



# **The consistency of merger decisions in a developing country: The South African Competition Commission**

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**ERSA working paper 286**

Economic Research Southern Africa (ERSA) is a research programme funded by the National Treasury of South Africa.

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## THE CONSISTENCY OF MERGER DECISIONS IN A DEVELOPING COUNTRY: THE SOUTH AFRICAN COMPETITION COMMISSION

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ABSTRACT. The South African Competition Commission's merger decisions for FY2002 through FY2009 are analyzed to empirically identify the factors historically influencing prohibition, conditional approval and unconditional approval. The key explanatory variables are linked to provisions of the 1998 Competition Act, such that the analysis provides insight into the consistency of merger decisions with respect to the legal requirements specified in the Act. Although the legislation includes standard economic concerns, it also includes a provision for advancing public interests and development concerns. Initial results point to differing behaviour over the time period, which suggests that the Commission is inconsistent; however, those inconsistencies are removed, once additional measures of market contestability are included in the analysis. The final results suggest that the Commission is less likely to approve mergers that they link to markets that are less contestable. In addition to protecting competition, the Commission is simultaneously protecting other public interests. Therefore, our research supports the hypothesis that the Commission consistently applies its legislative remit.

*J.E.L.*: K21, L40, D78

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*Date*: March 2012.

*Key words and phrases*. South African Competition Commission, Merger Decisions.

The authors would like to thank the South African Competition Commission for allowing us to use their data for this analysis. The authors would also like to thank *Economic Research Southern Africa* for financial support of this research. This analysis is based, in part, on Grimbeek (2011). Any remaining errors are the sole responsibility of the authors.

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## 1. INTRODUCTION

In the past, which was an era of widespread state intervention in economic activity, merger control in developing countries was not a priority, Adhikari & Knight-John (2004). More recently, both internal and external to these economies, the need for competition legislation became apparent. Internally, the privatisation of entities operating in sectors believed to be natural monopolies, such as the utilities sector, as well as the adoption of liberalisation policies, highlighted the importance of a framework capable of eliciting the most favourable efficiency and welfare outcomes in relation to both liberalisation and privatisation. Externally, a wave of international mergers, with potentially negative impacts on local market contestability, highlighted the need to develop tools and legislation to deal with increased multinational corporation market power, and the potential for abuse of dominant positions in local markets.

In South Africa, the transition to democracy in 1994 led to fundamental changes in the form and function of the state and the role of regulatory authorities tasked with helping achieve the government's broader economic development objectives. Merger decisions, the focus of this analysis, play an important role in determining the future structure of economic activity, and, therefore, are expected to influence economic development objectives. The passage of the Competition Act in 1998 (Act no. 89) in South Africa, which resulted in the establishment of the Competition Commission and the Competition Tribunal in September of 1999, was an important step in this process. The Act replaced a weak merger review system, under the previous Competition Board, in which firms decided whether or not to bring mergers to the attention of the Board, with one that requires pre-merger notification in mergers that exceed certain thresholds.<sup>1</sup>

The Commission is an independent body that rules on the appropriateness of mergers, and whose decisions can be appealed to the Tribunal, as well as the Competition Appeal Court. The Act follows mainstream European Union (EU) and,

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<sup>1</sup>Roberts (2004) provides a brief discussion of some of the assessments made by this board between 1993 and 1997.

to a lesser extent, United States (US) competition law by prohibiting practices in restraint of trade, whether vertical or horizontal. However, the legislation differs from the processes followed in most developed economies, since it also promotes underlying social and economic objectives to assist in addressing the previously skewed nature of economic activity in the country. The Act explicitly emphasises development and the public interest, linking competition policy with other economic development policies.<sup>2</sup>

The public interest concern has led to some controversy.<sup>3</sup> Reekie (1999), for example, argues that employment should solely be an objective of macroeconomic policy, and that previous ownership imbalances will be automatically rectified by the removal of socially biased legislation. However, Lewis (2002) notes that public interest and related concerns have been allayed via conditional approval of certain mergers, rather than outright prohibition; many mergers have been conditionally approved, where the conditions are specifically aimed at minimising job losses.<sup>4</sup> In addition to employment issues, Black Economic Empowerment (BEE) - an affirmative action program - has also featured in merger hearings.<sup>5</sup> Also, according to the Act, if a proposed merger is likely to be anti-competitive, the authorities are required to consider the possibility that technology or efficiency gains may offset those anti-competitive effects.

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<sup>2</sup> The stated objectives of the Competition Act of 1998 are: (a) to promote the efficiency, adaptability and development of the economy, (b) to provide consumers with competitive prices and product choices, (c) to promote employment and advance the social and economic welfare of South Africans, (d) to expand opportunities for South African participation in markets and to recognise the role of foreign competition in the Republic, (e) to ensure that small and medium-sized enterprises have an equitable opportunity to participate in the economy, and (f) to promote a greater spread of ownership, in particular, to increase the ownership stakes of historically disadvantaged persons. See the Competition Act no. 89, South Africa, as amended in 2001.

<sup>3</sup> Trade unions are regular participants in the merger evaluation process, especially when employment issues are at stake. However, there has been very little participation by either government departments or consumer groups, Competition Commission and Competition Tribunal (2009).

<sup>4</sup> In case 72/LM/Sep04, the Commission placed a cap on the number of retrenchments that could arise from the merger. Also, in case 46/LM/May05, the Commission required the merged entity to fund skills training for retrenched seasonal farm workers.

<sup>5</sup> In case 66/LM/Oct01, the Commission opposed a merger between a struggling BEE firm and a multinational corporation on the grounds that it contravened BEE objectives. However, the Tribunal approved the merger, finding that there was no purpose in preventing the merger to keep a failing firm on life-support merely to satisfy BEE objectives.

Given the broad objectives contained in the Act, as well as fundamental changes in the structure of industry and the regulation of markets, it is worthwhile examining the efficacy with which the Commission is able to execute its requirements. To this end, this research considers the determinants and the consistency of one aspect of the Commission's remit - merger approval - over the period from fiscal year (FY) 2002 through FY2009 using a sample from the population of notified mergers. The sample includes 310 observations, weighted to the population of 2368 merger decisions. Binary regressions of unconditionally approved vs. prohibited and conditionally approved mergers, based on linear probability models, were analysed. The results of the analysis find a number of significant determinants of the Commission's decision-making process. Unconditional approval is more likely when there are low barriers to entry into the market, when other countervailing market power exists to mitigate any anti-competitive effects of the merger, and when there is evidence that either the industry or the market is growing or is otherwise very dynamic. On the other hand, mergers are more likely to be either conditionally approved or prohibited when post-merger market shares exceed 45%, there is concern over coordinated effects, and when public interest concerns are raised. The results suggest that the Commission is following both the letter and the intent of the Competition Act, as initially published in 1998, amended in 2001.

