Maize milling in South Africa

Prospects for increased participation of small and medium-sized enterprises

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Innovation & Inclusion in Agro-processing

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Project Overview

Innovation and Inclusive Industrialisation in Agro-Processing is a two-year collaboration between researchers from the University of Edinburgh, the University of Johannesburg, and the Economic and Social Research Foundation, Tanzania.

The project is a comparative study conducted across Tanzania and South Africa focusing on three value chains: maize meal, citrus and dairy. The three aims of the study are:

- First, to describe the factors that determine innovation and inclusion in agro-processing
- Second, explain the challenges to promoting SME participation in agro-processing value chains
- Third, to use these findings to support industrial policy formulation at the national and regional level

In this project brief, we set out the key issues arising from our scoping work in maize milling in South Africa.

1: Summary

Maize meal is South Africa's crucial staple carbohydrate, with around 2.5 million tons of the product consumed in 2018/19.[1] Maize milling, which produces maize meal by processing raw grain, is a mature and highly consolidated industry, with low profit margins and significant economies of scale. It has undergone significant changes over recent decades, in technology, consumer demand, value chain relations, and institutional context. These changes pose considerable challenges for SME participation, which speak to the broader challenges fostering inclusion in fast-modernizing agro-processing industries. Notably, changing consumer preferences necessitate a much more refined, consistent product, which is more technically challenging to manufacture. The volatility of maize prices is a major challenge for all milling companies, but especially so for smaller companies due to more limited procurement capabilities. Access to supermarket retailers, whose presence has increased significantly, requires reliable volume and meeting exacting quality standards. Grain marketing liberalisation in the late 1990s was followed by a surge in registrations of new millers, but in recent years the number of active firms has been in decline, with dozens of smaller firms exiting the industry.

Nonetheless, there is still a considerable diversity of milling enterprises in South Africa, with close to 200 formally registered enterprises operating at a wide variety of scales, alongside informal millers for which no data exists. Beneath the overall trend towards consolidation, there is a more complex picture of adaptation and survival among SME millers. Most notable has been the emergence of competitive medium-scale firms predominantly targeting independent wholesalers, and with close links to farming enterprises in the maize belt of Free State and North West provinces. Thus, even while the number of registered millers has declined by around 25% in the past decade, the share of output accounted for by the largest 4 companies – ultra-large scale operations in corporate food manufacturing conglomerates – is down to 40%, from 60% a decade ago.[2] In addition a range of smaller milling companies sell to highly localised markets through the informal retail system of small wholesalers and spaza shops. Advances in milling equipment and communications technology making it possible to produce high-quality maize meal at smaller scales, but the challenges faced by these small companies relate to the challenging business environment they operate in and adverse value chain relations which the project has been investigating.

SME milling matters because while the levels of value-added are low relative to other types of agro-processing, notably exported fresh fruit and horticulture, they are often among the only surviving manufacturing enterprises

[1] Data from South African Grain Information Service (SAGIS)

[2] SAGIS data.

