40	0.12	0.27	-1.61	-1.64	-0.76
1996	2.84	-0.40	0.06	0.28	-0.51	-1.71	-0.77
1997	2.25	-0.30	0.14	0.40	-0.78	-0.48	-0.07
1998	1.80	-0.28	0.21	0.40	-0.73	-0.79	-0.24
1999	2.40	-0.35	0.02	0.09	-1.35	-0.55	-0.18
2000	2.49	-0.38	-0.07	0.00	-1.25	-0.97	-0.44
2001	2.28	-0.43	-0.10	-0.11	-0.74	0.12	0.08
2002	3.13	-0.33	0.07	0.25	-1.45	-0.79	-0.26
2003	1.48	-0.39	-0.03	-0.04	-0.88	-1.09	-0.50
2004	0.89	-0.40	-0.10	-0.18	-1.18	-1.48	-0.76
2005	0.42	-0.43	-0.15	-0.12	-0.61	-1.49	-0.74
2006	0.40	-0.43	-0.20	-0.13	-0.87	-1.04	-0.57
2007	0.09	-0.56	-0.20	-0.14	-1.92	-1.12	-0.69
2008	0.32	-0.45	-0.11	-0.02	-1.70	-0.99	-0.60
2009	1.21	-0.35	0.05	0.35	-1.07	-1.33	-0.56
2010	2.08	-0.44	-0.05	0.14	-0.99	-1.39	-0.61
2011	1.41	-0.56	-0.10	0.03	-1.92	-2.17	-1.10
2012	1.72	-0.45	-0.12	0.12	-3.05	-2.26	-1.03

Source: Authors' own estimations

Note: Pos. value $\Rightarrow$ Competitive   Neg. value $\Rightarrow$ Uncompetitive   Zero $\Rightarrow$ marginal

TABLE 2: RTA: Unprocessed Wheat: Global Comparison

|	Argentina	Australia	Brazil	Canada	Germany	South Africa	USA
1992	-	4.02	-	4.16	0.17	-0.68	1.46
1993	10.09	7.02	-0.01	2.81	0.09	-1.83	1.89
1994	12.48	9.97	-0.04	4.17	0.32	-1.03	2.13
1995	8.39	6.86	-0.03	4.09	0.24	-1.64	2.55
1996	9.82	12.75	-4.36	3.93	0.28	-1.71	2.46
1997	10.97	14.87	-4.06	4.86	0.31	-0.48	1.65
1998	16.36	13.42	-4.92	4.16	0.46	-0.79	1.78
1999	20.11	15.01	-6.20	3.43	0.35	-0.55	1.90
2000	14.48	13.20	-5.80	3.41	0.30	-0.97	1.74
2001	16.41	12.67	-5.54	3.43	0.41	0.12	1.73
2002	18.03	12.34	-6.23	2.74	0.34	-0.79	1.97
2003	14.82	7.24	-7.97	2.99	0.21	-1.09	2.41
2004	11.10	14.55	-3.63	3.69	0.22	-1.48	2.85
2005	16.83	10.62	-4.08	3.27	0.23	-1.49	2.64
2006	13.44	10.07	-5.06	4.33	0.26	-1.04	2.14
2007	10.31	4.58	-4.17	4.36	0.13	-1.12	3.02
2008	8.32	4.94	-2.96	4.43	0.27	-0.99	2.64
2009	14.31	7.59	-3.14	5.62	0.30	-1.33	1.64
2010	5.43	6.72	-3.06	4.57	0.23	-1.39	2.10
2011	3.15	6.84	-2.17	3.97	-0.01	-2.17	2.41
2012	9.98	7.99	-2.97	4.33	0.04	-2.26	1.65

