THE IMPACT OF THE AGRO-PROCESSING COMPETITIVENESS FUND IN FACILITATING ENTRY INTO SELECTED AGRO-PROCESSING SECTORS

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Abstract

We evaluate the success of the Agro-Processing Competitiveness Fund ("APCF") as a remedy through which to provide redress to firms whose entry and expansion was stifled as a result of the cartelisation of the bread, wheat and white maize milling, poultry and eggs industries by Pioneer. This analysis involved evaluating the actual results of the Fund, which were then compared to the Fund's potential impact as estimated through the output and employment multipliers. It is found that, thus far, the APCF has achieved its objectives in terms of facilitating the entry and expansion of non-dominant firms in the agro-processing and beverages sectors. In addition, the Fund has contributed to job creation and the crowding-in of funding, particularly in those subsectors which were cartelised by Pioneer. It is concluded that the achievements of the APCF can potentially serve as a sound benchmark against which similar remedies may be developed and assessed.

Keywords: Mergers & Acquisitions; Merger Control

JEL Classification: G14; **G34**

competition regulation for a growing and inclusive economy.

INTRODUCTION AND BACKGROUND

Until the 1990s, the marketing of agricultural products in South Africa was governed by the Marketing Act of 1937 (consolidated in the Marketing Act of 1968). However following deregulation in 1996, private anti-competitive arrangements took hold and replaced public controls. One such instance of this misconduct was during the period 1999-2007 in which Pioneer Foods together with other millers were found to have been involved in several cases relating to anticompetitive conduct spanning the wheat and maize milling, baking, poultry and eggs industries. However, of these complaints brought against Pioneer Foods, only two have been referred by the Competition Commission ("Commission") to the Competition Tribunal ("Tribunal") for adjudication.

The first referred complaint relates to the white maize products cartel[1]. This cartel comprised of all major players in the market including Tiger Brands, Pioneer, Foodcorp and Premier. In its investigation the Commission found the respondents to be in contravention of section 4(1)(b)(i)[2] of the Competition Act ("the Act"). Evidence to this effect included numerous meetings and telephone conversations during which consensus at a national and international level was reached regarding price fixing of white maize products, the creation of a uniform price list for wholesale, retail and general trade to customers as well as the timing of price increases and the implementation thereof.

The second referred complaint related to the milled wheat products cartel[3]. In this case the Commission alleged that Premier, Tiger Brands, Pioneer Foods, Foodcorp and Godrich Milling had been engaged in collusive activities in contravention of section 4(1)(b)(i) and (ii)[4] of the Act. Similar to the white maize cartel, the respondents were found to have participated in numerous meetings and telephone conversations as well as allocating customers between firms.

The Commission also received and investigated complaints regarding the alleged predatory conduct that Pioneer, through Sasko Bakeries, had engaged in against small independent bakers in the Western Cape.[5] The Commission also initiated investigations in the poultry[6] and eggs[7] industries after Pioneer applied for conditional leniency for conduct contravening sections 4(1)(b)(i) and (ii) of the Act.

Following Pioneer's admission to contravening the Act, the Commission entered into consent and settlement negotiations with Pioneer. It was found that the cumulative effect of Pioneer's conduct was likely to harm consumers through higher prices for essential food items together with the stifling of entry

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[1] Tribunal case number: 10/CR/Mar10 and 15/CR/Mar10
[2] **Section 4(1)(b)(i) reads as follows**: An agreement between, or concerted practice by, firms, or a decision by an association of firms, is prohibited if it is between parties in a horizontal relationship and if it involves directly or indirectly fixing a purchase or selling price or any other trading condition.
[3] Tribunal case number: 10/CR/Mar10 and 15/CR/Mar10
[4] **Section 4(1)(b)(ii) reads as follows**: An agreement between, or concerted practice by, firms, or a decision by an association of firms, is prohibited if it is between parties in a horizontal relationship and if it involves dividing markets by allocating customers, suppliers, territories, or specific types of goods or services.
[5] Tribunal case number: 10/CR/Mar10 and 15/CR/Mar10
[6] Ibid.
[7] Ibid.

and expansion of competitors, particularly small and medium enterprises. The remedy sought by the Commission aimed to address these adverse effects.

Pioneer undertook to (i) desist from engaging in conduct which infringed or might infringe the Act, (ii) adjust the prices of specific flour and bread products over a defined period to reduce its gross profit margin by R160 million, (iii) increase capital expenditure by R150 million over and above its capex budget, (iv) pay an administrative penalty of R500 million[8] to the National Revenue Fund, of which R250 million was allocated for the establishment of the Agro-Processing Competitiveness Fund ("APCF").