The rest of the paper is organized as follows. The following section, Section 2, describes the limited literature related to the examination of merger decisions by competition authorities worldwide. Section 3 outlines the data and sampling procedure used to extract the data for this study. Section 4 presents the results of the analysis and discusses those results, providing links, where possible, to the rest of the literature. Section 5 concludes the analysis.

## 2. LITERATURE REVIEW

In the United States, competition regulation primarily follows the 1890 Sherman Act, although the legislation, the enforcement guidelines and behaviours have

changed since then. Posner (1970) provides the impetus to the literature, examining US enforcement cases between 1890 and 1969.<sup>6</sup> He concludes his analysis with recommendations that antitrust enforcement activities should follow an appropriate economic framework - that enforcement should be focussed on activities that result in the best outcomes for the least cost.<sup>7</sup> The South African legislation, see footnote 2, veers slightly from Posner's recommendation, in that it includes objectives that are not explicitly related to the regulation of competition.

More recently, Coate & McChesney (1992) and Coate (2005) examine mergers and the behaviour of the Federal Trade Commission (FTC). Coate & McChesney (1992) make use of a sample of 70 horizontal mergers from the US between 1982 and 1986 to examine whether or not the 1982-1984 merger guidelines, which are based on a series of thresholds with respect to the Hirschman-Herfindahl Index (HHI), are followed. They find that these simple guidelines are not closely followed by the FTC, suggesting that other factors were at play; only 43% of the cases were challenged, even though nearly all violated the HHI guidelines. They also find evidence of political effects on decisions, suggesting that merger decisions are not consistent. In South Africa, the same political party has been in office, since 1994; therefore, it is not possible to directly consider political effects in the following analysis.

Coate (2005) analyses the behaviour of the FTC between 1993 and 2003, using data from 124 fully reviewed horizontal cases - 79 were enforced and 45 were closed without further action. He finds that HHI interacted with coordinated interaction concerns, barriers to entry, hot documents, customer complaints, previous anticompetitive behaviour and whether or not there were unilateral effects, to be strongly predictive of enforcement of (challenges to) the merger. When these separate concerns were removed from the regressions, he finds that any evidence of

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<sup>6</sup>Kovacic & Shapiro (2000) present a detailed historical perspective on the shape of, especially, policy and enforcement in the U.S., since the passage of the Sherman Act in 1890.

<sup>7</sup>Posner's (1970) database was later updated and the relationship between enforcement behaviour and the US business cycle was again considered by Ghosal & Gallo (2001). They apply causality tests related to both Granger (1969) and Geweke, Meese & Dent (1983), finding that enforcement behaviour is countercyclical.

anticompetitive behaviour is predictive of a challenge, but that procompetitive support, although correctly signed, was not predictive - except in one version of the model. His approach provides a nuanced explanation for some of the results in Coate & McChesney (1992).

Khemani & Shapiro (1993), on the other hand, examine the consistency and severity of enforcement related to merger policy in Canada, following the 1986 introduction of the Competition Act, while Avalos & De Hoyos (2008) examine 239 of the 350 merger cases filed between April 1997 and December 2001 that were evaluated by Mexico's Federal Competition Commission. Using data from 75 mergers from June 1986 through July 1989, Khemani & Shapiro (1993) find that the market share of the acquiring firm was associated with increased enforcement severity, as are barriers to entry, while import competition was associated with reduced enforcement severity. They also find evidence of enforcement differentiation, in the sense that all of the ordered probit cutoffs are significant. They interpret their results as supporting consistent behaviour by the Director of Investigation and Research, who heads the decisions made by the Canadian Bureau of Competition Policy. In the Mexican study, Avalos & De Hoyos (2008) consider a three-part decision outcome, whether to: allow the merger, allow the merger with conditions, or block the merger. Their results, which are broadly in line with the previously noted, as well as the subsequently discussed papers, suggest that the Mexican competition authority is acting consistently, with respect to the legislation.

Outside of North America, Weir (1992) and Weir (1993) examine data from 77 United Kingdom (UK) mergers applications, submitted between 1974 and 1990. These analyses have particular relevance to our study, as they concern the 1973 Fair Trading Act, which allows for the public interest to be taken into consideration, and the public interest can override economic considerations.<sup>8</sup> Weir (1992) suggests that public interest was not an important factor. However, he did find a bias in favour of mergers, which he interprets as inconsistent behaviour. Using the

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<sup>8</sup>Public interest could relate to product quality, environmental safety, new production techniques, industrial and employment distributions, and foreign trade.

same data, Weir (1993) focusses on the factors that made it more likely that the Monopoly and Mergers Commission (MMC) expected increased or decreased competition. His results suggest that the MMC considers different evidence, depending on the expected change in competition, which then has effects on their decisions. In other words, although behaviour is broadly consistent, it is nuanced, as was found with respect to the FTC. Davies, Driffield & Clarke (1999), rather than considering mergers, examine the probability of adverse findings in cases of abuse of monopoly power, drawing on 73 MMC reports from 1973 to 1995. They find that the market share of the largest firm, exclusivity in pricing or distribution, and a time dummy are consistently the most important determinants in their series of regressions. The significance of the time dummy can be interpreted as inconsistency in behaviour. In the following analysis, we also make use of time dummies, especially time interactions, to uncover potential inconsistencies in the South African Commission's decisions. One other European study was also uncovered.

With respect to the EU, Nilssen (1997) analyses the consistency of the Norwegian Competition Authority, following a case study approach, finding inconsistency in the Norwegian Authority's behaviour based on data from the non-life insurance industry, which is a highly concentrated industry that appears to contain a competitive fringe. In addition, Lindsay, Lecchi & Williams (2003) find that both large market shares and high barriers to entry are important determinants of merger prohibitions in their sample of 245 decisions made between 2000 and 2002. They further find that neither US incorporation nor Nordic country incorporation affect merger decisions. More recently, Bergman, Jakobsson & Razo (2005) consider a sample of 96 phase-two mergers, finding results that are similar to that of Lindsay et al. (2003).<sup>9</sup> Their analysis is partial, in that it only considers consistency in the second phase, irrespective of the first stage. They find no evidence that political pressure affects merger decisions by the EC, and, therefore, their results suggest

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<sup>9</sup>An interesting extension of this research program is the consideration of stock market effects of merger decisions, as undertaken by Duso, Neven & Röller (2007) and Röller & Neven (2002). Both find that approximately 75% of merger prohibitions correspond to mergers that were considered anti-competitive by the stock market. Such an analysis is beyond the scope of this paper.



consistency in behaviour; however, they note one substantial caveat: as their data is retrospective, it is not possible to control for intra-investigation inconsistency, such as more strict market definitions.<sup>10</sup> Their concern is true of all retrospective analyses, including ours.

