INTERROGATING THE LOGIC OF ACCUMULATION IN THE SUGAR SECTOR IN SOUTHERN AFRICA

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Introduction

- Introduction to regional patterns of sugar production accumulation by way of data analysis for key (formerly ‘South African’) firm Illovo across 6 countries
- ‘Centrifugal’ logic throws up a diversity of routes of accumulation, and different broad political compacts, despite focusing on a single company, (monolithic?) commodity and region
- Detailed case studies to provided by SSRN in special issue of Journal of Southern African Studies
The Sugar ‘Boom’

- Expansion: *Increases in aggregate* measures of production
- Geographical dispersion of formerly ‘South African’ corporate capital; Illovo and Tongaat-Hulett's
- Reshuffling of corporate ownership (Unbundling monopoly capital, Illovo purchased by British Sugar)
- Given rise to *puzzling differentials* in corporate profits
### Average sugar production and cane area harvested in Southern Africa 1962-2012

#### Average sugarcane area harvested Southern Africa (000' ha)

|          | Malawi | Moz. | Zim | Swazi | Tanzania | Zambia | Sub Total | South Africa | Total |
|----------|--------|------|-----|-------|----------|--------|-----------|--------------|-------|
| 1962-1972| 2      | 41   | 13  | 12    | 31       | 15     | 102       | 161          | 263   |
| 1972-1982| 9      | 53   | 26  | 21    | 27       | 25     | 143       | 211          | 354   |
| 1982-1992| 15     | 22   | 23  | 36    | 14       | 31     | 130       | 267          | 397   |
| 1992-2002| 19     | 25   | 27  | 40    | 15       | 35     | 148       | 300          | 448   |
| 2002-2012| 23     | 37   | 43  | 51    | 22       | 41     | 201       | 313          | 514   |

#### Average sugar production in Southern Africa (000' ton)

|          | Malawi | Moz. | Zim | Swazi | Tanzania | Zambia | Sub Total | South Africa | Total |
|----------|--------|------|-----|-------|----------|--------|-----------|--------------|-------|
| 1962-1972| 24     | 222  | 196 | 137   | 80       | 37     | 667       | 1,469        | 2,136 |
| 1972-1982| 96     | 223  | 315 | 262   | 111      | 84     | 1,090     | 1,989        | 3,078 |
| 1982-1992| 173    | 39   | 411 | 486   | 104      | 135    | 1,349     | 2,141        | 3,490 |
| 1992-2002| 203    | 44   | 445 | 493   | 118      | 178    | 1,482     | 2,204        | 3,685 |
| 2002-2012| 278    | 267  | 408 | 626   | 261      | 289    | 2,129     | 2,327        | 4,456 |
Sugar mills in Southern Africa

| Company       | Country  | Mills                  |
|---------------|----------|------------------------|
| Illovo        | Malawi   | Dwangwa, Nchalo        |
|               | Mozambique| Maragra,              |
|               | South Africa| Noordsberg, Sezela,    |
|               | Swaziland| Umzimkulu**            |
|               | Tanzania  | Msolwa, Ruembe         |
|               | Zambia    | Nakambala              |
| Tongaat-Hulett| Mozambique| Mafambisse, Xinavane   |
|               | South Africa| Amatikulu, Darnall,    |
|               | Zimbabwe  | Maidstone, Felixton,   |
|               |           | Hippo Valley, Triangle  |
| TSB           | South Africa| Malelane, Komati,      |
|               |           | Pongola                |
| Others        | Tereos/Petrobras| Mozambique| Sena Sugar |
|               | Union Cooperative Ltd| South Africa| Dalton |
|               | Umfolozi Sugar Mill| South Africa| Umfolozi |
|               | Royal Swazi| Swaziland| Mhlume, Simunye |
|               | Sukari Investment Company| Tanzania| TPC (Moshi) |
|               | Tanzania Sugar Industries Ltd| Tanzania| Mtibwa |
|               | Kagera Sugar Ltd| Tanzania| Kagera |
Tongaat-Hulett's operating profit and sugar production for 2007/8 and 2013

Operating profit
- 2007/8: 20%
- 2013: 46%

Production
- 2007/8: 61%
- 2013: 39%

Graph showing operating profit and production for Tongaat-Hulett in Mozambique, Zimbabwe, and SA for 2007/8 and 2013.
Illovo operating profit and sugar production for 2002 and 2013
Puzzle of differential profits