Whilst there has been previous analysis of the effectiveness of the consent and settlement agreement focussing on the commitment to reduce prices[9], this assessment will consider the likely impact of the APCF on entry and expansion within the agro-processing and beverages sector, with emphasis on those subsectors which were affected by Pioneer's anti-competitive conduct.

The report is structured as follows: **Section I** provides a brief summary of the objectives and structure of the APCF as well as an analysis of the impact of the APCF since inception. This analysis is conducted by considering the *actual impact* the Fund has had on the respective sectors is considered. Specifically, the assessment includes an overview of the value of funding approved, number of enterprises funded and jobs created, the sectoral and provincial spread of the support provided as well as a discussion on co-financing and non-financial support offerings. We then proceed to assess the *potential impact* of the APCF using output and employment multipliers for the food and agro-processing sector in **Section II**. **Section III** provides an overall impact of the APCF that compares the potential and actual impact of the APCF. **Section IV** concludes.

SECTION I: ESTABLISHMENT AND ACHIEVEMENTS OF THE AGRO-PROCESSING COMPETITIVENESS FUND

Objectives and structure of the APCF

The APCF was established in November 2010 and in July 2012 the Industrial Development Corporation ("IDC") was appointed as the administrator of the Fund on behalf of the Economic Development Department ("EDD"). The objective of the APCF is to facilitate increased competition, growth, job creation and development through the provision of funding to non-dominant players in the agro-processing and beverages sector. In order to achieve these outcomes, the Fund is capitalised with R250 million allocated

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[8] The original settlement involved Pioneer paying an administrative penalty of R250 million to the National Revenue Fund and an additional R250 million to the Industrial Development Corporation to create the proposed APCF. However, the National Treasury was opposed to this proposal on the grounds that diverting R250 million of the penalty to establish the APCF contravened section 213 of the Constitution and section 13 of the Public Finance Management Act. The proposal further contravened section 59(4) of the Competition Act which states: "A find payable in terms of this section must be paid into the National Revenue Fund referred to section 213 of the Constitution".

[9] See Mncube, L. and Ngwenya, A., 2011, South Africa's Pioneer Settlement: an innovative way to remedy competition law violations in developing countries?

across three distinct channels; an investment channel (R231 million), a Business Support Channel (R6.5 million), and a Research Grants Channel (R12.5 million).

The APCF aims to provide affordable loan finance[10] and business support to enterprises which meet specific qualifying criteria. These criteria require, amongst other things, that the enterprises are (i) involved in agro-processing or beverages sector activities, (ii) at start-up or expansion phase, (iii) able to show sustainability from a financial, technical and environmental perspective, and (iv) given that the APCF is focused on improving entry and competition, beneficiaries cannot hold a dominant position and must be unlikely to obtain third-party funding from commercial banks.[11]

The APCF may be construed as a creative remedy in that it aims to address both government and competition policy objectives. With respect to government economic objectives, the Fund contributes to priority industries identified in various policy documents. The New Growth Path places job creation at the centre of economic policy and identifies labour-absorbing activities in the agricultural value chain – including small scale farming, infrastructure development and the provision of finance – as necessary requirements for employment growth, particularly within the agriculture and agro-processing sectors.

The Industrial Policy Action Plan ("IPAP") identifies agro-processing as one of the largest domestic manufacturing sectors in terms of employment, with strong upstream and downstream linkages. The policy calls for continued focus on the milling industry along with interventions to increase competition and develop alternative products for the feedstock and consumption markets. Key interventions include, amongst others, broiler production, small scale milling, and fruit and vegetable canning. Finally, the National Development Plan ("NDP") submits that the skewing of the agro-processing sector towards large-scale farming and vertically integrated agro-processing limits entry and expansion of small market players. Growth potential is therefore identified in the development of small-scale farmers and manufacturers.

These priorities are reflected in the Fund's attention to the entry and expansion of small and medium-sized manufacturers in an effort to balance the sector where large-scale commercial operators are prevalent. The qualifying criteria require that enterprises are involved in value adding activities that facilitate the creation of robust upstream and downstream linkages.