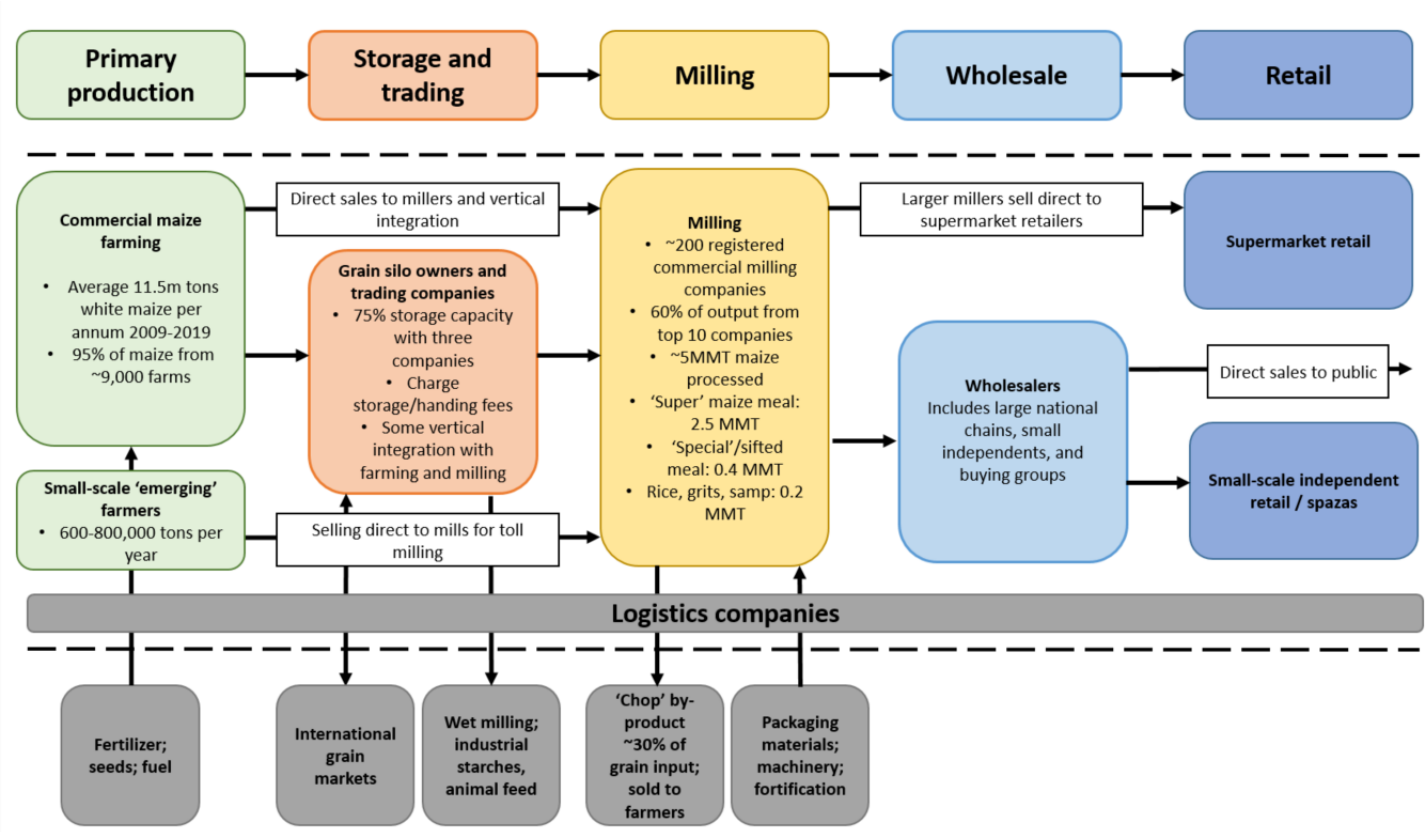
in contexts of high poverty and unemployment. In addition, smaller milling enterprises can provide a route to market and storage facilities for emerging small-scale maize farmers in more marginal growing areas. Milling provides a potential means to stimulate disadvantaged rural economies and broaden participation in manufacturing. Small scale milling has been targeted in the past for industrial policy support, at both provincial and national levels. This has included Department of Trade and Industry financing of small-scale milling equipment, and initiatives by provincial governments to finance the establishment of mills in marginalised rural areas, often in conjunction with support for maize farmers. State interventions have achieved little tangible success to date, however.

2: The milling value chain

2.1 Historical context

As with most other industries in the South African economy, the legacies of apartheid are reflected in present-day milling, specifically in terms of concentrated ownership and a spatial distribution of activity around white grain farming districts and the major urban industrial centres. Under apartheid maize was highly regulated. Prices were controlled by a marketing board and infrastructure planned around regional agricultural cooperatives to limit competition. The key beneficiaries were white grain farmers, which were a key constituency for the National Party. Black participation in commercial agriculture and associated industries was tightly curtailed. From 1996, the agricultural sector was rapidly and extensively liberalised in line with broader reform processes. However, while this ushered in some significant changes in business models and organisation, dominant actors from the previous era were able to leverage their advantages to maintain dominant positions, and capture the opportunities afforded by economic liberalisation (Bernstein, 2013; Greenberg, 2017). This has posed considerable challenges for fostering inclusion in agro-industries.

