STUDIES OF CARTEL STABILITY, BREAKDOWN, AND HARM IN SOUTH AFRICA
PROPOSAL FOR PHD IN ECONOMICS RESEARCH

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1. INTRODUCTION

South African competition authorities have uncovered many cartels across different sectors of the economy, with the number of firms penalised for cartel conduct being upwards of eighty since 1999.[1] The number of cartels uncovered increased significantly with the inception of the Competition Commission's Corporate Leniency Policy ("CLP"). These numbers do not necessarily reflect the entire cartel universe during the period since some of the cartels would have gone undetected and unprosecuted. A significant number of these cartels are long-standing, durable and have their origins in the historical era of state regulation. Some of these cartels, have been in key economic sectors including food, intermediate inputs such as fertilisers, grain trading and storage services, construction and related products, health, airlines, steel and related products, plastics, property, and automotive.

Cartel conduct is a long-standing concern that can be traced as far back as 1776 when Adam Smith retorted: *"People of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the public, or in some contrivance to raise prices."*[2] More recently the former EU Commissioner for Competition claimed, *"Under any analysis, cartels cause terrible damage"*[3] while one court has labelled cartel conduct as the *"supreme evil of antitrust."*[4] Cartels are harmful because they lead to higher prices effects on prices, reduced output, and reduce allocative, productive and dynamic efficiencies in the affected markets.[5] Hardcore cartel conduct typically produces limited or no efficiencies to compensate for the harm to consumer welfare.

Cartels are more likely to form when firms recognise their interdependence, and that they have a shared incentive to limit production and raise prices to maximise joint profits. Collective profits are higher than under conditions of competition and the higher the collective profits, the stronger the incentives to form

[1] Here 1999 is selected to coincide with the inception of the current Competition Act, though some of the cartels that were uncovered predate this point in time.
[2] Smith (1776).
[3] Kroes (2009) – former EU Commissioner for Competition.
[4] US Supreme Court in *Verizon Communications Inc v Law Offices of Curtis V Trinko, LLP* 540 US 398, 408 (2004).
[5] Niels *et al* (2011), p.285.

and sustain a cartel. However, the mere recognition of interdependence does not automatically mean collusion occurs. This is because individually, firms face the attractiveness to cheat on the others and accrue the resulting benefits at the expense of its rivals. The higher the individual immediate benefits of cheating, the more difficult it is to sustain a cartel meaning that collusion is internally unstable, that is, undermined by the very firms seeking to collude. Cartels therefore have to develop internal mechanisms to ensure that collusive arrangements are stable. Such mechanisms mainly relate to monitoring the actions of internal participants and punishment of those firms that cheat. Effectiveness in these two areas enhances the success chances of collusion.

Cartels also face external threats to their existence. These emanate from possibility of entry due to higher cartel prices and supra-competitive returns that derive from cartel behaviour. These higher returns are expected to entice firms outside the cartel arrangement to enter or expand and 'steal' the cartel's 'lunch'. Additional external challenges relate to how the firms can maintain an illegal conspiracy without detection by competition authorities who have a number of instruments at their disposal to offset the benefits of cartel conduct (e.g., leniency programs and administrative penalties). This means that cartels also invest in mechanisms that enhance external stability. Such mechanisms include monitoring through information exchange and exclusion (or foreclosure) of rivals outside of the collusive arrangements. In the bread cartel case, Pioneer Foods engaged in predatory pricing in the Western Cape as a means to fend off the competitive effects of smaller independent bakeries.

When cartels do not find ways to overcome these challenges, they are short-lived and they likely fail. One would therefore expect that cartels are inherently unstable, lasting only short periods as suggested by Stigler (1964). However, a look at some of South Africa's durable and stable cartels reveals a contrary position. Many South African firms interact repeatedly, over time, in a dynamic way in one or more markets. Repeated interaction enables them to build knowledge about the benefits of strategic behaviour and the potential profit from collusion. This knowledge can create powerful incentives to collude and allow the development of mechanism to monitor, punish and/or neutralise external threats to the cartel, ensuring cartel durability. Economic theory can therefore not predict, *a priori*, which of the two incentives (the incentive to cheat and the incentive to earn higher profits through collusion) will dominate the other and the resulting durability of the cartels. The Court of First Instance in Europe identify three conditions necessary for collusion:[6]

[6] Ibid, p.148.