The design of the APCF further enables the achievement of several competition policy objectives. Apart from resonating with the priority sectors[12] identified by the Commission, the Fund encourages rivalry and the expansion of consumer choice by facilitating the entry and expansion of businesses within the agro-

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[10] Investment instruments include interest free loans, zero return quasi equity, business support grants and research grants. The loan size ranges from R250 000 to R3 million for a tenure of up to ten years.
[11] This must be due to one or more of the following: a lack of expertise or scale; low levels of equity; limited assets available to provide security for funding; the need for working capital as well as investments in intangible assets'; exposure and reliance on the goodwill and support of dominant players in the sector.
[12] These include the likes of food and agro-processing, infrastructure and construction, and intermediate industrial products, amongst others.

processing sector. This, in turn, contributes to eroding the dominance of large players within the previously cartelised industries.

As the APCF is the first financing facility established by means of an administrative fine, it provides a reliable benchmark against which to assess the effectiveness of remedies tying government policy with competition policy. Learnings from this Fund are therefore important for the Commission, particularly in determining whether this type of creative remedy may be suitable to use in other cases where anti-competitive conduct has produced similar effects to those addressed through the APCF.

Actual impact of the APCF

The following section provides an overview of the performance of the APCF since inception in April 2011 to end March 2016. The value of loan approvals and disbursements, the number of enterprises funded, job creation estimates, and provincial and sectoral spread are provided. The co-financing, business support and research grant segments of the Fund are also briefly discussed.

Since the establishment of the APCF funding to the value of R201 425 701 (87% of the R231 million allocated ton direct investment) has been approved through the APCF to 34 enterprises. Of the allocated funds, R186 277 970 has been disbursed to beneficiaries, which translates into 92% of total APCF commitments. These figures are provided in Table 1 below.

Table 1: APCF approvals, disbursements and number of enterprises funded (April 2011 to March 2016)

Approvals	
Total approvals	R 251 000 706
Cancellations	R 49 575 005
Approvals (net cancellations)	R 201 425 701
Write-offs	R 0
Disbursements	
Disbursements to beneficiaries	R 186 277 970
As % of cumulative commitments	92%
Number of investments	
Total approvals	38
Cancellations	4
Approvals (net cancellations)	34
Average size of investment	R 5 924 285

Source: Industrial Development Corporation

The Fund has crowded-in *co-funding* from various third parties, including contributions by the enterprise owners themselves, as well as the commercial banks which have contributed to the financing of two businesses. As presented in Table 2, the largest co-financier is the IDC, which has approved funding to the value of R223 885 641 over the duration of the Fund. The value of co-funding from both the IDC and third parties brings to total value of funding approved to R498 284 342 for qualifying enterprises.

In terms of *job creation*, it is estimated that 2 401 jobs have been created through APCF loan finance. It should be noted that these jobs figures are estimated at approval stage and could vary as business plans are implemented.

As already mentioned, one of the objectives of the APCF is to facilitate increased competition through the provision of funding to non-dominant players in the agro-processing and beverage sector. The success of the APCF in achieving this objective is assessed by evaluating (i) the number of start-up and expansion firms which have received support, and (ii) the sectoral spread of these firms across the sectors which were affected by Pioneer's conduct. The tables below capture this information.

Table 2: Phase of enterprise development – start-up and expansion stage

	Start-up	Expansion	Total
Number of enterprises and jobs created			
No. of enterprises funded	10	24	**34**
No. of jobs created	992	1 409	**2 401**
Co-funding			
APCF funding	R35 928 575	R165 497 126	**R201 425 701**
IDC co-funding	R82 037 710[13]	R141 847 931[14]	**R223 885 641**
Third-party co-funding	R38 000 000[15]	R34 973 000[16]	**R72 973 000**
Total value of funding	**R155 966 285**	**R342 318 057**	**R498 284 342**
Pioneer sectors	4*	8**	**12**

Source: *Industrial Development Corporation*

* Start-up: Animal feed; maize snacks; cake and pastry producers

** Expansion: Chicken producer; wheat flour and soya flour producers; biscuit manufacturers; pasta producer; maize meal and wheat manufacturers; and ready-to eat products

Of the enterprises funded through the APCF, 10 are start-up companies and 24 are existing enterprises which qualified for funding to expand their business operations. In terms of the value of funding committed, it is apparent that whilst expansion enterprises received the largest portion of APCF funding overall (over R165 million compared to almost R36 million for start-ups), IDC co-funding approvals for start-up and expansion enterprises is more evenly spread. Other *co-financing arrangements* include contributions by the enterprise owners themselves, as well as the commercial banks which have contributed to the financing of two businesses. The crowding-in of other financiers demonstrates an element of additionality as the enterprises which benefitted from the co-financing would not have received this additional investment had they not received support through the APCF.