Figure 1: Overview of the maize value chain



2.2 Upstream primary agriculture

Primary maize production is highly concentrated, with increasing consolidation in commercial maize farming, and generally disappointing outcomes of government efforts to stimulate small-scale maize production. Around 95% of marketed production comes from around 9,000 large-scale 'commercial' farms, mostly in the key maize growing areas of North West, Free State and Mpumalanga, and the remainder, 600,000-800,000 tons, from an unknown number of smallholder producers, predominantly in former 'homeland' areas (DAFF, 2017: Greyling & Pardey, 2019). Small farmers face a range of challenges related to affordability of inputs, inadequate storage infrastructure and access to markets. White maize output – used for production of mealie meal – has risen considerably since liberalisation, from around 8m tons in the late 1990s an average of 11.5m tons over the past decade. This has been driven by major increases in yield, which have more than doubled to around 5-6t/ha, as farming has become more technology and input intensive.[3] Raw maize prices are extremely volatile, exposed to global market dynamics in which major grain trading houses and conditions in the United States play a key role. Being predominantly rain-fed, maize farming is also subject to increasingly adverse climatic conditions. This volatility has important implications for agro-processing, given upwards of 70% of miller's cost-base – varying with the maize price – is accounted for by maize purchases.

2.3 Midstream storage and logistics

Silo companies constitute the arterial network of the grain industry, enabling large-scale aggregation and storage of grain after the annual harvest. Only 8-12% of maize is stored with processors at any one time,[4] and specialised storage infrastructure is therefore critical to the functioning of the industry. This makes silo-owners crucial intermediaries, capable of exerting great influence over costs for millers and farmers. This infrastructure was constructed primarily during apartheid by large farmer cooperatives. Many of these have now been privatised and they remain powerful. Seventeen silo-owners comprising 95% of capacity, and within this three (AFGRI, NWK and SENWES Group) controlling 73% of capacity (DAFF, 2017). Few new silos have been built since the 1990s and in many cases specific silo-owners will operate as localised monopolies for small-scale buyers/sellers unable to source grain from further afield. An emerging theme from our research have been small millers attempts to circumvent reliance on the silo owners through direct linkages to farming. Many areas of the country in which smallholder farming predominate still lack modern storage facilities, creating severe problems with post-harvest losses, food safety and year-round access to grain for processors.

2.4 Downstream retail

Modern supermarket retail is predominant in urban areas of South Africa, and is increasingly encroaching into new markets in townships and rural areas (Competition Commission, 2019). Supermarket retail supply chains pose significant challenges for all but the largest agro-processors, since they exert significant buyer-power, require high volumes, have exacting quality standards, often levy large rebates and seek to streamline their procurement processes through a small number of suppliers delivering to centralised distribution centres. Their shelves tend to be dominated by well-known brands produced by a handful of ultra-large-scale millers owned by diversified food manufacturing conglomerates. However, small-scale retailers still play a major role in the food system. Served by wholesalers and buying groups, and selling to lower income consumers, small retailers are more likely than supermarkets to source from SME millers, which tend to sell at significantly lower prices, often as little as 60% of the major corporate brands. These small retailers are often precarious, but have more relaxed terms and conditions, in particular concerning repayment periods. The expansion of supermarket retail therefore represents a major challenge for SME millers. This and other challenges are elaborated in the following section

[3] DAFF Data.

[4] Author's calculations, SAGIS data

3: Key challenges for participation of SME millers

After liberalisation of the agricultural sector in the 1990s, there was a rush of new entrants to the milling industry. Numbers of registered millers peaked at just short of 300 in the early-2000s. However, since then there has been a gradual decline in numbers despite a gradual increase in maize consumption (Figure 2). Consumption of processed maize has increased in both absolute terms and gradually on a per-capital basis, with annual per capita consumption increasing from an average of 51kg per year in the 1990s to 61kg in the past decade. Corresponding to this, there has been a trend of declining fixed capital stock but rising value added over the past decade (Figure 3).

Figure 2: Maize consumption and numbers of registered maize millers (Source: SAGIS)