- Firms must have the ability to monitor the other cartel members, that is, the market must be transparent for detection of cheating, indicators include pricing transparency, and product homogeneity, which is necessary for (1) an understanding of rivals' cost structures, and (2) competition and coordination to be on prices alone.
- Suitable retaliation mechanisms must exist to punish firms that cheat e.g., excess capacity, multi-market contact, and short speed of price adjustment, and
- Reaction of current and future competitors and consumers should not destabilise the cartel arrangement. Indicators include presence of few firms in the market, high entry barriers, inelastic demand, stable demand, and low levels of technological change.

The implication is that a significant proportion of the market must participate in the arrangement and the market should be characterised by high entry barriers in order to sustain collusion. It is therefore necessary to understand the nature of the oligopoly and the market in each cartel case. Consequently, a study of the sources of durability and stability in South African cartels must necessarily involve an empirical analysis of South African conditions favouring cartel formation. The proposed research will conduct such an analysis, as explained later.

South African competition authorities have been very active in pursuing cartels, emphasising the need to prosecute durable cartels with their origin in earlier periods of lighter enforcement. As part of their enforcement toolkit and in keeping with international trends, the South African authorities adopted a CLP. The CLP is a policy under which the Commission grants a self-confessing cartel member, who is first to approach the Commission, immunity[7] for its participating in cartel activity in return for the cartel member disclosing information relating to cartel activity and co-operating with the Commission in the prosecution of other cartel members.[8] The Commission's CLP aims to discourage or prevent the formation of cartels and to eradicate harmful cartel conduct.[9] The CLP envisages that this will be achieved through enhanced detection, investigation and prosecution of cartels.[10] CLPs follow a game-theoretic approach to cartel detection, by placing firms involved in collusion in asymmetric positions, leading firms to come forward to confess of their participation in collusion. The impact of leniency programs has been the subject of some debate in the academic and antitrust circles. CLPs are generally useful for enhancing detection of cartel behaviour in the short-run (helping reduce costs of enforcement), and in the long-term deter firms from engaging in anti-competitive conduct [see for instance, Hinloopen (2003), Motta and Polo (2003), Spagnolo

[7] The cartel member would not be subject to adjudication or prosecution with view of imposing fine.
[8] See the Commission's Corporate Leniency Policy, para. 3.1 and para. 3.6.
[9] Ibid, para. 3.2.
[10] Ibid, para. 3.6 and para. 3.8.

(2004) Chen and Harrington (2007), Brenner (2005), Cai (2012)]. The effectiveness of leniency programs in cartel detection and improving long-run competition is an empirical matter [Brenner (2009) and Miller (2009)]. As explained below, the proposed research will assess the impact of the South African CLP on cartel detection and prosecution.

The ultimate aim of cartel policy is to ensure greater levels of competition in South African markets. Yet, recent work suggest that, following the demise of a cartel, former cartel members may seek to merge. Hüschelrath and Smuda (2013) find that the average number of merger transactions increase by up to 51% when the three year period before the cartels breakdown is compared to the three years afterwards; horizontal mergers are found to increase even more (up to 83%) after cartels breakdown. They conclude that competition authorities should consider mergers as a second-best alternative available to cartels meaning that competition authorities may need to increase prioritisation of resources to merger activity. Davies *et al* (2014) also find that increased levels of merger activity follow cartel breakdown especially for cartels detected through leniency applications, and where levels of market concentration were relatively lower. They also find that where mergers do not take place, the post-merger market structure is consistent with potential dominance or the mergers moves the market in that direction. Cosnita-Langlais and Tropeano (2012) study the question of whether competition authorities should fight cartels or control mergers as a matter of optimal allocation of enforcement efforts. In their paper, they assess the interaction between cartel enforcement and merger control given the budgetary constraints faced by competition authorities and taking into account the incentives for firms to choose between collusion and mergers. They find that the two enforcement actions are complementary where firms, facing tougher enforcement in the one conduct, choose the other as a substitute. However, where coordinated effects arising from mergers are sufficiently large, they find that it may be optimal for the competition authorities to dedicate resources to fighting cartels.