Twelve of the enterprises supported (of which four are start-ups) are active in those subsectors which were cartelised by Pioneer conduct, specifically the poultry, animal feed, and the flour milling and bread industries. The remaining 22 firms are active in other agro-processing activities, including the beverages

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[13] Four start-up enterprises received IDC co-funding
[14] Fourteen expanding enterprises received IDC co-funding
[15] One start-up enterprise received third-party co-funding
[16] Five expanding enterprises received third-party co-funding

sector. The table below identifies the industries in which beneficiaries are active as well as whether the business is a start-up or expansion enterprise.

Table 3: Sub-sectors supported through APCF funding

Sectors affected by Pioneer's conduct				Other agro-processing sectors			
Sub-sector	Start-up	Expansion	Tot # of enterprises	Sub-sector	Start-up	Expansion	Tot # of enterprises
Animal feed	1	-	1	Brewery and wine producer	3	1	4
				Sweet manufacturer	-	4	4
Biscuits, cake and maize snack manufacturers	2	2	4	Oil manufacturer	1	-	1
				Cherry Pepper Processor	1	-	1
Soya and gluten free products	-	2	2	Fruit canning	-	1	1
				Soya Flour Producer	-	1	1
Milling (flour and maize)	-	2	2	Bee & Honey Producer	-	1	1
				Tea and juice producers	-	4	4
Pasta and pastry producer	1	1	2	Milk producer	1	1	2
				Mushroom producer	-	1	1
Chicken producer	-	1	1	Mango producer	-	1	1
				Sorghum Malt Producer	-	1	1
Sub-total	**4**	**8**	**12**	**Sub-total**	**6**	**16**	**22**

Source: Industrial Development Corporation

Table 4 below shows the *provincial spread* in terms of the total value of funding approved (through the APCF and co-funding arrangements), the number of enterprises funded and the number of jobs created. Investment has been allocated to various rural-based enterprises across the provinces. Beneficiaries in Gauteng received the largest value of APCF funding followed by businesses in the Free State and Western Cape. While a large portion of IDC co-funding was allocated to Gauteng-based enterprises (43%), businesses in the Eastern Cape also received a significant portion of the finance made available through the lending institution.

Table 4: Provincial spread of funding and enterprises funded

Province	APCF Funding	Co-investment from IDC	Other co-funders	Start-up	Expansion	Tot. # of enterprises	Jobs
Gauteng	R 62 171 734	R 96 580 904	R 0	1	7	8	333
Western Cape	R 37 564 000	R 4 750 000	R 22 900 000	0	7	7	120
Free State	R 38 451 719	R 26 300 000	R 2 073 000	3	3	6	891
Limpopo	R 19 222 428	R 9 736 007	R 0	1	2	3	183
KwaZulu Natal	R 17 900 000	R 16 380 000	R 10 000 000	2	2	4	74
Eastern Cape	R 13 870 000	R 68 420 000	R 38 000 000	2	1	3	746
North West	R 11 100 000	R 0	R 0	0	2	2	38
Mpumalanga	R 1 145 820	R 1 718 730	R 0	1	0	1	16
Northern Cape	R 0	R 0	R 0	0	0	0	0
Total	**R 201 425 701**	**R 223 885 641**	**R 72 973 000**	**10**	**24**	**34**	**2401**

Source: Industrial Development Corporation

Another benefit realised by APCF beneficiaries is *non-financial business support*. Since inception, business support grants[17] to the value of R5 108 767have been approved to 14 enterprises. Five of the support grants were allocated to businesses that received funding through the APCF, whilst the remaining 9 grants were allocated to companies that require pre-investment support such as compiling marketing and business plans.

The APCF has also made *research grants* available to finance academic and applied research projects on a sector-wide, sub-sector and/or company level, the benefits of which are expected to accrue to the sector or sub-sector as a whole. Research topics are confined to the agro-processing sector, particularly with regard to opportunities and challenges experienced in rural agro-processing initiatives. To date, the APCF has approved research grants to the value of R6,7 million to 8 applicants. The sectors in which research is to be conducted include, amongst others, horticulture (citrus and Sharon fruits), poultry, aquaculture, flax fibres, tomatoes, sugar and rural apiculture development (beekeeping).