Source: Authors' own estimations

FIGURE 1: Structure of the South African wheat industry
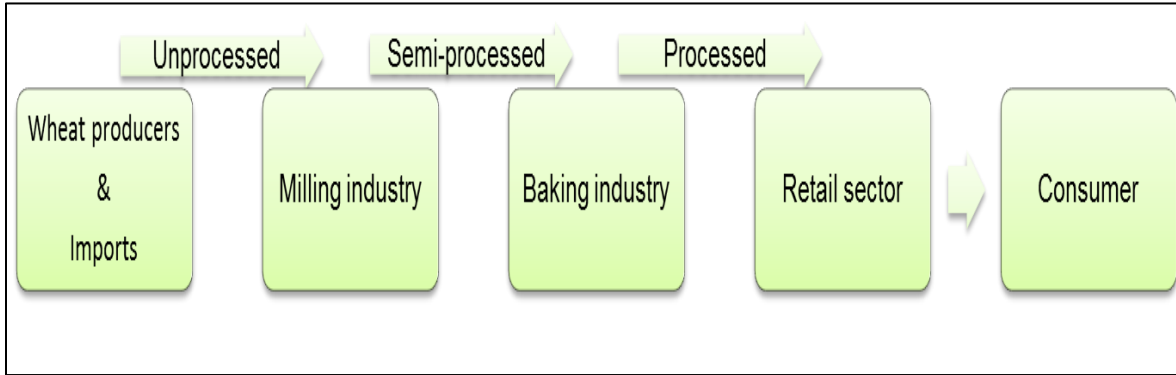
Source: Authors' own construction

FIGURE 2: Trends in the RTA index values for unprocessed, semi-processed and processed wheat in South Africa
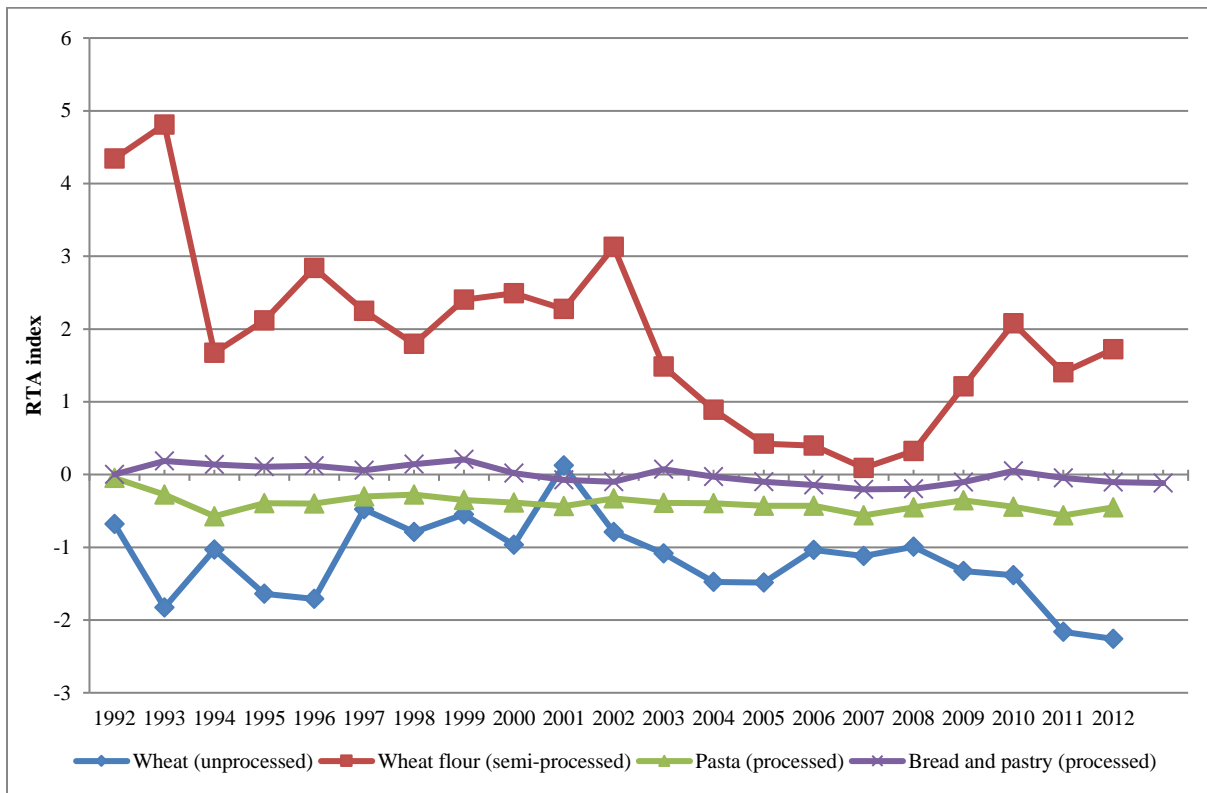
Source: United Nations Comtrade database (2015)