With respect to merger analysis in South Africa, previous studies include Theron (2001), Smith (2003) and Roberts (2004). Smith's (2003) analysis is based on mergers notified between 1999 and 2003, focussing on public interest considerations. He finds that conventional measures of competition, such as market share, are important merger approval determinants, although public interest considerations are not generally important. However, the Commission is shown to support Black Economic Empowerment within a subsample of large mergers. Our analysis extends Smith (2003) by considering more recent data, as well as a deeper set of control variables. Theron (2001), rather than conducting a detailed empirical investigation, makes use of qualitative analysis, assessing the Competition Tribunal's treatment of five large merger cases. She argues that public interest goals have not conflicted with competition goals, such as efficiency. Our analysis also extends Theron (2001), since both more and newer data are available to us. Roberts (2004) also presents a short case study of the steel industry, as well as describing cases that were prohibited between 1999 and 2003.

The preceding studies provide the basis for this analysis. In the previous studies, the authors examine the consistency of the decisions made by the competition authority when dealing with mergers, focussing primarily on potential political and public interest effects that are generally not included in the legislative remit. Our analysis, therefore, differs, because public interest concerns are included in the Commission's remit. The analyses in the literature are primarily based on binary response models, typically logit or probit, where the dependent variable is some version of whether or not a merger is allowed. Independent variables include various

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<sup>10</sup>Another strand of the literature investigates the potential impacts of competition authority behaviour on markets, and future merger applications. See, for example, Ivaldi & Verboven (2005), Neven & Zenger (2008) and Seldeslachts, Clougherty & Pita Barros (2009). Developing the appropriate counterfactuals is, however, quite complicated in these settings.

measures of market share, as well as other measures of presumed anti-competitive or pro-competitive market characteristics, such as ease of entry. We generally follow the approach in the literature, although we make use of linear probability models, partly due to the complications that arise when dealing with the effect of public interest concerns (see below). However, we are not able to directly include measures of political pressure in the analysis; therefore, year dummies interacted with other controls are used to describe potential inconsistencies.

### 3. DATA

**3.1. Population of Mergers.** During the period FY2002-FY2009, April 2002 to March 2010, a total number of 2 368 mergers were notified to the Competition Commission and decided upon.<sup>11</sup> Another set of notified mergers were subsequently withdrawn by the parties, mainly in anticipation of a non-favourable decision of the Commission, and these mergers were not included in the data. Similarly, a final set of potential mergers were not proposed, as the involved parties anticipated a non-favourable decision. According to the Act, mergers are classified as small (a combined turnover lower than the determined threshold by the Minister), intermediate (a combined post-merger turnover falling between the lower and higher thresholds), or large (a combined post-merger turnover at or above the higher threshold).

At the beginning of FY2002, the Commission began to categorise all notified mergers according to the level of complexity involved in the analysis of the merger's effect on the relevant markets. Therefore, all mergers notified between September 1999 and March 2002 were excluded from the total population.<sup>12</sup> Mergers are categorized as non-complex, complex and very complex. Non-complex, or Phase I,

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<sup>11</sup>All intermediate and large mergers, based on either the size of the combined entity or the size of the target firm, are required to be notified to the Commission. Intermediate mergers are decided upon by the Commission, with provision for the parties to appeal Commission decisions to the Competition Tribunal for adjudication. Large mergers are initially considered by the Commission, which makes a recommendation; however, the matter must be referred to the Tribunal for final adjudication. The Tribunal's decision on large mergers may then be appealed in the Competition Appeal Court. Small merger notification is voluntary, and the Commission restricts investigations to small mergers it views as being problematic, due to the previous contact between the parties, the parties being involved in current investigations by the Commission or those in priority sectors.

<sup>12</sup>The categorisation of mergers enabled the authors to employ a more complex sampling technique, so as to increase the accuracy and power of the regressions.

mergers are those with little or no effect on competition. These include mergers where the parties combined post-merger market share is less than 15%, there are no complex control structures and no public interest issues to consider. Complex, or Phase II, mergers involve tie-ups between direct or potential competitors on a horizontal level, or between customers and suppliers on a vertical level, where the merging parties control more than 15% of the market post-merger. Very complex, or Phase III, mergers are those that are highly likely to result in a substantial lessening of competition in the post-merger market. These mergers mostly involve the leading market participants. Analysis of Phase III mergers often requires the Commission to obtain specific documents and information from the merging parties and affected third parties.

Of the thousands of mergers notified to the Commission since 1999 only a very small proportion (less than 4 percent) have been prohibited or have been approved subject to conditions imposed on the merging parties, which is in line with international benchmarks; see Competition Commission and Competition Tribunal (2009). Between FY2002 and FY2007, the number of merger notifications rose steadily, and this increase took place in a period of economic, primarily trade, liberalisation and economic restructuring in South Africa. Since FY2008, however, there has been a substantial decline in the number of merger notifications received by the Commission. The decrease can be linked to the global economic crisis and subsequent recession in South Africa. Also, in April 2009, the Commission changed the notification thresholds, which also affected the number of notifications.<sup>13</sup> During the same period, the Commission also adopted a more vigorous approach to monitoring small mergers for possible competition concerns.

More than half, 54%, of the mergers are horizontal in nature, while vertical mergers cover less than 8% of the mergers. The manufacturing sector has consistently

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<sup>13</sup>Between February 2001 and April 2009, notification was required if the target firm's assets or turnover exceeded R30 million, or the merging parties' combined assets or turnover exceeded R200 million. Under such circumstances, the merger was considered to be intermediate. In 2009, the respective thresholds were raised to R80 million and R560 million. For large mergers, the pre-2009 thresholds were R100 million and R3.5 billion. After April 2009, those thresholds were raised to R190 million and R6.6 billion, respectively.

been the most important driver of merger activity, approximately 26 percent of merger notifications, followed by property transactions, approximately 20 percent of the mergers. In third place is the retail and wholesale trade sector, covering 14 percent of transactions, followed by the finance sector, and then the mining and construction sectors; see Competition Commission and Competition Tribunal (2009).

Taking the Commission's merger categorization system as outlined above, the total population available for examination is described in the Target Population columns of Table 1. It is clear from the table that very complex cases constitute a very small percentage of the total population of Commission merger decisions. This target population was used as the basis for the sampling methodology, described in the following subsection.

**3.2. Sampling Methodology.** As previously discussed, the total population available for analysis is 2 368 mergers notified to the Commission during the period April 2002 to March 2010, although some merger reports were incomplete yielding a population of 2277.<sup>14</sup> From these mergers, a sample of 310 mergers was taken. Sampling was based on a retrospective simple random stratified sampling methodology. Stratification was conditioned on the dependent variable, such that a total of 81, out of the population of 91 mergers that were either conditionally approved or prohibited, were included in the final sample. On the other hand, the population of approved mergers was stratified according to a set of factors - Year, Category and Type - which resulted in 101 Year-Category-Type strata. The stratification was applied to calculate a nominal sample size to obtain a power of 80%, thus providing for a general odds ratio of between 2 to 4 for an unweighted total sample of size 310 including Decisions "A" - unconditionally approved - and "P+CA" - prohibited or conditionally approved.<sup>15</sup> To provide for possible non-response (unavailable

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<sup>14</sup>Data was collected from each of the merger reports and this data was collated for the analysis. The Commission does not have an information system or database of the relevant variables for the analysis. Instead, each of the reports was read, and the appropriate data was placed in a database. In some instances, the relevant data was subjectively determined.