- What explains these differentials?
- Hypothesis of two key sets of factors:
  - Differential productivity
  - Uneven terms of exchange
    - Similar to focus on ‘oligopoly rents’ & ‘economies of scale’ in African value chains identified by Gibbon & Ponte 2005
- Opportunity for evaluation of data provided by Illovo’s 2013 Good Corporate Citizenship reports, (complemented by South African Sugar Technologists Association production data and World Bank international price data)
Differential productivity: Hierarchies of field and factory

- Extreme form of "industrial throughput system" (Weis 2007; 2010)
- Miller’s profitability centred on maximising consumption of high-quality (sugarcane):
  - Profits experienced only in ‘last tons processed’ (See Senior’s Last hour; Marx, 1976)
  - Profits highly contingent on reducing the value composition of raw materials (sugarcane) (Moore, 2011)
Differential productivity: Hierarchies of field and factory

- Structurally monopsonic relationship between miller-processing and sugarcane cultivation
  - Highly perishable (requires immediate processing);
  - No market for raw-cane (requires processing for valorisation) (Mintz, 1986; Binswanger and Rosenzweig, 1986)
Differential productivity: Hierarchies of field and factory

- Productivity in Southern African cane production defined by labour, water and input intensity

  - Labour Intensity:
    - Land dispossession → access to land & ‘reserve army’ of ‘cheap’ African labour (Lincoln, 2006; Head, 1980; Mlambo and Pangeti, 1996; Richardson, 1982; Beinart, 1990).
    - Capital intensity in processing and transport, but cultivation un-mechanized (Van Bilijon, 1970; Minaar, 1993; O’Laughlin, forthcoming);
Differential productivity

- **Input and water intensity**: Labour productivity increases rest largely on:
  - improving seedcane varieties, chemical fertilizers, pesticides and;
  - increasing water intensity in high-rainfall areas or through the development of (often state-subsidized) irrigation infrastructure (Tyler, 2007; Minaar 1992; Mlambo and Pangeti, 1996; NDC, 1992; Beck, 1964).
# Key characteristics of Illovo’s sugar production by country

|                  | Malawi (2 mills) | Moz. (1 mill) | South Africa (4 mills) | Swaziland (1 mill) | Tanzania (2 mills) | Zambia (1 mill) |
|------------------|------------------|---------------|-------------------------|--------------------|-------------------|-----------------|
| Total cane (tons)| 2,460,735        | 719,860       | 5,119,944               | 2,165,058          | 1,309,145         | 3,246,082       |
| Average ERC%     | 12.2%            | 11.7%         | 11.6%                   | 10.8%              | 9.9%              | 12.4%           |
| Water (m$^3$)/tons estate | 183              | 74            | 0                       | 133                | 94                | 105             |
| Total hectare    | 24,567           | 9,300         | ?                       | 23,600             | 24,162            | 28,000          |
| Tons per hectare | 100              | 77            | ?                       | 92                 | 54                | 116             |
| Total employment | 7,954            | 4,798         | 23,431                  | 6,411              | 10,993            | 6,369           |
| Ton cane/ worker (total) | 411             | 154           | 223                     | 419                | 292               | 545             |

## Sugar

|                  | Malawi (2 mills) | Moz. (1 mill) | South Africa (4 mills) | Swaziland (1 mill) | Tanzania (2 mills) | Zambia (1 mill) |
|------------------|------------------|---------------|-------------------------|--------------------|-------------------|-----------------|
| Total sugar (tons)| 299,494          | 84,546        | 598,700                 | 232,723            | 129,737           | 403,867         |
| Mill capacity     |                  |               |                         |                    |                   |                 |
| Tons cane per hour | 501.69           | 297.48        | 1,051.70                | 398.92             | 252.6             | 642.07          |
| Tons sugar per hour | 61.06            | 36.07         | 122.86                  | 42.88              | 25.05             | 79.88           |
| Time efficiency   | 87.6%            | 80.4%         | 78%                     | 82.4%              | 81%               | 84.2%           |
| Total employment  | 7,032            | 1,684         | 2,879                   | 1,467              | 1,036             | 3,035           |
| Ton sugar/ worker | 42.59            | 49.88         | 206.32                  | 158.83             | 125.23            | 133.11          |
Outgrowers