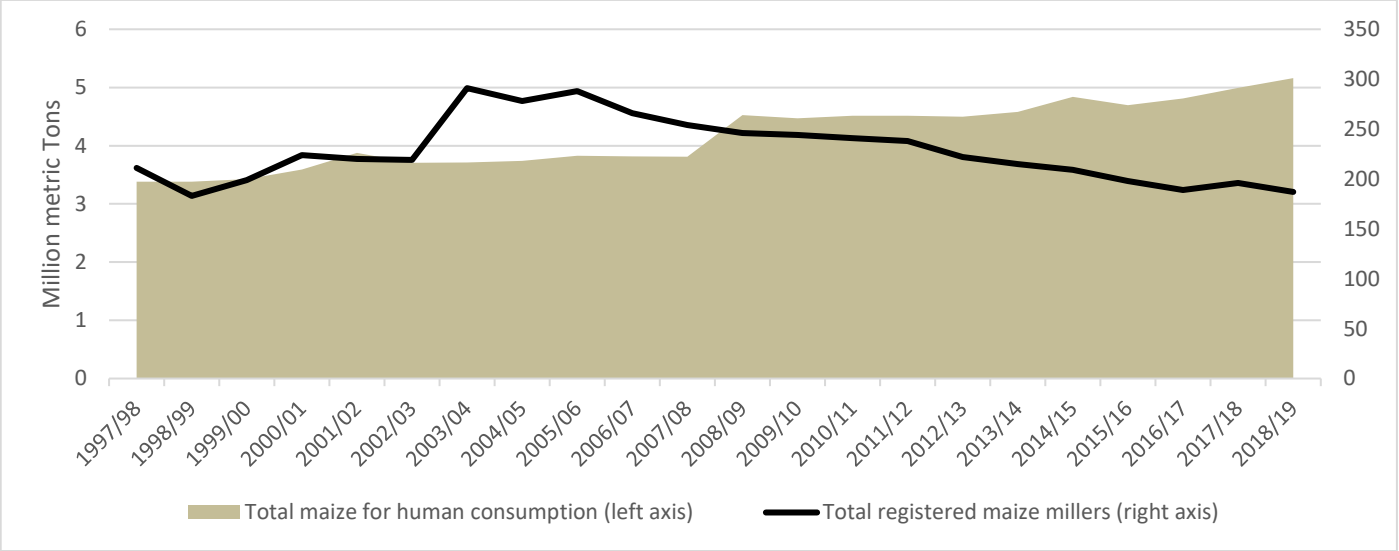
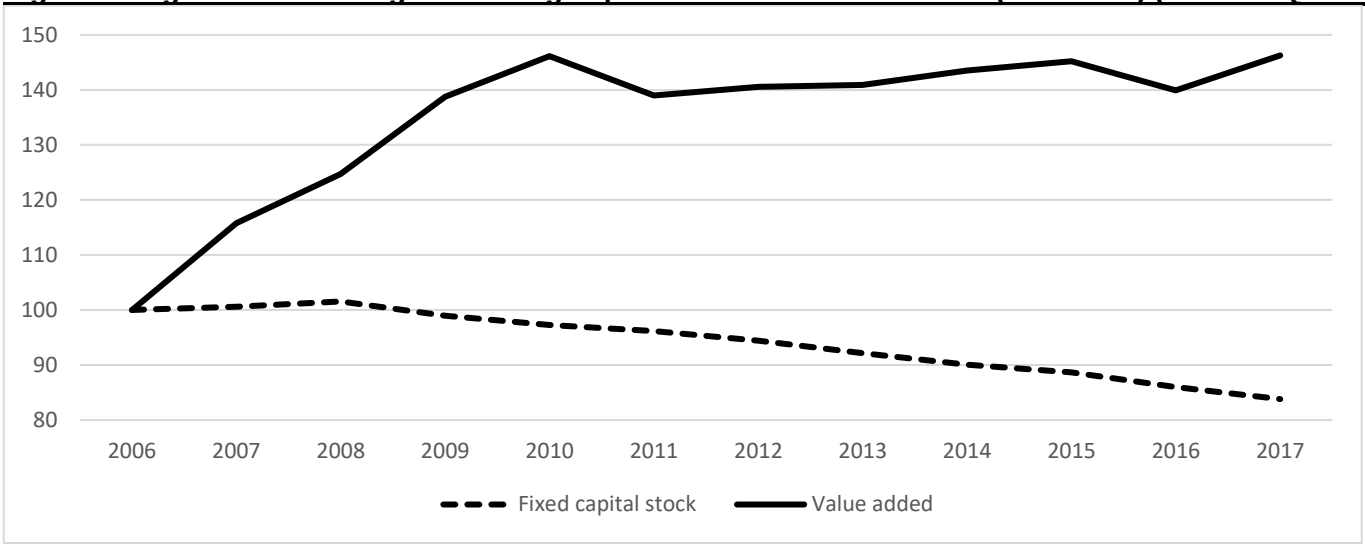


Figure 3: Figure 2: Index of grain milling capital stock and value added (2006=100) (Source: Quantec)



Larger milling companies have multiple advantages. Most importantly, milling is a low-margin industry in which volume is a critical variable for commercial success. The largest millers are typically owned by multi-product corporate food manufacturing conglomerates, improving bargaining power with retailers. In addition to this, consumer preferences have increasingly favoured more refined, consistently white 'super' maize meal – which has surpassed less processed 'special' maize meal (Table 1) – smaller package-sizes, and, increasingly, a range of instant products. For 'super' maize meal, the extraction rate is typically 62.5%, compared to 78.7% for

the more conventional 'special' maize meal. This is because the extraction process removes as much of the husk (hull) and germ as possible, leaving the most starchy part of the endosperm, to produce a highly processed, carbohydrate-rich white maize powder, with the by-product predominately going to animal feed.