<sup>15</sup>As a general rule of thumb, a sample size with a power of 80% is accepted as reasonable.

final reports on the Commissions merger database), an oversampling strategy was administered. For a nominal sample of 229 (Decision A), the size of the oversample was 427.<sup>16</sup>

The initial sample sizes for the strata were based on a proportional allocation. This however, resulted in very low sample sizes for the smaller strata and these numbers were then adjusted, resulting in a disproportionate sample ratio. To accommodate this disproportionality, weighting of the realised sample was necessary to reflect the population sizes of the strata, based on the inverse of the inclusion probability. The effectiveness of the sampling strategy is illustrated in Table 1; see, in particular, the columns Sample Population and Sample.

**Table 1 about here**

**3.3. Control Variables.** The values of the independent variables for the analysis were gleaned from the final merger reports of the sampled cases. All of the variables used in the analysis are dummy variables.<sup>17</sup> Given the nature of the reports, a number of variables had to be subjectively determined. Specifically, reports rarely included a direct statement in agreement with the basic definition of any of the dummy variables, and, therefore, if it was felt the Commission was of the opinion that, for example, entry barriers were high or that there was significant import competition in the relevant market, entry barriers were assumed to be high or import competition was assumed to exist. Unfortunately, it was not possible to decipher either the exact level of entry barriers or the degree of import competition from the report.

In evaluating mergers, the main test that the Act requires is for the competition authorities to determine whether a merger will result in a substantial reduction in

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<sup>16</sup>In administering the sample strategy some final merger reports could not be located, resulting in a final sampled population of 2 252 cases, which represents 81 different Year-Category-Type strata.

<sup>17</sup>Post-merger market shares were originally available as continuous variables; however, some reports had missing information. Therefore, two categorical variables were created. The first to separate mergers with missing from available information; the second to separate mergers with market shares exceeding 45% - missing values were assumed to be below this threshold. Missing values are mostly associated with conglomerate mergers and mergers that do not meet the *de minimus* 15%.

market competition, which requires the consideration of a range of factors relating to actual and potential competition in the relevant markets, as set out in Section 12A.2 of the Act. Therefore, we considered: (a) the actual and potential level of import competition in the market; (b) the ease of entry into the market, including tariff and regulatory barriers; (c) the level and trends of concentration, and history of collusion, in the market; (d) the degree of countervailing power in the market; (e) the dynamic characteristics of the market, including growth, innovation and product differentiation; (f) the nature and extent of vertical integration in the market; (g) whether the business or part of the business of a party to the merger or proposed merger has failed or is likely to fail; and (h) whether the merger will result in the removal of an effective competitor.

In addition to the aforementioned factors, we also made provision for the type of merger - conglomerate, horizontal or vertical - the investigation phase - non-complex, complex or very complex - the merger category - small, intermediate and large - and the fiscal year in which the merger was notified. Furthermore, as discussed in earlier sections, the Act also makes explicit provisions for public interest concerns within the analysis, and, therefore, if these concerns were raised and noted in the report, an indicator for public interest concerns was created. Finally, provision was also made to include a control accounting for concerns over coordinated effects within the industry in which the merger was proposed.

Each of the included variables captures our interpretation, from the reports, of the Commission's expectation of the effect that any particular merger would have on competition, as well as controlling for potential differences in behaviour over the fiscal years being studied. A summary of the control variables is available in Table 2, and that summary is provided for both unconditionally approved mergers and mergers that were either conditionally approved or prohibited.

**Table 2 about here**

#### 4. RESULTS

Two sets of empirical analyses were considered, both linear probability models. Since the independent variables are all binary variables, the linear probability models provide non-parametric estimates of step functions of the probability that a merger is either prohibited or conditionally approved. In the first analysis, results available in Table 3, the determinants of merger disapproval are post-merger market shares in excess of 45%, missing post-merger market shares, the complexity of the investigation, the fiscal year of the merger's notification, and a number of interactions between the fiscal year, market shares and investigation complexity. In the second analysis, results presented in Table 4, a number of features related to the Commission's expectation of the post-merger competitive structure of the market are also included.

**4.1. Model I.** Model I is estimated across four interrelated specifications; results are denoted as Model I-A, I-B, I-C and I-D in Table 3. Model I-A did not include any interaction terms, but did include binary market share measures, investigation complexity and merger fiscal year; FY2002, simple investigations, available post-merger market shares that are less than 45% are the remainder categories contained in the constant term. Each of the remaining models includes all of the variables contained in Model I-A. Model I-B includes market shares in excess of 45% interacted with fiscal year. Model I-C, on the other hand, includes investigation complexity interacted with fiscal year. Finally, Model I-D includes both Model I-B and Model I-C.

**Table 3 about here**

The results of Model I-A suggest that large post-merger market shares increase the probability of disapproval by nearly 44%, while complex investigations and very complex investigations raise that probability by nearly 18% and nearly 25%, respectively. Furthermore, each of the fiscal year effects are positive and significant, the expected increase in the probability of either prohibition or conditional approval ranging from just under 11% to nearly 24.5%. In other words, mergers notified

in FY2002 were more likely to be approved than mergers notified in any of the following years. Given the difference in merger acceptance across the fiscal years, it would appear that the Commission did not act consistently over time. A formal test of equal parameters for the fiscal years is not rejected,  $F_{6,298}=1.63$ ,  $p=0.139$ . Therefore, the Commission does appear to be acting consistently over the time period, except for FY2002, at least with respect to the limited number of variables included in the initial analysis.

In Model I-B, fiscal year was interacted with our measure of large post-merger market shares. Not surprisingly, the estimates for each of the fiscal years, as well as the effect of post-merger market shares in excess of 45% are all estimated to be smaller. The market share effect falls from nearly 44% to just over 25%, while the fiscal year effects range from 5.7% to 21.2%. Nearly all of the fiscal year - market share interactions are positive and significant, except for the interaction with FY2003 and FY2009. Furthermore, the confidence intervals for interactions with FY2004, FY2006, FY2007 and FY2008 do not contain zero. In other words, between April 2005 and March 2009, the Commission treated post-merger market structures in excess of 45% more strictly than they did before April 2005 and after March 2009, and, therefore, the Commission did not apply a consistent rule with respect to market share worries.

Once merger complexity is interacted with fiscal year, instead of market shares, see Model I-C, the individual fiscal year effects, as well as merger complexity (which now measures the effect for fiscal year 2002-03) are no longer significant. We continue to observe that the Commission treats mergers resulting in post-merger market shares that exceed 45% more strictly than smaller post-merger market shares. Larger shares are 40% more likely to be prohibited or approved with attached conditions. Complex mergers receive more strict treatment from April 2003 until March 2006, while very complex mergers are more likely to be either approved with conditions or prohibited in all years other than FY2005 and FY2009. As with the



results from Model I-B, these results point to inconsistency in merger decisions over the time period.