- Substantial numbers of ‘outgrower’ farmers (large & small) supplying sugar mills
- Monopsonic mill position → outgrowers constitute a social fraction within a nominally technically and economically unified process of sugar production.
Outgrowers

- Facilitate sugar accumulation directly,
  - by absorbing the risk/cost (Glover Kusterer, 1990):
    - Of cane production. Mill often only purchases sucrose. If there is a production failure, the mill is unaffected,
    - Of sugar marketing. Reducing/withholding payment for sucrose that was not ultimately sold, or scaling down other services
    - Of circulation/transport. Growers oft carry full cost of cane transport, including losses due to delays
  - Fragments workers and embeds exploitation within local structures of authority and reciprocity; evade minimum wages difficulties sourcing/disciplining labour on estates (Wilson 1986; Little and Watts 1994).
- Longer working hours, lower wages and poor conditions may, however, simply serve to compensate for lower-than-average levels of productivity (in field or factory), and may be captured by either farmers or millers (Starosta, 2010).
Outgrowers

- Facilitate accumulation indirectly:
  - attracting investment of development aid or preferential finance into cane production;
  - rendering the absorption of land and water resources land into estate production more politically palatable;
  - encouraging the political promotion of favourable mercantile arrangements for sugar pricing and tariff protection, often connected to different models of land reform (see Chinsanga; James & Woodhouse; Matenga; Terry; Scoones; Sulle, forthcoming).
### Key characteristics of Illovo’s outgrower supply base by country

|                      | Malawi (2 mills) | Mozambique (1 mill) | South Africa (4 mills) | Swaziland (1 mill) | Tanzania (2 mills) | Zambia (1 mill) |
|----------------------|------------------|---------------------|------------------------|--------------------|--------------------|-----------------|
| Total Cane (tons)    | 2,460,735        | 719,860             | 5,119,944              | 2,165,058          | 1,309,145          | 3,246,082       |
| Estate               | 2,102,002        | 532,560             | 358,396                | 862,058            | 726,145            | 1,942,435       |
| Outgrower            | 358,733          | 187,300             | 4,761,548              | 1,303,000          | 583,000            | 1,303,647       |
| Total (n, %)         | 2,047            | 371                  | 5,707                   | ±3,031             | 8,000              | ±8,000          |
| "Small"              | 1,888 (2.5 ha)   | 337 (< 20 ha)       | 5,071 (3-5 ha)         | ±3,000 (3 ha)      | 6,320 (< 5 ha)     | 254 (6-7.5 ha)  |
| "Medium"             | 159 (?)          | 29 (20-120 ha)      | 58 (?)                  | 15 (<50 ha)        | 1,667 (5-50 ha)    | -              |
| "Large"              | -                | 5 (120+ ha)         | 578 (50+ ha)           | 16 (+50 ha)        | 13 (50+ ha)        | 11              |
| Total hectares       | 19,567           | 6,000                | 3,173                   | 780                 | 1,290              | 1,509           |
| Tons/hectare**       | 100              | 77                   | ?                       | 92                  |                      | 116             |
| Estate               | 80               | 60                   | ?                       | ?                   | 8,600              | 9,562           |
| Outgrower            | 5,000            | 3,300                | ?                       | ?                   | 15,000             | 14,600          |
| Total Employment     | 7,954            | 4,798                | 23,431                  | 6,411              | 10,993             | 6,369           |
| Estate*              | 4,520            | 3,173                | 780                     | 1,290              | 1,509              | 2,979           |
| Outgrower            | 3,434            | 1,625                | 22,651                  | 5,121              | 9,484              | 3,390           |
| Tons/worker**        | 411              | 154                  | 223                     | 419                | 292                | 545             |
| Estate*              | 465              | 168                  | 399                     | 667                | 481                | 652             |
| Outgrower            | 104              | 115                  | 212                     | 254                | 61                 | 385             |
Markets, Mercantilism

- Evaded the wholesale liberalization and deregulation in other sectors and industries.
- Sugar retains a strong mercantile character, and is subject to a complex politics of domestic and regional market segmentation.
- Here ‘mercantile’ is used to mean purposely shifting terms of trade, erstwhile anonymously determined by ‘market’ forces.
Markets, Mercantilism

5 key features:

- **Rents**: Prices governed by direct price-setting or tariff protection, shape rents are established in domestic market mediate contradictory interests of producers and ‘consumers’ (incl. man).