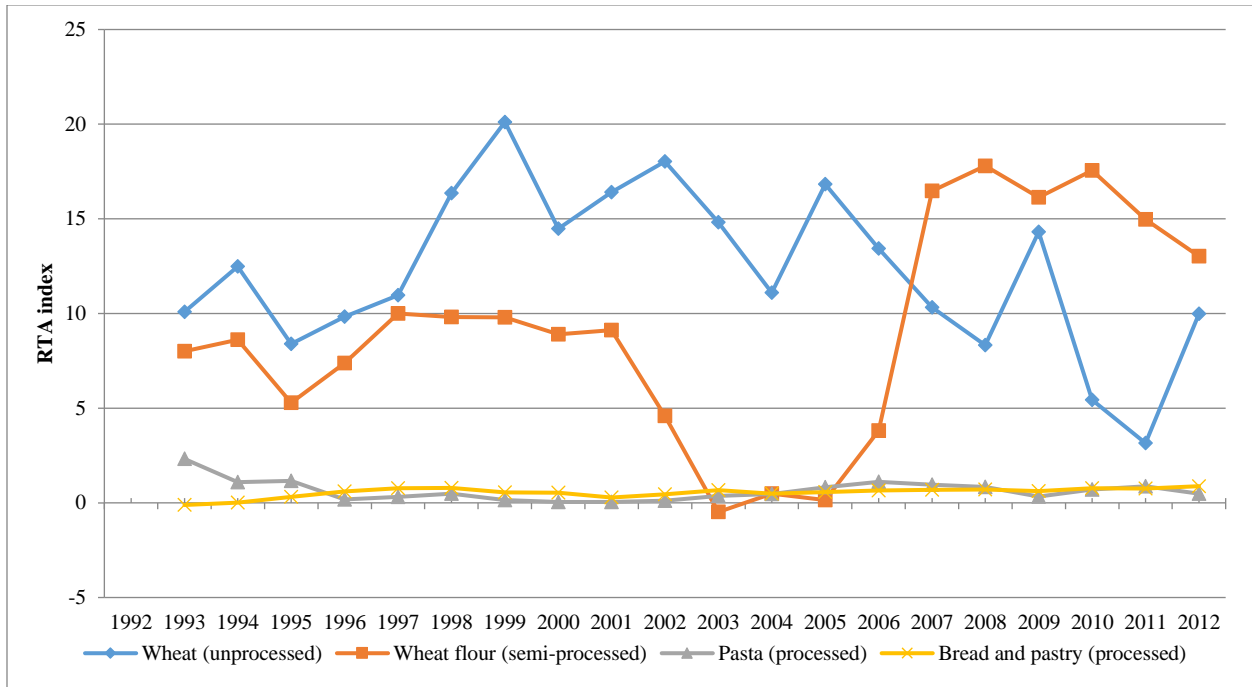**FIGURE A1:** Trends in RTA index values for unprocessed, semi-processed, processed wheat in Argentina