With the number of cartels that have been uncovered in South Africa and the significant number of mergers that competition authorities assess each year, it is perhaps the opportune time to investigate the possible link between merger activity and cartel behaviour. This question has received limited empirical attention in South Africa, except as part of individual merger investigations where competition authorities consider the history of coordination in markets. Even then, the primary focus is on whether the merger is likely to strengthen existing coordination or facilitate coordination and not necessarily, whether the merger is an alternative way of reinstating the collusive equilibria (albeit short of cartelisation) in the long run. In other words, the question seems to focus more on whether the merger creates conditions for firms to collude tacitly. However, following the demise of a cartel firms may be motivated to soften competition by altering the structure of the market through mergers.

Based on the introductory remarks so far, the purpose of the proposed doctoral research will be to provide an empirical assessment of cartel behaviour in South Africa along three dimensions. Firstly, the research will assess key determinants of cartel stability and breakdown in South Africa. Secondly, the research will seek to develop an understanding of the impact of the South African CLP on cartels. Thirdly, the research will study the impact of cartel breakdown on merger activity. The following section sets out the three research themes in detail.

2. PROPOSED RESEARCH THEMES: BRIEF LITERATURE REVIEW AND PROPOSED METHODOLOGY

As introduced above, the proposed doctoral research will consider three research themes related to South African cartels: (i) the determinants of cartel stability, with special focus on the durability of many South African cartels, (ii) the impact of the corporate leniency policy on cartel stability and breakdown, and (iii) the impact of cartel breakdown on merger activity.

Theme I: Cartel stability and breakdown

South African competition authorities have uncovered many cartels across different sectors of the economy, with the number of firms penalised for cartel conduct being upwards of eighty since 1999.[11] A number of these cartels have been long-standing, durable and a number of them have their origins in the historical era of state regulation, during which some enjoyed *de jure* or *de facto* exemption from competition law.

Various factors may facilitate the endurance of cartels, including industry concentration, demand stability, fluctuations in the economic environment (though common cyclical fluctuations have limited impact on cartel stability), cartel organisation (monitoring, decision-making, alignment of incentives through self-imposed mechanisms). There is mixed empirical evidence when it comes to the relationship between market concentration and cartel stability [Levenstein and Suslow (2006); Symeonidis (2003), Dick (1996a)]. The existence of industry associations can also assist in facilitating collusion in less concentrated markets (Levenstein and Suslow, 2006). In addition, higher prices can allow marginal firms to remain in the market, thus reducing concentration levels (Levenstein and Suslow, 2006).

Some studies have considered several factors (determinants and outcomes of collusive conduct) that can potentially characterise cartel stability. These include the market and legal environment in which the cartel

[11] 1999 is selected to coincide with the inception of the current Competition Act, though some of the cartels that were uncovered predate this point in time.

operates, the duration of the cartel arrangement, and the ability of the cartel to repeat collusive conduct after breakdowns (Bolotova *et al*, 2006). The market[12] and legal environment has potential to either facilitate or present challenges for successful and sustainable coordination. This view was highlighted by Stigler (1964), Porter (1983 and 1985), Dick (1996a) and Symeonidis (2003). Where a cartel has endured for a period, that period, in itself, could provide indirect evidence of how stable the cartel was [Jacquemin *et al* (1981), Marquez (1994), Dick (1996b), and Suslow (2001)].