- **‘Residual’ world market**: Widespread international protection and subsidy of sugar industries internationally; bulk of sugar trade bilateral, world price highly sensitive to variations in supply and demand.

- **‘Overproduction’**: Potential crises when insufficient world prices account for large proportions of production.

- **Preferential market access**: The evasion of ‘overproduction’ has been heavily mediated by a politics of access to protected markets, particularly those in the USA and the EU.

- **Biofuel production**: Potential to divert cane processing to (fuel and non-fuel) ethanol as a form of ‘surplus absorption’
Nominal EU, world, and select domestic sugar prices, 2002-2012
Nominal Brent crude and ethanol prices per hectolitre, 2000-2013
Nominal sugar and ethanol prices per ton of cane, 2000-2013
Proportions of export production and production by lead firms in Southern Africa in 2012/13
Comparison of market destinations and realized values of Illovo’s operations in 2012/13
Estimated Prices

**Average realized sugar price**

\[
\text{Average realized sugar price} = \frac{\text{Gross revenue}}{\text{Gross sugar production}}
\]

and;

**Average domestic + regional price**

\[
\text{Average domestic + regional price} = \frac{\text{Gross Revenue} - \text{EUval} - \text{USval} - \text{Worldval}}{\text{Total production} - \text{EU export} - \text{US export} - \text{World export}}
\]

Where:

- \( \text{EUval} = \text{Realized value from European export} = \text{EU price} \times \text{EU export} \)
- \( \text{USval} = \text{Realized value from American export} = \text{US price} \times \text{US export} \)
- \( \text{Worldval} = \text{Realized value from world export} = \text{World price} \times \text{world export} \)
- In Tanzania, unsold stocks of approximately 17,000 tons were deducted from total production in this calculation in order to better approximate prices received for sold production.
**Estimated sugar prices, cane, factory and wage costs across Illovo’s operations in 2012/13**

| Country  | Est. dom. & regional price (R/ton) | Average realized sugar price (R/ton) | DoP % | OG realized share (R/ton) | Mill realized share (R/ton) | Notional cost/TSH | Lowest wage (R/year) | Average permanent wage (R/year) |
|----------|----------------------------------|-------------------------------------|-------|---------------------------|-----------------------------|---------------------|---------------------|------------------------|
| Malawi   | 7,336                            | 6,110                               | 60%   | 3,666                     | 2,444                       | 7,189,650           | 7,728               | 37,277                 |
| Moz.     | 10,659                           | 6,386                               | 60.5%* | 3,863                     | 2,522                       | 5,769,337           | 10,512              | 84,046                 |
| SA       | 5,767                            | 7,120                               | 66%   | 4,699                     | 2,421                       | 12,086,928          | 28,800              | 265,840                |
| Swazi.   | 8,483                            | 5,643                               | 60.5%* | 3,414                     | 2,229                       | 9,461,940           | 19,788              | 144,702                |
| Tanzania | 6,485                            | 5,384                               | 57%   | 3,069                     | 2,315                       | 9,385,230           | 12,144              | 144,435                |
| Zambia   | 7,123                            | 6,237                               | 59%   | 3,686                     | 2,551                       | 12,641,462          | 23,448              | 187,718                |
Interrogating Profits

- Clearly, both productive and ‘mercantile’ features sources of considerable importance and variation
- Not sufficient data for statistical procedure
- Counter-factual analysis:
  - Simple self-designed arithmetic model
  - Imposing mathematical relationship between value data and physical data
Interrogating Profits

\[ P (\text{Profit}) = \text{Revenue} - C_1 (\text{outgrower cane}) - C_2 (\text{manufacturing costs}) - W_1 (\text{permanent labour}) - W_2 (\text{seasonal labour}) \]

Where:

- Revenue = Price per ton sugar * annual tons of sugar
- \( C_1 = \text{Price/ton sugar} \times \text{Division of Proceeds} \times \text{ERC\%} \times \text{Total outgrower cane production} \)
- \( C_2 = \frac{\text{Manufacturing costs}}{\text{Tons Sugar Hour}} \times \text{Tons Sugar Hour} \)
- \( W_1 = \frac{\text{Number of permanent workers}}{\text{Gross salaries} - (\text{Number of seasonal workers} \times \text{Lowest monthly wage} \times 12)} \)
- \( W_2 = \text{Number of seasonal labourers} \times \text{Lowest Monthly Wage} \)
- \( \text{ERC\%} = \%\text{Estimated Recoverable Content} = \frac{\text{Total cane crushed}}{\text{Sugar produced}} \)
- \( W_3 = \text{Number of workers employed by outgrowers} \times \text{Lowest monthly wage} \times 12 \)
Interrogating Profits