In the final consistency check, the determinants from both Models I-B and I-C were included in the analysis. The results from the complexity interactions carry-over, even when market share interactions are included. However, the only significant market share estimate is for FY2005; in other words, the market share interaction effects do not carry over. The results from the final model, Model I-D, further support that the commission does not appear to follow the exact same guidelines for all merger applications for all years.

Although the Commission appears to behave inconsistently, a conclusion of this nature is premature, as there are at least two potential concerns that were not captured in this analysis. The first is that it is not possible to control for merger applications that are either not notified or have been withdrawn, due to the potential merging parties expectation that their merger will not be approved. The second is that there could be other factors that are more prevalent in certain years or certain types of mergers that are more common in some years than others. Unfortunately, the first concern cannot be dealt with in this analysis, and, therefore, it will remain as a caveat for the subsequent analysis. The second concern, however, to which we now turn, can be addressed, at least in part.

**4.2. Model II.** In the second set of analyses, we include a number of other potential controls for post-merger market contestability. These variables include the type of merger, whether or not there is effective import competition in the market, whether or not barriers to entry are deemed to be low, whether or not there is a history of collusion in the market, whether there is countervailing buyer power in the market, whether or not one of the firm's involved in the merger is failing, whether the merger results in the removal of an effective market competitor, whether there are sufficient dynamics - such as growth or changes in market share - to imply a

market that is likely to remain or become more competitive, whether or not public interest concerns were raised, and a number of interactions. The results are presented in Table 4.

According to the Act, interested parties are allowed to provide arguments against a merger that are based upon the public interest. In the sample data, public interest concerns were raised only in mergers that were either prohibited or conditionally approved. The resulting quasi-separation would raise difficulties with respect to both logit and probit models, although does not raise any difficulties in terms of the linear probability model, which partly justifies the focus on linear probability models.

As with initial analyses, four sets of results are presented in the table. In the first column, Model II-A, no interactions are included; in the second column, Model II-B, interactions with large market shares are included; In Model II-C, rather than market share interactions, we include horizontal merger interactions. Finally, Model II-D combines both Models II-B and Models II-C.

**Table 4 about here**

Importantly, the results suggest that the Commission is, in fact, reasonably consistent over the time period, as there are no significant fiscal year effects, with two exceptions. FY2009 estimates are positive and significant in both Models II-B and II-D, where market share interactions are included.<sup>18</sup> Although there is some evidence of inconsistency, there was a recession during FY2009. In other words, unusual behaviour during unusual times does not represent a strong pattern with respect to consistency.

Under Model II-A, in which no interaction terms were included, the results imply that the Commission looks favourably upon mergers in markets that are growing - 4.6% less likely to disallow the merger - when there are low barriers to entry - 22.1% less likely to disapprove - and when there is countervailing buyer power

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<sup>18</sup>A test of joint significance for all of the fiscal years in Model II-B yields  $F_{7,278}=2.33$  and  $p=0.025$ , while a similar test in Model II-D yields  $F_{7,272}=1.94$  and  $p=0.063$ . Joint significance is rejected for both Models II-A and II-C.

in the market - 21.2% less likely. On the other hand, mergers receive more strict scrutiny, are more likely to be either conditionally approved or prohibited outright, when post-merger market shares are either not available - 4.3% marginal effect - or exceed 45% - 13.8% marginal effect. Similarly, the Commission reacts strongly when the public interest is at stake; the probability of approval with conditions or prohibition is 62.4% higher when the public interest is at stake. The Commission also takes a dim view of the potential for coordinated effects in the market; the estimated marginal effect exceeds 30%.

In Model II-B, large market shares were interacted with each of our measures of market contestability, and the inclusion of these interactions does affect the estimation results. For the most part, the contestability measures that were significant determinants of disapproval in Model II-A, are qualitatively similar in Model II-B, although quantitatively different. For example, the estimated marginal effect of large post-merger market shares rises from just under 14% to approximately 30.5%, while the estimated marginal effect of missing market shares is cut in half. The marginal effect for low barriers to entry increases from -22.1% to -13.3%, the growth effect falls slightly from -4.6% to -5.7% and the countervailing power effect increases slightly from -21.2% to -20.4%. The effect of public interest concerns does not change markedly. In addition to these small changes, a number of other contestability measures become significant, once the market share interactions are included. In particular, both complex investigations and the removal of an effective competitor lead to increases in the probability of disapproval by 5.5% and 43.5%, respectively. However, the removal of an effective competitor is deemed less of a problem for large post-merger market shares; the estimated marginal effect of -47.7% roughly offsets the overall effect of removing an effective competitor. In terms of the other interactions, the interaction between large market shares and a history of collusion yields an expected increase in Commission skepticism; the increase is 38.7%. However, low barriers to entry are viewed relatively more favourably, 31.5%, for large post-merger market shares than for small post-merger market shares, which

is somewhat surprising. Similarly, the Commission is not found to worry as much about coordinated effects, when the post-merger market share exceeds 45%. These final two results suggest that the Commission's decisions are not completely consistent with their remit; however, it is also quite plausible that (a) barriers to entry are not particularly low and (b) that coordinated effects are more commonly observed in markets in which there are large post-merger market shares.

In the third analysis, see column three, rather than including market share interactions, we included horizontal merger interactions. The results suggest that these interactions are very important in determining Commission behaviour. The inclusion of this set of interactions yields a number of insignificant contestability effects; importantly, these contestability effects are found to primarily affect horizontal merger decisions (rather than either vertical or conglomerate mergers). Once the interactions are included, horizontal mergers are 40.1% more likely to be either conditionally approved or prohibited, while concerns related to coordinated effects in the market are associated with an 87.2% increase in disapproval. Both market growth effects and public interest effects are found to be similar in Models II-A and II-C. In terms of the interactions, the impact of effective import competition and concerns over coordinated effects are surprising. Import competition in horizontal mergers raises the probability of disapproval by 11%, while coordinated effects in a horizontal merger are associated with a 65% increase in the probability of unconditional approval. The rest of the effects are more in line with expectations. In particular, low barriers to entry and countervailing buyer power in a horizontal merger raise the probability of unconditional approval by 21.7% and 18.8%, respectively, while a history of collusion in the market in which the horizontal merger is proposed results in a 21% increase in the probability that the merger is either prohibited or approved with conditions.

In the final analysis, Model II-D, reported in column four, both of the interaction models were combined. As expected, a number of the results carry-over across the models, although the marginal effects estimates change. Two result differences,

however, stand out. The first relates to base market share effects. The second is related to the removal of a competitor. The effect of large post-merger market shares is no longer significant once both market share interactions and horizontal merger interactions are included. Removing an effective competitor, as it did under Model II-B, has two nearly offsetting impacts. When interacted with market share, the removal of a competitor yields a surprising decrease of 48.3% in the probability of disapproval; however, that is offset by a 44.6% increase in the probability of disapproval if a horizontal merger results in the removal of an effective competitor.