Bolotova *et al* (2006) apply econometric analysis using data on 238 cartels to study the impact of cartel characteristics, market and legal environment on cartel stability (measured as the expected number of attempts to form a cartel in the same product market). Their findings include; first, that global cartels are less stable than local ones. Second, cartels operating in countries with antitrust laws are more stable compared to those operating in countries where such regulations are not in place. Third, as antitrust laws become stricter, sanctioned cartels become less stable. Fourth, the shorter the average duration of cartel episode, the more likely the firms are to attempt to collude again. Finally, if the cartel the cartel overcharge is high, the cartel is less likely to repeat the conduct.

Telser (1980, 1985) and Sjostrom (1989, 2005) developed the theory of the core as an alternative theory to explain why cartels form. In this theory, cartels may form as a means to reach equilibrium rather than to extract monopoly profit and the assumption is that cartels are formed in industries with high entry barriers in the form of high fixed costs (Sjostrom, 1989). Quantity allocation, in these circumstances, could facilitate the reaching of an equilibrium, absent which equilibrium will not exist as the number of potential producers exceeds the number of acting producers. This theory differs from traditional cartel theory in two ways. First, the theory of the core posits that cartels are more likely to arise when demand and/or supply are more variable. Second, the theory predicts that cartels are less likely to arise when entry is legally restricted. Traditional cartel theory predicts that demand and/or supply variability is likely to undermine collusion and entry restrictions are likely to facilitate coordination.

Cartel stability and success are difficult concepts to define. Cartel success can be defined by the ability of the cartel to earn super-normal profits over an extended period of time (Grossman, 2004). However, cartels may still be considered as successful even when they last a shorter period as long as the benefits derived from collusion outweigh the costs of cartel organisation and losses from cheating. As such, there are no objective measures for cartel success. Researchers typically measure cartel stability by assessing its ability to maintain long-term stability, but questions also arise about what stability means. One way of looking at

[12] These include product homogeneity, high market concentration, number of rivals, elasticity of demand, the extent of entry barriers, the size of buyers and the purchasing commitments, and market transparency.

these questions may then be whether one cartel was more stable than others were (e.g., lasted longer than the average or median duration of cartels). Cartel success can therefore be measured by the ability to earn super-normal profits and duration of cartel. Levenstein and Suslow (2004) study cartel stability and success from these two perspectives.

Levenstein and Suslow (2004) suggest a mixture of cross-section analysis and industry-specific case studies, given their complementarity. They highlight some of the challenges associated with studying cartels as emanating from the fact that cartel success depends on a wide variety of variables, which are often interrelated: first, structural factors (variance in and concentration of demand, structure and homogeneity of costs, and the rate of technological change); second, cartel organisation (distribution of power in cartel, cartel voting structure, sophistication of mechanisms for monitoring, detecting and punishing cheating, and the ability of the cartel to create entry barriers); third, government regulations and competition law enforcement; and, finally, cartel-specific and history-dependent factors (such as how quickly the cartel learns about cartel design, the cartel start-up costs, and reputation of cartel members).

Levenstein and Suslow (2004) then suggest that cross-sectional studies are more informative if cartel success depends primarily on exogenous factors such as competition law enforcement, or demand and cost parameters. However, if idiosyncratic factors affect cartel success, then the best way to study the question on the determinants of cartel success is through industry-specific studies. Individual case studies are useful in defining cartel success and cross-sectional studies could be useful in improving overall understanding of cartels beyond individual case studies. From cross-sectional studies of US price fixing cartels, Levenstein and Suslow (2004) generalize the following: First, cartels with greater market share and in more highly concentrated industries last longer relative to those with lower share and in lesser-concentrated industries. Second, faster growth in trend demand and business cycle downturns are associated with shorter duration cartels (economic downturn destabilises cartels). Third, cartel organisation and the history of the cartel are important factors though difficult to measure. Fourth, cartels reappear in some industries and duration tends to increase as an industry gains experience with collusion, though patterns in cartel duration can be quite varied. Finally, cheating is the most common cause of breakdowns in international cartels.