SECTION II: EVALUATION OF THE POTENTIAL IMPACT OF THE AGRO-PROCESSING COMPETITIVENESS FUND

Having evaluated the actual output of the APCF, we then sought to calculate the potential impact of the APCF, based on the value of funding approved, using output and employment multipliers. The output and employment multipliers are calculated using the 2011 social accounting matrix ("SAM") model developed

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[17] Through Business Support Grants, enterprises are able to secure funds for, amongst other things, conducting feasibility studies, business plan development, market strategy development, the implementation of management systems and procedures, policy development, and staff training.

for EDD, and allows for the potential pass-through effect of the of the APCF investment on the agro-processing sector to be measured.

Potential impact of the APCF from a macroeconomic perspective

The use of output and employment multipliers in analysing the agro-processing sector must be positioned within the context of the economic climate that the domestic manufacturing sector has faced over time. It is acknowledged that South Africa's manufacturing sector competitiveness has eroded over the past decade.[18] This is indicated by the low manufacturing value-add of South Africa compared to its emerging market peers particularly those in East Asia where manufacturing contributes to a large proportion of total GDP.[19] A multitude of structural constraints have been attributed to this decline in the manufacturing sector, including skills shortages, inadequate infrastructure, and a lack of an integrated and sustained industrialisation strategy. Infrastructure bottlenecks together with unfavourable macroeconomic policies have also been identified as factors contributing to the deteriorating performance of the manufacturing sector.

Similar results are observed in the agro-processing sector where the average contribution of agro-processing to the output and value-add of the manufacturing sector was 29.3% and 29.1%, in 2006 and 2010 respectively. The sector's contribution to domestic fixed investment and export was 28.5% and 13.6%, respectively, during the same period. These results are mirrored in the sectors contribution to employment. These observations indicate that changes in the food and agro-processing sector are likely to impact the manufacturing sector.

Data and model

In quantifying the potential impact of the APCF on the agro-processing sector we relied on output and employment multipliers to provide a measure of the susceptibility of the sector to an external shock. An economic multiplier is a single number that summarises the total economic benefits resulting from an increase in economic output[20]. The advantage of using the multiplier to quantify the likely macroeconomic impact on a sector is that a multiplier provides a measure of the significance of a change in a variable. This significance is not limited to the direct impact of the variable on the sector but also includes the indirect impact this change has on other sectors. In this way, policymakers are provided with a measure of the total impact on the economy.

The output and employment multipliers for the South African manufacturing sector have previously been calculated using the SAM model. A SAM can be described as an organised matrix representation of all transactions and transfers between various economic sectors in the economy. In essence, it is a comprehensive accounting framework within which the full circular flow of income is captured (see

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[18] Pan-African Investment & Research Services, 2011, 'Assessing the manufacturing sector and its multiplier effects on the South African economy', p8.
[19] Ibid.
[20] Kaliba, A.R., Mbiha, E.R., Nkuba, J.M., and Kingu, P.M., 2008, 'Impact of foreign aid on dependency, absorptive capacity, and poverty reduction: the case of Tanzania'.

Annexure A for full explanation). Since its development, this model has been used extensively in the literature to analyse growth linkages between various economic sectors, particularly in the agricultural sector.[21]

In this framework, we use an updated version of the 2005 SAM model[22] built by StatsSA and modified by the EDD for use in its infrastructure investment simulation models. The revised SAM uses updated national accounts information by augmenting the 2005 SAM with additional information about factors, primarily labour and representative household and government agents. Moreover, the production side of the model is widened to include additional economic activities, account for changes in technology, and the relevant commodity accounts are expanded to better reflect changes in the economy since 2005.

It should be noted that the SAM model used may underestimate the changes likely to occur in the South African agro-processing sector due to the limited information available at sectoral level. The adjusted SAM used in this analysis considers the 'food manufacturing sector' as a proxy for the entire food and agro-processing sector. The effect of this is a likely underestimation of the true effect of the APCF on the food and agro-processing sector. With this in mind, the estimated output and employment multipliers are discussed below.

Estimation

We use the adjusted SAM model to calculate output and employment multipliers for the agro-processing sector and associated sectors. The table below indicates that a R1 increase in investment spending in the food sub-sector will lead to more than a rand value increase in output value. Due to the direct linkages that exist between the food sector and agriculture sector, we can posit that a boost in the food sector will lead to a direct improvement in the agriculture sector.