**4.3. Discussion.** Two different sets of analyses were considered. In the first, the Commission's decisions varied over time, supporting the conclusion that the Commission was inconsistent in its merger decisions. However, in the second, the inclusion of a number of market contestability measures yielded a different conclusion, that the Commission's merger decisions were not time dependent and, as such, the Commission was reasonably consistent in the application of its remit.

In line with economic theory, as well as the guidelines set out by the Act, the Commission pays very careful attention to variables that are directly tied to competition. The Commission views post-merger market shares in excess of 45% as something to be avoided and holds a skeptical view of markets in which post-merger market share data is not available. Large post-merger market shares, unsurprisingly, have also featured as important determinants of merger approval in the rest of the international literature - Coate & McChesney (1992), Weir (1992), Khemani & Shapiro (1993), Bergman et al. (2005) and Avalos & De Hoyos (2008) - and in the limited South African literature - Smith (2003). Complex and very complex mergers, which have not previously featured in the literature, are also viewed skeptically, being 18% and 25%, respectively, more likely to be either conditionally approved or prohibited. However, both market share and complexity effects are found to be time dependent.

In a second analysis, additional variables related to the complexity of the merger were included in the analysis. When these variables are included, year effects are

generally insignificant. As expected, mergers in markets that are more competitive, as measured by the existence of countervailing market power, low barriers to entry and market growth are generally viewed more positively. On the other hand, mergers in markets that are likely to be less competitive, as measured by the existence or potential for coordinated effects, are viewed more skeptically. These results, related to the underlying level of competition and determinants of competition, are similar to that found by Coate & McChesney (1992), Weir (1992), Khemani & Shapiro (1993), Bergman et al. (2005) and Avalos & De Hoyos (2008).

Finally, the Commission takes seriously its responsibility to protect the public interest. When such interests are raised by parties concerned with the merger, the Commission takes notice. In this sample, if a stakeholder was concerned with potential negative impacts on the broader public, the Commission was 63% more likely to either place conditions on the merger or prohibit it completely. Our result is counter to much of the literature; however, since the public interest is not an explicit goal of competition policy in most countries, there is little scope for comparison. Weir (1992) finds that public interest concerns were not important determinants of MMC behaviour between 1974 and 1990. Similarly, Smith (2003) finds minimal evidence that the South African Competition Commission worried about public interest considerations before 2003, although Black Economic Empowerment considerations affect decisions in his subsample of large mergers. The majority of public interest analysis in the international literature, rather than focussing on an explicit goal, has considered the potential for political or national influence in the analysis. Along those lines, Coate & McChesney (1992) find evidence of political pressure affecting merger decisions in the U.S., while Lindsay et al. (2003), Bergman et al. (2005) and Avalos & De Hoyos (2008) do not find evidence of the relevant authorities discriminating against foreign-based firms.

## 5. CONCLUSION

This research has examined the determinants of and the consistency with which the Competition Commission has evaluated merger transactions notified during the period from FY2002 to FY2009. Data was extracted from a population of 2 368 mergers, and the analysis, undertaken in two parts, hinged upon linear probability models corrected for our sampling strategy. Initially, the analysis focused on a small set of explanatory variables, including year and year-interaction effects. Both post-merger market shares and the Commission's perception of the complexity of the merger are significant determinants of merger approvals. However, mergers notified following FY2002 were more likely to be treated more skeptically by the commission; other fiscal year effects were also uncovered. These significant time effects suggest that the Commission's merger decision behaviour was not consistent. Subsequently, though, market contestability effects and other related interactions were included to test the robustness of the time effects. The results from this second analysis provide a much more favourable view of the Commission's behavioural consistency with respect to merger decisions, as outlined in the Competition Act of 1998 and its 2001 amendment.

Our analysis is one of the first to examine competition policy in South Africa, having considered more recent and more detailed data than either Theron (2001), Smith (2003) or Roberts (2004). Similarly, it is one of the first to examine merger policy in a developing middle income country; the only other analysis we were able to find was for Mexico by Avalos & De Hoyos (2008). Given the changes in the structure of industry in developing economies, driven in part by privatisation and a recent increase in international mergers, the analysis contributes to a rather small, but growing, literature on the enforcement of competition policy in developing economies.

In summary, a number of factors were found to affect the Commission's decisions, and these factors generally had the expected effects. Although the results support

our intuition, a few caveats remain. Importantly, the estimation results may, instead of pointing to consistent behaviour at the Commission, point to consistent interpretation of the merger data, since a degree of subjectivity was necessary for the compilation of the dataset. Even though it is not possible to further examine our subjectivity, a recommendation to the Commission arises from the analysis. A more succinct data capturing process at the Commission would be beneficial. We would also note that it was not possible to control for the entire decision-making process, including the investigators and directors making recommendations or the discussions surrounding those recommendations. Although not necessarily relevant to our analysis, it would be interesting to see if a subgroup of investigators or other actors in the Commission were more or less likely to approve any particular merger. Finally, the analysis assumes that the target population, and, therefore, the sample population, is representative of mergers. Given that Commission behaviour is likely to influence the applications received, as was found by Seldeslachts et al. (2009), the target population is not likely to be representative of all potential mergers during the time period. Therefore, our results are only relevant with respect to all notified mergers between April 2002 and March 2010.

This research only addresses the determinants and consistency of the Commission's decisions with respect to mergers; however, it paves the way for future research into the market's reaction to merger notifications. In particular, future research could investigate whether or not stock markets appropriately price the stocks of merging entities, analysing whether or not stock markets internalize the Commission's most likely decision, along the lines of the analyses performed by Aktas, de Brodt & Roll (2004), Duso et al. (2007) and Ivaldi & Verboven (2005). Furthermore, research into the post-merger performance of merged entities and the markets in which these entities operate would provide evidence related to the appropriateness of the principles contained in the Act.



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TABLE 1. Population and Sample

Category	Type	Target Population A	Sample Population A	Sample A	Target Population P+CA	Sample Population P+CA	Sample P+CA
Non-comp	Small	21	18	13	0	0	0
Non-comp	Interm	1406	1406	83	3	2	2
Non-comp	Large	328	273	33	2	2	2
Complex	Small	11	11	8	2	1	1
Complex	Interm	247	238	27	9	9	8
Complex	Large	138	115	23	12	10	8
Very Comp	Small	7	6	7	5	5	5
Very Comp	Interm	71	56	19	34	34	33
Very Comp	Large	48	42	16	24	24	22
Total		2277	2165	229	91	87	81

“comp” - complex; “Interm” - Intermediate.