This study will apply a combination of cross-sectional analysis and industry-specific case studies to assess the key determinants of cartel stability in South Africa. The rational for using the two approaches is to take advantage of the important complementarity between the two to try to gain some insights into the stability of South African cartels. This study will primarily focus on cartel duration relative to benchmark duration based on average duration of cartels elsewhere. In addition, the study will also consider cartel durability by assessing the ability of cartels to survive changes to the competition law enforcement regime (e.g., legal

cartels that manage to persist after they become illegal cartels). The study will also present a classification system for different cartel concepts (such as success, durability, stability) to accompany the empirical analysis. The findings of this analysis will then be interpreted relative to recent findings of other studies on cartel overcharges in South Africa.

Theme II: An empirical assessment of the impact of the South African Corporate Leniency Policy (CLP) on cartel stability

Leniency programs generally aid the fight against cartels first by placing firms in asymmetric positions that then leads firms to come forth and confessing to their participation in cartel conduct. This then increases the probability of detecting and prosecuting cartel conduct in the short term. In the long-term, the expectation is that leniency programs help increase deterrence [Hinloopen (2003), Motta and Polo (2003), Spagnolo (2004) Chen and Harrington (2007), Brenner (2005), Cai (2012)]. As such, leniency programs are a key instrument in the toolkit of most competition authorities including South Africa.

The effectiveness of leniency programs has been the subject of the empirical research, but primarily the focus has been on cartel detection [Brenner (2009) and Miller (2009)]. Klein (2010) studies the effectiveness of leniency programs by analysing the direct impact of such programs on the intensity of competition - long-term goal of leniency programs. He finds that leniency programs increase competition intensity with an approximate decrease in price-cost margins of 3% to 5% and concludes that leniency program work efficiently to detect and deter collusion. Klein (2010) notes that leniency programs can also create perverse incentives as firms trade off the lower leniency-induced penalties against higher collusive profits. He also notes that empirical literature analyses effectiveness of leniency programs, but this is constrained by the fact that identification of applies only to detected cartels – a sample of cartels universe. This, he argues, does not provide clarity on whether an increase in the number of detected cartels (a possible success of leniency programs) is due to more efficient cartel prosecution or due to there being a greater pool of existent cartels. Similarly, Brenner (2005) notes that the sharp rise in cartel convictions after the introduction of leniency programs could be a result of a rise in cartel activity following the European Union's accelerated market integration from the 1990s.

Given that the Commission's CLP seeks to discourage or prevent the formation of cartels and to eradicate harmful cartel conduct through enhanced detection, investigation and prosecution of cartels, this study will primarily assess the short-term effects of the South African CLP on cartel detection and prosecution. In particular, the study will assess the extent to which the CLP influences features of cartel detection and

prosecution. Such features include: the probability of cartel detection through CLP;[13] the duration of prosecution relative to non-CLP prosecutions;[14] the likelihood of firms challenging allegations in CLP prosecutions relative to non-CLP prosecutions; the nature of disputes between the Commission and cartel members in CLP prosecutions relative to non-CLP prosecutions (e.g., disputes on conduct vs. disputes on sanction); and relative size of penalties in CLP prosecutions relative to non-CLP prosecutions. This allows for inference of success of the CLP. Descriptive analysis of information from competition authorities relating to detection and prosecution of cartels will complement this analysis. Panel regressions will also be used to assess the short-term effects of the leniency policy (detection and prosecution – information revelation and investigation cost reductions).

Theme III: The impact of cartel breakdown on merger activity

This research will empirically assess the relationship between the demise of cartel conduct and merger activity using data and information from previous cartel, and mergers and acquisition cases that competition authorities in South Africa have assessed and decided on. Firms engage in merger activity for various reasons including the need to enhance profitability, which the firms can in turn achieve through increased efficiencies or reduced levels of competition. Motivations for merger activity differ by type of merger [Mueller (2004)]. The welfare effects of mergers can be ambiguous relative to cartels, primarily because mergers can create efficiencies which reduce costs and consequently benefit consumers assuming they are passed on to the consumers. On the other hand, firms form cartels mainly with the objective of restricting competition, which serves to be harmful to consumer welfare.