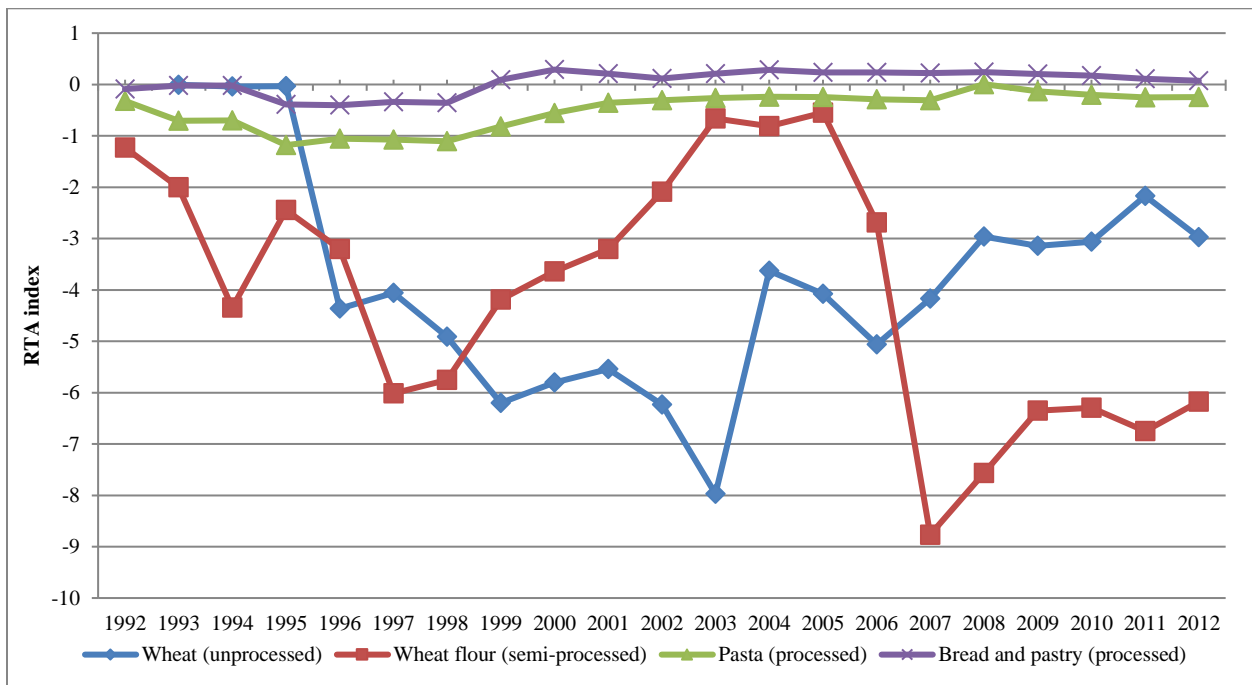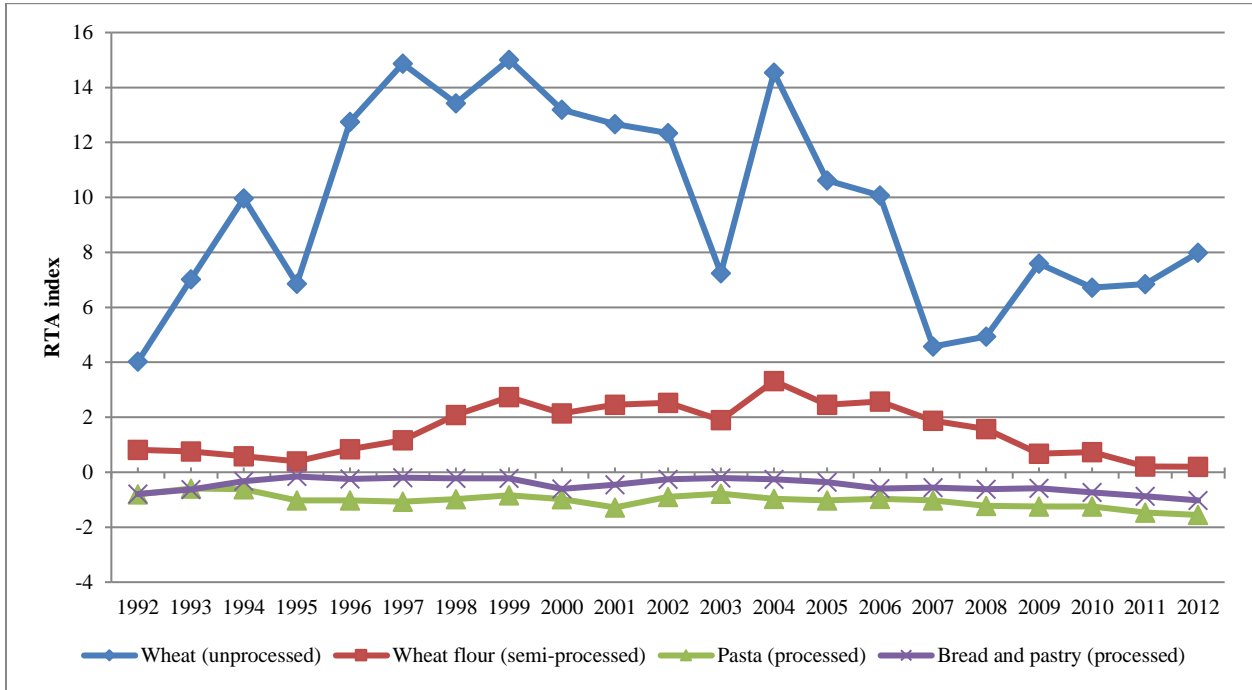**FIGURE A2:** Trends in RTA index values for unprocessed, semi-processed and processed wheat in Brazil

FIGURE A3: Trends in RTA index values for unprocessed, semi-processed and processed wheat in Australia