TABLE 2. Summary Statistics of Analysis Variables

Variable	Short Definition	Not Approved Mean (S.E.)	Approved Mean (S.E.)
M-Share	Post-merger market share <sup>a</sup>	48.824 <sup>b</sup> (4.22)	16.447 (1.09)
M-Share ≥ 45%	Post-merger market share ≥ 45% <sup>a</sup>	0.516 <sup>b</sup> (0.08)	0.042 (0.01)
M-Share Miss	Market share not available	0.175 (0.08)	0.451 <sup>c</sup> (0.05)
Large	Merger type large = 1	0.360 <sup>d</sup> (0.08)	0.191 (0.03)
Small	Merger type small = 1	0.031 (0.01)	0.017 (0.01)
Complex	Merger category complex = 1	0.401 <sup>c</sup> (0.08)	0.147 (0.03)
Very Complex	Merger category very complex = 1	0.382 <sup>b</sup> (0.07)	0.042 (0.01)
Horizontal	Horizontal merger = 1	0.818 <sup>d</sup> (0.08)	0.608 (0.05)
Vertical	Vertical merger = 1	0.275 (0.06)	0.170 (0.03)
Conglomerate	Conglomerate merger = 1	0.117 (0.08)	0.297 <sup>d</sup> (0.04)
Import	Import competition constrains behaviour = 1	0.200 (0.07)	0.086 (0.02)
Barriers	Low barriers to entry = 1	0.218 (0.08)	0.944 <sup>b</sup> (0.02)
Collusion	History of collusion in market = 1	0.074 <sup>b</sup> (0.02)	0.009 (0.01)
Countervailing	Countervailing buyer power in market = 1	0.587 (0.08)	0.984 <sup>b</sup> (0.01)
Failing	One of merging parties is failing = 1	0.082 (0.05)	0.026 (0.01)
Removal	Result in removal of effective competitor = 1	0.288 <sup>b</sup> (0.06)	0.004 (0.00)
Coordinated	Potential post-merger coordinated effects = 1	0.281 <sup>b</sup> (0.07)	0.003 (0.00)
Growth	Dynamics are integral feature of the market = 1	0.0436 (0.08)	0.540 (0.05)
Public Interest	Public interest concerns = 1	0.431 (0.09)	N/A <sup>e</sup> N/A

<sup>a</sup> Assumed to be 15% in case of missing data. <sup>b</sup> - Significantly different at 0.001.

<sup>c</sup> - Significantly different at 0.01. <sup>d</sup> - Significantly different at 0.05.

<sup>e</sup> - Only occurs in unapproved cases.

Table 3: Parameter Estimates for Model I

VARIABLES	Model I-A	Model I-B	Model I-C	Model I-D
M-Share $\geq$ 45%	0.4395 <sup>a</sup> (0.0979)	0.2505 <sup>a</sup> (0.2204)	0.4004 <sup>a</sup> (0.1006)	0.2599 (0.2023)
M-Share Miss	0.0263 (0.0267)	0.0289 (0.0264)	0.0346 (0.0256)	0.0378 <sup>d</sup> (0.0251)
Complex	0.1796 <sup>a</sup> (0.0521)	0.1576 <sup>a</sup> (0.0504)	-0.0546 (0.0940)	-0.0807 (0.0695)
Very Complex	0.2493 <sup>a</sup> (0.0817)	0.2073 <sup>a</sup> (0.0742)	-0.1378 (0.1352)	-0.1166 (0.1374)
FY2003	0.1093 <sup>d</sup> (0.0673)	0.0645 <sup>c</sup> (0.0330)	-0.0307 (0.0825)	-0.0655 <sup>d</sup> (0.0430)
FY2004	0.2066 <sup>a</sup> (0.0691)	0.1342 <sup>a</sup> (0.0466)	-0.0032 (0.0764)	-0.0457 (0.0409)
FY2005	0.1539 <sup>b</sup> (0.0689)	0.0629 <sup>c</sup> (0.0356)	0.0084 (0.0847)	-0.0503 (0.0421)
FY2006	0.1268 <sup>c</sup> (0.0649)	0.0565 <sup>d</sup> (0.0363)	-0.0042 (0.0769)	-0.0468 (0.0419)
FY2007	0.1366 <sup>b</sup> (0.0615)	0.0583 <sup>c</sup> (0.0294)	-0.0058 (0.0766)	-0.0486 (0.0411)
FY2008	0.2445 <sup>a</sup> (0.0814)	0.1753 <sup>a</sup> (0.0641)	0.0498 (0.0956)	0.0068 (0.0708)
FY2009	0.2131 <sup>c</sup> (0.1210)	0.2119 <sup>c</sup> (0.1200)	0.1204 (0.1495)	0.0925 (0.1362)
Constant	-0.1517 <sup>b</sup> (0.0633)	-0.0849 <sup>a</sup> (0.0325)	-0.0133 (0.0755)	0.0277 (0.0407)
Complex Investigations Interacted with Fiscal Year				
w/ FY2003			0.2220 <sup>c</sup> (0.1244)	0.2592 <sup>b</sup> (0.1111)
w/ FY2004			0.5104 <sup>a</sup> (0.1613)	0.5172 <sup>a</sup> (0.1601)
w/ FY2005			0.2960 <sup>c</sup> (0.1604)	0.2311 <sup>c</sup> (0.1399)
w/ FY2006			0.0720 (0.0972)	0.0998 (0.0731)
w/ FY2007			0.0737 (0.0973)	0.1016 (0.0729)
w/ FY2008			0.1387 (0.1753)	0.1665 (0.1643)
Continued on next page...				

## Parameter Estimates for Model I: Continued

VARIABLES	Model I-A	Model I-B	Model I-C	Model I-D
w/ FY2009			0.2368 (0.2905)	0.2570 (0.2844)
Very Complex Investigations Interacted with Fiscal Year				
w/ FY2003			0.4544 <sup>b</sup> (0.1850)	0.4740 <sup>b</sup> (0.2026)
w/ FY2004			0.4344 <sup>b</sup> (0.1700)	0.3444 <sup>c</sup> (0.1913)
w/ FY2005			0.3057 (0.1840)	-0.0957 (0.1993)
w/ FY2006			0.8692 <sup>a</sup> (0.1564)	1.1356 <sup>a</sup> (0.1378)
w/ FY2007			0.7116 <sup>a</sup> (0.1461)	0.8068 <sup>b</sup> (0.3181)
w/ FY2008			0.9371 <sup>a</sup> (0.1576)	0.9900 <sup>a</sup> (0.1735)
w/ FY2009			0.0496 (0.2245)	0.2873 (0.2293)
Market Share $\geq$ 45% Interacted with Fiscal Year				
w/ FY2003		0.0588 (0.2713)		0.0177 (0.2658)
w/ FY2004		0.3963 <sup>d</sup> (0.2416)		0.2895 (0.2399)
w/ FY2005		0.4936 <sup>b</sup> (0.2424)		0.6417 <sup>a</sup> (0.2211)
w/ FY2006		0.5707 <sup>a</sup> (0.2091)		-0.2599 (0.2023)
w/ FY2007		0.5006 <sup>b</sup> (0.2187)		0.0025 (0.3578)
w/ FY2008		0.4518 <sup>b</sup> (0.2158)		-0.1679 (0.2210)
w/ FY2009		-0.2184 (0.2737)		-0.1939 (0.2641)
Observations	310	310	310	310
$R^2$	0.3148	0.3846	0.4652	0.5088

Robust standard errors in parentheses. <sup>a</sup> - Significant at 0.01. <sup>b</sup> - Significant at 0.05.