There is currently limited research relating to the relationship between cartel demise and merger activity. Mehra (2007) studies the relationship between cartels and mergers and sees them as alternative arrangements to increasing profitability. She concludes that factors such as industry structure, the organisation of firms, and existing competition laws determine the choice between the two and that in the absence of fines, cartels are preferable if mergers do not create efficiencies. In addition, she finds that if there is perfect competition among a competitive fringe, there is no incentive to form a cartel. Battlingmayer (1985) finds that following the declaration of cartels as illegal in the US, firms started merging and he concludes that cartels and mergers were substitute relationships. Kumar *et al* (2012) study the question of why firms may still prefer cartel (unstable arrangements) to a merger and find[15] that cartel behaviour may still be rational as long as customers are uncertain about whether the non-merged firms have formed a cartel

[13] This will be based on proportion of cartels detected via CLP relative to detection through the Commission's other investigative tools. This approach may overstate the probability of detection since it focuses only on detected cartels.
[14] These are prosecutions where there is no CLP application.
[15] In addition to reduced capital requirements for cartels relative to mergers, and expected diseconomies from mergers.

or not. Increased merger activity can also result from a desire to improve the relative position of the acquirer post-cartel, acquisition of inefficient firms that run into financial difficulties, and as a possible means of switching to tacit collusion. Competition authorities detect some cartels during the process of merger activity and at times, the merging firms apply for immunity at that point [Hüschelrath and Smuda (2013)].

The research will apply a two-pronged approach focusing first on a descriptive assessment as used by Hüschelrath and Smuda (2013) and then using econometric analysis. Econometric analysis could take various forms, primarily the during-and-after approach, which can be supplemented by panel analysis. The during-and-after approach could explain merger activity during and after cartelisation while controlling for other drivers of merger activity (e.g., general economic conditions, interest rate levels, and/or industry specific factors or trends). A dummy variable will capture the presence and/or absence of cartel conduct in a market. The study will also employ a difference-in-difference approach using as a control group, mergers where no cartels were detected in the relevant markets, and mergers where cartels have been detected will be used as the treatment group. This approach will provide insights into whether the detection and breakdown of a cartel increases the likelihood of a merger occurring. The study will also seek to use non-parametric statistics to assess whether there is a rank correlation between mergers and preceding cartel breakdowns.

The study will consider (1) all mergers and (2) horizontal mergers in isolation since cartels are horizontal arrangements. It may also be useful to consider vertical mergers where there is possibility that these could serve as platforms for coordination between competing firms [Nocke & White (2007); Battlingmayer (1985)]. Exogenous factors that affect merger activity will be accounted for including industry-specific factors.

3. DATA AND INFORMATION SOURCES

The study will use standard statistical software such as STATA and Excel to examine the data. The research will use data and/or information from the following sources:

3.1 Previous Competition Commission investigations and Tribunal or Competition Appeal Court decisions;

3.2 Competition Commission statistics on merger activity and cartel cases available in annual reports and other publications such as newsletters;

3.3 Firm specific data on prices, costs etc.;

3.4 Industry associations or information bodies for industry statistics;

3.5 Public sources such as Statistics South Africa, and the South African Reserve Bank for economic data such as inflation, GDP, interest rates, exports, imports, global trends etc.

4. RESEARCH PLAN

The research will be developed and completed over a period of four years as follows:

Year 1: Literature review, to help refine research question
- Main empirical phase
- Developing research methods

Year 2: Main empirical phase
- Developing research methods
- Data collection
- Analysis

Year 3: Main empirical phase,
- Analysis,
- Supplementary literature review
- Writing draft thesis

Year 4: Complete writing thesis and submission

5. SUMMARY OF EXPECTED CONTRIBUTIONS

The research will aim to contribute to better understanding of the determinants of cartel behaviour, stability and harm in South Africa, through generating three academic articles relating to the three themes discussed above. This contribution will add to an understanding of the following sub-questions:

a. What have been the key determinants of cartel stability/instability in South Africa, and what caused their breakdown? Can a general picture emerge from an assessment of cartels that have been uncovered? The diverse nature of cartels that have been uncovered in South Africa suggests that these are important questions to try to answer.
b. How effective has the South African CLP been relative to its stated objectives of enhancing deterrence through efficient detection and effective prosecution of cartels?
c. What is the nature of firm behaviour when cartel enforcement efforts increase; do firms search for alternative ways to maintain supra-competitive profits, for instance by engaging in merger activity?