We further find that a shock to the food sector also leads to an improvement in output value in the trade, petroleum, business activities and financial intermediation sectors. The impact on these sectors may arise from the indirect linkages between these sectors and the food sector. For example, a boost to the food sector will impact the trade sector through food producers exporting more of their products to other countries.

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[21] Townsend and McDonald, 1999, 'Biased Policies, Agriculture and Income Distribution in South Africa: A Social Accounting Matrix Approach'.

[22] The 2005 SAM faced criticism from academia with regards to the limited number of factor and representative household accounts as well as the lack of disaggregation of the activity and commodity accounts for agriculture. This has led to a variety of "unofficial" SAMs for South Africa which attempt to address these issues. (See McDonald,S and Punt,C., 2005, General Equilibrium modelling in South Africa: What the future holds, *Agrekon*, Vol 44, No.1; p73)

Table 5: Output multiplier of a R1 investment in 2011

Output multiplier		APCF Funding	ICD Co-funding	APCF and IDC combined
Food	**1.24**	**R249 767 869**	**R277 618 195**	**R427 386 064**
Indirect multiplier effect				
Agriculture	0.23	R46 327 911	R277 618 195	R97 821 609
Trade	0.18	R36 256 626	R51 493 697	R76 556 042
Petroleum	0.16	R32 228 112	R40 299 415	R68 049 815
Business activities	0.16	R32 228 112	R35 821 703	R68 049 815
Financial intermediation	0.14	R28 199 598	R35 821 703	R59 543 588

Source: 2011 DySAM - Infrastructure Scenario Simulation (EDD); own calculations

Based on the ***output multiplier analysis***, we find that an increase of R201.4 million in investment spending to the sector (from the APCF funding on its own) likely led to an output value increase of R249.8 million. Combining the APCF funding together the co-financing available from the IDC, an investment of R425.3 million is available to the sector. When we apply the output multiplier to this combined investment spending estimate, we find that the combined funding will result in R527.4 million output value in the agro-processing sector. This change constitutes the *direct impact* that the APCF may have on the agro-processing sector.

The *indirect impact* that the APCF may have is measured by the likely ripple effects which may occur in those sectors listed in the table above. If we consider the indirect impact then an increase of R201.4 million in investment spending in the sector may lead to a combined direct and indirect output value increase of R425 million.

Employment multipliers quantify the likely effects on employment as a result of an additional R1 million additional investment expenditure (per sector); the multipliers indicate that at least 9 jobs can be created in the agriculture sector and at least 6 jobs in the food sector.[23] This is in line with the labour-intensive nature of these sectors[24] and is in line with the employment ranged predicted in the IPAP2 review of value-added sectors with high employment and growth multipliers.[25] The table below provides the estimated employment multipliers for 2011.

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[23] Please note that these are commodity labour multipliers. The activity labour multipliers reveal slightly higher estimates (10.18 for agriculture and 8.48 for food).

[24] Pan-African Investment & Research Services, 2011, 'Assessing the manufacturing sector and its multiplier effects on the South African economy', p15.

[25] The second iteration of the IPAP compiled by the dti used the SAM model to estimate multipliers for value added sectors. It was found that the food sector together with others such as Textiles, leather and leather products are sectors with high employment multipliers (above 7 but lower than 14) and strong backward linkages.

Table 5: Employment multiplier of a R1 million investment in 2011

Employment multipliers		APCF Funding	IDC Co-funding	APCF and IDC combined
Food	**6.47**	**1 303**	**1 449**	**2 752**
Indirect multiplier effect				
Agriculture	9.08	1 829	2 033	3 862
Roads	10.54	2 123	2 360	4 483
Gold	8.21	1 654	1 838	3 492
Business activities	8.81	1 775	1 972	3 747
Electricity	4.44	8 94	994	1 888

Source: 2011 DySAM - Infrastructure Scenario Simulation (EDD); own calculations

Based on the APCF's loan approvals of R201.4 million made thus far it can be estimated that at least 1303 jobs may be created in the food industry. If the value of IDC co-financing is included, the potential employment creation rises to 2 452 jobs.

Based on these findings, we are of the view that the APCF is likely to lead to increases in output and employment in the food and agro-processing sector. The extent to which the changes in output and employment will remain sustainable over time is not provided by the estimated multipliers. Nonetheless, the multiplier analysis does provide a measure of the potential changes that could occur in the food and agro-processing sector. These changes are not withstanding the micro-economic impact the APCF could have on small-to-medium enterprises which either want to enter or expand in the agro-processing sector.