<sup>c</sup> - Significant at 0.1. <sup>d</sup> - Significant at 0.15.

Table 4: Parameter Estimates for Model II

VARIABLES	Model II-A	Model II-B	Model II-C	Model II-D
M-Share $\geq$ 45%	0.1382 <sup>b</sup> (0.0671)	0.3046 <sup>c</sup> (0.1612)	0.1186 <sup>c</sup> (0.0612)	0.1903 (0.1847)
M-Share Miss	0.0432 <sup>b</sup> (0.0173)	0.0237 <sup>c</sup> (0.0133)	0.0273 <sup>c</sup> (0.0140)	0.0153 (0.0116)
Complex	0.0388 (0.0295)	0.0550 <sup>a</sup> (0.0208)	0.0218 (0.0320)	0.0409 <sup>c</sup> (0.0225)
Very Complex	0.0418 (0.0747)	0.0178 (0.0576)	0.0296 (0.0680)	0.0080 (0.0553)
Horizontal	0.0252 (0.0316)	-0.0019 (0.0308)	0.4011 <sup>a</sup> (0.1219)	0.4557 <sup>a</sup> (0.1742)
Vertical	-0.0281 (0.0239)	-0.0481 <sup>c</sup> (0.0249)	-0.0255 (0.0230)	-0.0405 (0.0236)
Conglomerate	-0.0030 (0.0288)	-0.0153 (0.0284)	-0.0055 (0.0243)	-0.0085 (0.0246)
Import	0.0429 (0.0465)	-0.0055 (0.0299)	-0.0180 (0.0340)	-0.0042 (0.0357)
Barriers	-0.2207 <sup>a</sup> (0.0691)	-0.1330 <sup>a</sup> (0.0477)	-0.0492 (0.0521)	0.0209 (0.0696)
Collusion	0.0848 (0.0754)	-0.0803 (0.0633)	-0.0350 (0.0365)	-0.0467 (0.0359)
Countervailing	-0.2121 <sup>a</sup> (0.0685)	-0.2038 <sup>b</sup> (0.0915)	-0.0474 (0.0345)	-0.0356 (0.0341)
Failing	-0.0078 (0.0491)	0.0069 (0.0388)	-0.0221 (0.0493)	-0.0057 (0.0356)
Removal	0.0927 (0.1005)	0.4345 <sup>a</sup> (0.1295)	0.0000 (0.0000)	0.0000 (0.0000)
Coordinated	0.3016 <sup>a</sup> (0.1093)	0.4710 <sup>a</sup> (0.1472)	0.8722 <sup>a</sup> (0.0823)	0.9773 <sup>a</sup> (0.1116)
Growth	-0.0457 <sup>b</sup> (0.0218)	-0.0564 <sup>a</sup> (0.0207)	-0.0475 <sup>c</sup> (0.0243)	-0.0483 <sup>b</sup> (0.0240)
Public Interest	0.6239 <sup>a</sup> (0.0939)	0.6216 <sup>a</sup> (0.0933)	0.6062 <sup>a</sup> (0.0973)	0.6131 <sup>a</sup> (0.0971)
FY2003	0.0248 (0.0488)	0.0268 (0.0362)	0.0286 (0.0424)	0.0296 (0.0342)
FY2004	0.0563 (0.0470)	0.0590 <sup>c</sup> (0.0348)	0.0558 (0.0451)	0.0545 (0.0349)
FY2005	-0.0172 (0.0474)	-0.0090 (0.0333)	-0.0130 (0.0413)	-0.0054 (0.0311)

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## Parameter Estimates for Model II: Continued

VARIABLES	Model II-A	Model II-B	Model II-C	Model II-D
FY2006	-0.0035 (0.0432)	-0.0133 (0.0351)	-0.0064 (0.0393)	-0.0135 (0.0339)
FY2007	0.0105 (0.0438)	0.0107 (0.0345)	0.0018 (0.0410)	0.0054 (0.0337)
FY2008	0.0874 (0.0623)	0.0747 (0.0571)	0.0750 (0.0614)	0.0656 (0.0566)
FY2009	0.0579 (0.0505)	0.0825 <sup>b</sup> (0.0401)	0.0605 (0.0467)	0.0740 <sup>b</sup> (0.0382)
Constant	0.3998 <sup>a</sup> (0.1058)	0.3457 <sup>a</sup> (0.1101)	0.0992 (0.0855)	0.0322 (0.0954)
Market Share $\geq$ 45% Interacted with Other Control Variables				
w/ Import		0.1841 (0.1289)		0.1381 (0.1138)
w/ Barriers		-0.3147 <sup>b</sup> (0.1580)		-0.3204 <sup>b</sup> (0.1405)
w/ Collusion		0.3870 <sup>b</sup> (0.1955)		0.5368 <sup>b</sup> (0.2429)
w/ Countervailing		-0.0131 (0.1563)		0.1030 (0.1830)
w/ Failing		-0.0561 (0.1443)		-0.0643 (0.1427)
w/ Removal		-0.4773 <sup>a</sup> (0.1645)		-0.4832 <sup>b</sup> (0.1814)
w/ Coordinated		-0.3041 <sup>d</sup> (0.2005)		-0.2727 (0.2062)
w/ Growth		0.0629 (0.1144)		0.0698 (0.1107)
Horizontal Merger Interacted with Other Control Variables				
w/ Import			0.1120 <sup>c</sup> (0.0603)	0.0261 (0.0492)
w/ Barriers			-0.2172 <sup>b</sup> (0.1036)	-0.1857 <sup>c</sup> (0.0986)
w/ Collusion			0.2099 <sup>c</sup> (0.1143)	-0.1642 (0.1534)
w/ Countervailing			-0.1882 <sup>c</sup> (0.1052)	-0.2780 <sup>c</sup> (0.1465)
w/ Removal			0.0783 (0.0991)	0.4459 <sup>a</sup> (0.1532)
Continued on next page...				



## Parameter Estimates for Model II: Continued

VARIABLES	Model II-A	Model II-B	Model II-C	Model II-D
w/ Coordinated			-0.6595 <sup>a</sup> (0.1558)	-0.5891 <sup>a</sup> (0.1643)
w/ Growth			-0.0034 (0.0291)	-0.0074 (0.0242)
Observations	310	310	310	310
$R^2$	0.7333	0.7674	0.7547	0.7823

Robust standard errors in parentheses. <sup>a</sup> - Significant at 0.01. <sup>b</sup> - Significant at 0.05.  
<sup>c</sup> - Significant at 0.1. <sup>d</sup> - Significant at 0.15.