Table 1: Changes in maize meal consumption, 1996/97-2018/19, T000s (SAGIS data)

	Maize rice, grits and samp	Sifted Maize Meal	Special Maize Meal	Super Maize Meal	Total
1996/97	226	461	968	623	2,278
2018/19	190	28	371	2,495	3,084
Change	-16%	-94%	-62%	300%	35%

All this in turn requires investment in more sophisticated equipment – including degerminators, sorting machines, automated packaging, and a range of control systems to ensure consistency – and skilled staff. The ability to invest in intangible assets such as branding is also very important. The greater volumes of raw material purchases give large millers access to a diversity of maize suppliers, and their financial capabilities enable them to use derivatives for hedging during periods of price volatility. This matters because upwards of 70% of the cost of production per unit of maize meal is composed of this raw material cost: a small increase in maize input costs has a huge impact on profitability. In any given year, the farm share of a unit of super maize meal can range from 75% to 30%, as was the case over the course of 2017 (NAMC, 2019). From early 2015 to early 2016 during a drought period, maize prices more than doubled to around R5,000 per tonne as maize production crashed to 8m tons for the year, down from 12m average for the prior five years. Retailers are typically slow to pass cost increases on to consumers. These problems for milling companies are only likely to become more severe with the onset of climate change. This requires significant procurement capabilities, with mill owners required to understand market trends – at a global level – or at least have sufficient resource to employ a trading company.

However, beneath this seemingly bleak predicament for SME millers, there is a more complex picture of adaptation and survival. Most notably, there are indications that competitive medium-scale millers with close links to farming have emerged to challenge more long-established large-scale millers. The share of output accounted for by the largest 4 companies is 40%, down from 60% a decade ago. The Free State is now the largest maize producing province in South Africa, accounting for 30% of processed maize output, displacing the historically dominant Gauteng (17%). Additionally, many small milling enterprises among the long tail of 150+ companies accounting for around 20% of production have proven resilient, and have adapted themselves for survival in this harsh environment in various ways. This can include location in more distant rural areas, targeting lower-income consumer groups for whom the major corporate brands come at a significant additional cost, and forging close links to grain farming, trading enterprises or forms of community or cooperative ownership, which overcome some of the misalignments of interests between actors in the value chain. There are also an estimated 2000 of micro mills offering services to smallholder farming communities at a local level in more remote rural areas. The crop estimate committee says 600,000 – 800,000tons of maize is produced by subsistence farmers annually – compared to a 10 year average of 11.5m tons for maize farming as a whole – but little is known about how this. Our research so far suggests informal micro-millers pose a significant threat to SMEs, being able to undercut them on price while avoiding the onerous requirements of formality such as health and labour inspections, and fortification requirements.

There are, still, a range of opportunities for SME milling companies, which could provide much needed manufacturing employment in impoverished rural areas, as well as a route to market for small scale farmers. Supporting and developing these industries may not be simply a matter of 'entry to value chains' and expansion into mainstream markets, but nurturing and supporting a range of alternative commercial ecosystems which create opportunities for these firms. However, support appears to be inadequate and incoherent. SME milling

is fragmented and disorganised, with few institutional channels for technology transfer, information sharing or pursuit of collective action. Following Competition Commission investigations which ensnared many of its members, participation in the trade association, the National Chamber of Milling is low, and slanted towards large companies. This contrasts starkly with grain farming, and the powerful trade associations such as GrainSA in primary agriculture. A wide range of government support has been provided to small scale milling in the past, and is available in the present. The range of entities that have claimed to be engaged in one way or another in supporting SME milling now or over the past decade includes, at a minimum, the Land Bank, the IDC, the DTI, DAFF, DRDLR, and provincial governments in Gauteng, North West, Eastern Cape and KwaZulu Natal. However, there is little to no coordination among these entities, and past government schemes to subsidise equipment for small millers not yielding success. Public procurement provides a key potential means of supporting SME millers by providing stable and predictable demand, but our research suggests this potential is not being realised.

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