Finally, it is important to emphasise that this increased funding amount brought by the IDC, and the corresponding output and employment values obtained through the multiplier analysis, were only achieved as a result of the APCF acting as a catalyst to crowd-in IDC co-financing.

SECTION III: OVERALL IMPACT OF THE APCF

In order to gauge the success of the APCF as one of the remedies for Pioneer's conduct, the macro- and micro-impact of the Fund are compared. In terms of actual achievements, the Fund's impact on facilitating the entry and expansion of enterprises, as well as it serving as a catalyst to crowd-in third party funding into the agro-processing sector is considered. The APCF's actual achievements and its potential impact, as calculated through the output and employment multiplier analysis, are compared in Table 7 below.

In terms of facilitating the <u>entry or expansion of small and medium enterprises</u>, as per the APCF's underlying objectives, the results presented in Section I find that the Fund has supported the entry of 10 start-up enterprises and the expansion of 24 enterprises in the broad agro-processing and beverages sectors. Closer evaluation of finds that of the enterprises supported four start-up enterprises and eight expansion enterprises are involved in activities in industries which were previously cartelised by Pioneer. Further, none of the firms supported hold a dominant position in their respective markets.

These results suggest that the Fund has effectively provided some redress for small and medium enterprises whose entry and expansion was stifled in the Pioneer cartelised markets, and has contributed

to the achievement of developmental objectives. It is noted that start-up and expansion enterprises in other agro-processing sub-sectors were also allocated APCF funding. As one of the main objectives of the APCF was to facilitate entry primarily into those sectors affected by Pioneer's conducted, it is possible that the allocation of loan finance not non-affected sectors may lead to a muted impact of the APCF.

The Fund has also successfully <u>crowded-in funding</u> from third-parties by reducing the risk profile of beneficiaries. This co-funding support has included contributions from enterprise owners themselves as well as commercial banks, although the principal co-financier has been the IDC. The Fund has therefore successfully served as a catalyst in attracting funding into industries and SMMEs which are unlikely to obtain funding from third-parties.

In terms of the potential <u>impact of the Fund on the agro-processing sector</u>, the output multiplier analysis finds that the APCF's R201.4 million investment in the agro-processing sector is expected to have led to a likely increase in output value of R249.8 million. If the co-financing through the IDC is included in this calculation, the combined R425.3 million funding would result in an increase of R427.4 million in output value. Using the employment multiplier calculated above, the expected employment impact of the APCF's R201.4 million investment is an estimated 1 303 jobs in the food industry. Including the IDC co-financing, the potential employment creation rises to 2 752 jobs.

Table 6: Results of output and employment multiplier analysis

		Actual impact	Potential impact
Loan finance allocated	APCF funding	R201 425 701	R249 767 869
	APCF and IDC combined	R425 311 342	R427 386 064
No. of jobs created	APCF funding	2 401	1 303
	APCF and IDC combined		2 752

The inclusion of the IDC co-financing to the analysis finds that the Fund falls short of the anticipated potential employment creation under the multiplier analysis by 351 jobs. These results indicate that the actual impact of the APCF in terms of output and employment is either greater than, or closely in line with, potential impact as estimated by the multiplier analysis.

SECTION IV: CONCLUSION

This research as endeavoured to evaluate the success of the APCF as a remedy through which to provide redress to firms whose entry and expansion was stifled as a result of the cartelisation of the bread, wheat and white maize milling, poultry and eggs industries by Pioneer. This analysis involved evaluating the actual results of the Fund, which were then compared to the Fund's potential impact as estimated through the output and employment multipliers.

We have found that the APCF has, thus far, achieved its objectives in terms of its mandate in terms of facilitating the entry and expansion of non-dominant firms in the agro-processing and beverages sectors. It addition, the Fund has contributed to job creation and the crowding-in of funding, particularly in those subsectors which were cartelised by Pioneer. Whilst the impact of the Fund within the context of the broader agro-processing sector has been limited, it has successfully addressed key government policy imperatives and competition issues.

The APCF therefore provides a good example of how remedies can cater to both government policy and competition policy objectives. The achievements of the APCF can therefore potentially serve as a sound benchmark against which similar remedies are developed and assessed.

ANNEXURE A: Technical description of the SAM model

Social accounting matrix ("SAM") multiplier analysis is based on a fixed-price, fixed coefficient, demand-driven, economy-wide simulation. In essence the SAM is a tabular representation of all transactions that occur in an economy at a particular point in time. These transactions occur among the agents in the economy: producers, owners of primary factors of production, households, government and the rest of the world.