FIGURE A4: Trends in RTA index values for unprocessed, semi-processed and processed wheat in Canada
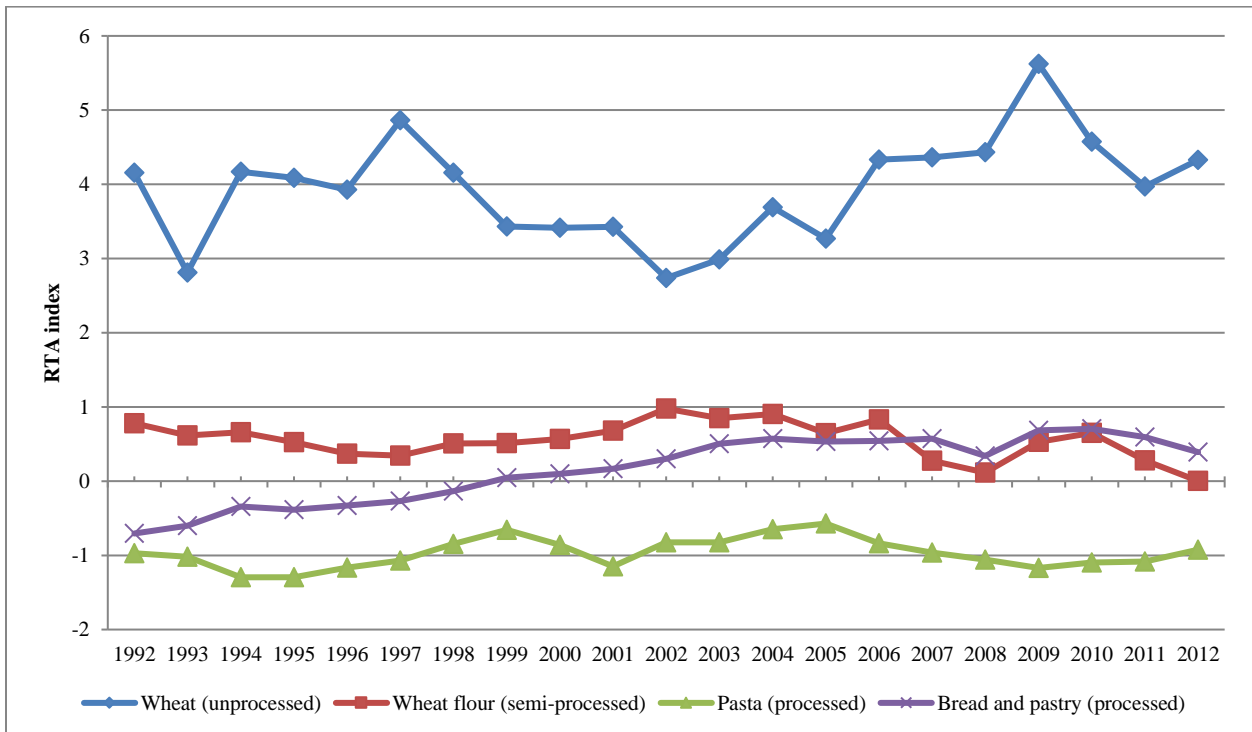
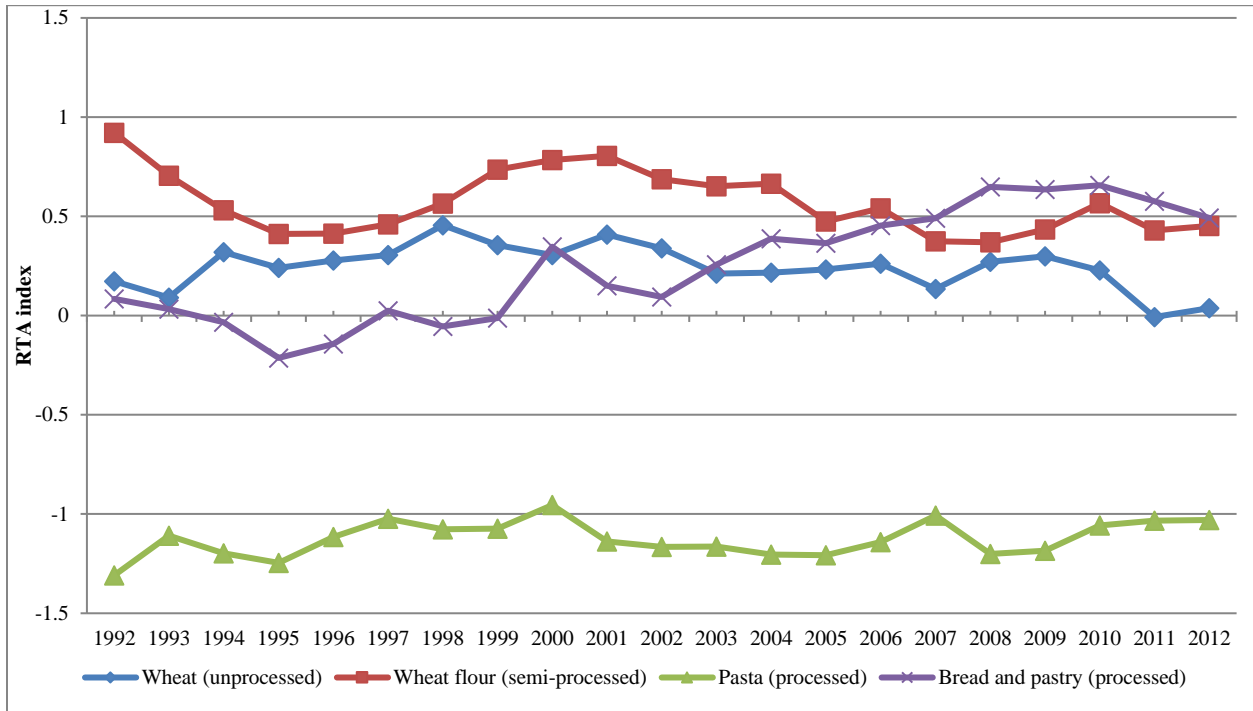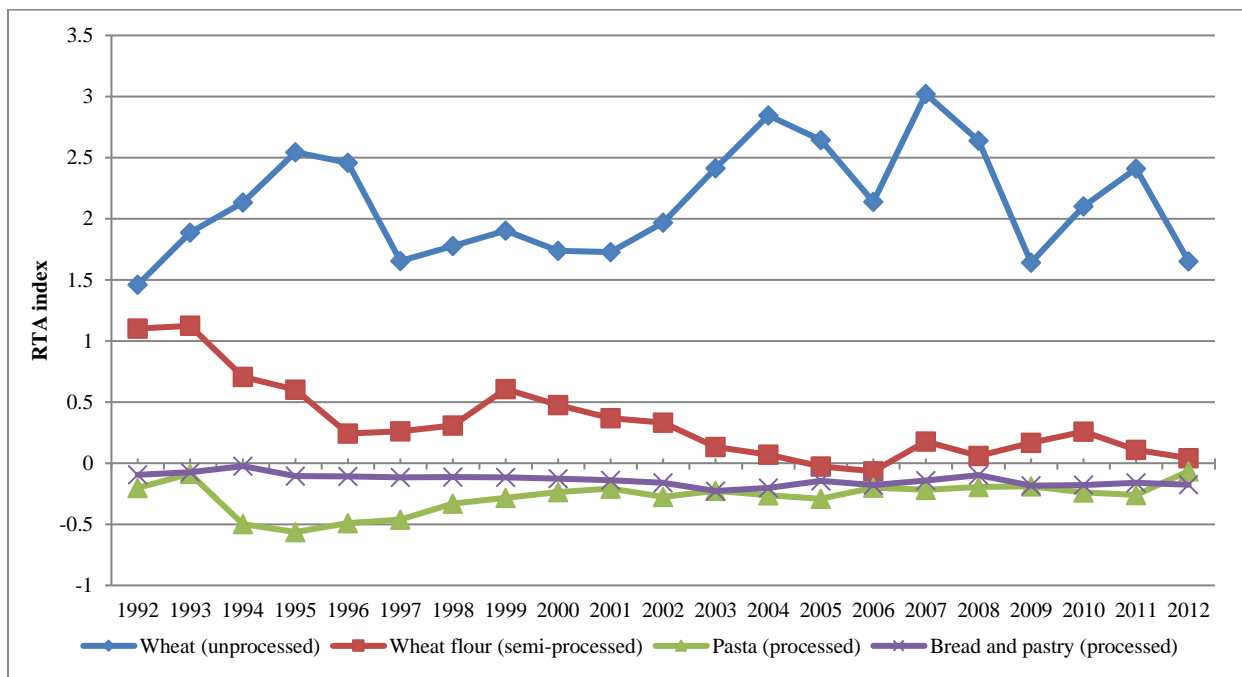**FIGURE A5:** Trends in RTA index values for unprocessed, semi-processed and processed wheat in Germany

FIGURE A6: Trends in RTA index values for unprocessed, semi-processed and processed wheat in the USA

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