This research will be potentially useful not just as contribution to academic thinking, but also for competition authorities who face the challenging task of fighting cartels (detecting, prosecution and ultimately deterrence) and as such can contribute to decision-making in competition authorities. Findings relating to the relationship between the collapse of cartels and merger activity may be more useful to competition agencies whose primary role is to prevent mergers that promote anti-competitive outcomes. Although each case gets and should be treated on its own facts, an understanding of cartel stability and harm is also useful for the purposes of prioritising resources in the fight against cartels and determining administrative penalties under the competition law regime. In South Africa, there is currently limited published research in the field of competition law and economics, particularly in relation to cartel behaviour.

6. TRAINING AND PREPARATION

I have a Master's degree (MSc Economics) from the University of Zimbabwe and a first class undergraduate degree from the same university. I currently work as a Principal Economist in the economics department (Policy & Research) at the Competition Commission of South Africa. Prior to joining the Commission in 2008, I worked in the foreign exchange department (Exchange Control Inspectorate) at the Reserve Bank of Zimbabwe and thereafter as a Market Analyst for a private consulting firm (Demacon Market Studies) in South Africa. I have attached my C.V. to give a background of my academic, research and work experience.

Since joining the Commission, I have worked on different enforcement cases dealing with abuse of dominance, cartel conduct, and merger control providing economic analysis, and advising the Tribunal in merger control cases. In addition to this, I have also contributed to building capacity for research and knowledge of the economics of competition and regulation (both within South Africa and as part of regional inter-agency training) and undertaken analysis related to competition matters with regard to policy and regulation.

I have participated and presented papers at local and international conferences as well attending graduate summer schools in Spain (Quantitative Methods for Competition Analysis), Greece and Italy as well as short courses in Econometrics at the University of Pretoria. Some of the papers I have co-authored and/or presented at conferences include:

Muzata, T.G., Roberts, S., Vilakazi, T., 2012, *'Penalties and settlements for cartels in South Africa seen through an economics lens'*, presented at the Sixth Annual Conference on Competition Law,

Economics and Policy in South Africa, University of Witwatersrand, South Africa, 4 – 5 September 2012.

Muzata, T.G., Maphwanya, R., Robb, G., 2012, *'The comforts and discomforts of using quantitative tests and other tools in defining antitrust markets with complex competitive dynamics: A review of evidence from a complaint and two mergers'*, presented at the Sixth Annual Conference on Competition Law, Economics and Policy in South Africa, University of Witwatersrand, South Africa, 4 – 5 September 2012.

Muzata, T.G., das Nair, R., Mtombeni, S., 2012, *'A review of lessons from information exchange investigations and the approach of the South African Competition Commission'*, presented at the Sixth Annual Conference on Competition Law, Economics and Policy in South Africa, University of Witwatersrand, South Africa, 4 – 5 September 2012.

Muzata, T.G., Grimbeek, S., Darji, R., (2011), *'The impact of antitrust fines on firm valuation in South Africa: The case of Pioneer Foods, Tiger Brands and Sasol Chemical Industries'*, presented at the Sixth International Conference on Competition and Regulation, 1-3 July 2011, Rhodes, Greece.

Also presented at:

The Biennial ESSA Conference, University of Stellenbosch, South Africa, 5 - 7 September 2011.

The Fifth Annual Conference on Competition Law, Economics and Policy in South Africa, University of Johannesburg, South Africa, 4 – 5 October 2011.

Muzata, T.G., and Mnisi, K., (2010), *'Are antitrust fines excessive to the detriment of the companies concerned and consumers in general?'*, presented at the Fourth Annual Competition Commission, Competition Tribunal and Mandela Institute Conference on Competition Law, Economics and Policy in South Africa, 2 September 2010.

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