- Producers are represented as industrial sectors which may include sectors such as manufacturing, service and natural resource industries.
- Primary factors of production include labour and capital. In some instances, it may include land or natural resource factor accounts such as agricultural land and water.
- Households are usually disaggregated by income or any other demographic characteristic.
- Government is usually disaggregated by the level of government.

The columns of the SAM represent payments made by these actors while the rows represent the receipt of these payments. This means that industries buy labour, land and capital from primary factor accounts which in turn pay households and other owners of primary factors of production. Thus total payments will equal total receipts meaning that the row totals and column totals for each agent will be equal.

The SAM is constructed with six types of accounts, namely: (i) commodity accounts; (ii) activity or production accounts; (iii) factor accounts; (iv) institutional accounts; (v) capital accounts; and (vi) rest of the world accounts.

The objective of SAM modelling is to use multiplier analysis to help understand the linkages between the different sectors and the institutional agents at work within the economy in the determination of output and incomes. More specifically for SAM modelling the determination of incomes as endogenous variables must be defined and consequently the accounting impact multipliers and linkages can be calculated. To derive multipliers from a SAM, the SAM is first converted into a linear model of the economy's transactions. As derived by Berck and Hoffmann (2002), let a J + 1 x J+1 SAM matrix, **S**, be partitioned into a J x J matrix of endogenous transaction accounts, **T** = $[t_{ij}]$, bordered to the right by a column vector of exogenous demand, **x** = $[x_1, \ldots, x_J, 0] = [s_{1,J+1}, \ldots s_{j,j}]$ and at the bottom by a row vector of exogenous accounts, **L** = $[l_1, \ldots l_J, 0] = [s_{J+1}, \ldots s_{J,J}]$.

Let **y** be the vector of row totals of **S** representing total receipts by each actor in the SAM. Total receipts for any one of the **J** accounts in the region's economy (y_i) is made up of payments from other actors or institutions in the economy ($t_{i,j}$), and payments from exogenous demand (x_i):

$$y_i = \sum t_{i,j} + x_i$$

In order to convert the SAM into a linear model, the endogenous oat of the SAM, T, is transformed into a matrix of fixed coefficients, A with elements $a_{ij} = t_{ij}/y_j$. This is substituted for t in the equation above:

$$y_i = \sum_{j=1,J-1} a_{ij}\, y_i + x_i$$

In matrix notation, this becomes:

$$\boldsymbol{y} = \boldsymbol{Ay} + \boldsymbol{x}$$

This is inverted to find:

$$\boldsymbol{y} = (\boldsymbol{I} - \boldsymbol{A})^{-1}\, \boldsymbol{x}$$

The matrix $(\boldsymbol{I} - \boldsymbol{A})^{-1}$ is referred to as the multiplier matrix.

The change in economic activity (or output), $\Delta \boldsymbol{y}$, is then computed as:

$$\Delta \boldsymbol{y} = (\boldsymbol{I} - \boldsymbol{A})^{-1}\, \Delta \boldsymbol{x}$$

One can then add together the elements of $\Delta \boldsymbol{y}$ that correspond to industrial outputs to get a sense of the total output multiplier.

With regards to the employment multiplier, one converts the change in output to a change in jobs by dividing the appropriate elements of $\Delta \boldsymbol{y}$ by the average number of employees per rand of sales in each sector, $\boldsymbol{w}$.

There are several advantages to using the SAM for impact assessments as opposed to the more traditional input-output ("I-O") tables developed by Leontief in the 1930s;[26] the I-O table merely records the transactions between industries and as such provides only a partial record of the circular flow of income. This means that analysis conducted using the I-O model is limited to production linkages only.[27] The SAM, on the other hand, corrects for this by including accounts and economic agents to address issues of income distribution, employment and households' welfare. This information is usually available at a disaggregated level and is thus the preferred analytical tool to trace impact of changes in a sector.[28]

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[26] The I-O table merely records the transactions between industries and as such provides only a partial record of the circular flow of income. The SAM on other hand corrects for these deficiencies.

[27] Tlhalefang, J and Galebotswe, O. 2014, Welfare effects of Higher Energy and Food Prices in Botswana: a SAM Price Multiplier Analysis, Botswana Journal of Economics, p23.

[28] Berck, P and Hoffmann, S., 2002, Assessing the Employment Impacts of Environmental and Natural Resource Policy, Environmental and Resource Economics: June 2002; 22, p137.