- arithmetic not precise, only guides analysis differentials. Three key failings:
  - The calculation of Estimated Recoverable Content (ERC%) = total cane crushed/ sugar produced does not accommodate differences between outgrower and estate cane quality, nor the sucrose extraction efficiency of milling operations, which is notoriously difficult to measure and disentangle from cane quality (Formound, 1966).
  - The division of proceeds formula applied in Swaziland and Mozambique was not reported, and was assumed to be the average of the remaining countries.
  - Finally, manufacturing costs ($C_2$) are divided according to Tons Sugar per Hour factory capacity as a proxy for per-unit capital costs, but in reality also include estate costs.
Two Models:

**Model I, Productivity:** average values applied to *exchange characteristics* (Price per ton of sugar; division of proceeds; lowest annual wage; average annual wage permanent workers) so *only productive characteristics vary* (Total sugar; Total cane crushed; ERC%; Outgrower cane; TSH; Time Efficiency; Seasonal Workers; Permanent workers; workers employed by outgrowers)

**Model II, Terms of exchange:** Inverse; average productive characteristics applied so *terms of exchange vary*
Interrogating Profits

Rate of Profit Model I (productivity)

Rate of Profit Model II (exchange)

- Mozambique
- Malawi
- South Africa
- Swaziland
- Tanzania
- Zambia

Median profit (12%)

I
High production profits
High mercantile profits

II
Low production profits
High mercantile profits

III
Low production profits
Low mercantile profits

IV
High production profits
Low mercantile profits

Low production profits
High mercantile profits

Low production profits
Low mercantile profits

High production profits
Low mercantile profits
Productive efficiency, rather than monopoly rents, claimed the highest RoP in the group in Model I, ran at loss in Model II.

The political economy of Zambia Sugar’s productivity-centred approach appears to cohere around a three-way compact:

- State permits company’s access to substantial productive resources, including the controversial extension of its water-intensive estates with the acquisition of Nanga Farms and highly integrated management of outgrowers (see Matenga, forthcoming) and further low-tax commitments (leaving aside allegations of tax evasion) (Lewis 2013).

- Illovo’s substantial profits come without unusually high consumer rents, and ensure substantial wages and outgrower returns can be financed.

- In turn, Zambia Sugar’s economic benefits translate into enhanced electoral support in its opposition-held area of operation (Richardson 2010: 930).
Malawi

- Model I profitable: vast labour and water-intensive estates, low lost crushing-time and low outgrower, and manufacturing costs being incurred.
- Model II super-profitable: low per-unit capital costs, and extreme labour exploitation at core
- Suggests Illovo’s Malawian operation retains the patrimonial relationship forged in the past between Hastings Banda’s Malawi and Tiny Rowland’s Lonrho Sugar, despite reports that sugar distribution quotas will no longer be leveraged by individual politicians (Gosnell, 2005; Gondwe 2005; Illovo 2014a).
- Unlike Zambia, no ‘democratic dividend’ obstructs the generalized squeeze on land, water and labour (see Chinsinga, forthcoming) by the triumvirate of party, state, and company.
Mozambique

- Least productive operations run at an **outright loss** in Model I, but extreme profits in Model II.
- Mercantile ‘squeezing’ central Illovo’s Mozambique operation: highest domestic prices (counterbalancing large export burden), depressed capital prices, and extremely low wage bill; second only to Malawi.
- Buur (2011) has argued that generally direct economic **returns to the state** were secondary to the potential **electoral benefits** in projects of party political consolidation.
  - Maragra mill performance relative to local competitors, or particular political returns generated, not clear.
  - Profitability – despite low productivity – suggest profits come at the greatest ‘externalised’ social, environmental and economic cost of the entire cohort.
Significant profit in Model I, highly productive capital and water intensive factory and estate, but less profitable than Tanzania as a result of higher outgrower cane purchases.

Low Profits in Model II: despite second-highest domestic price, obtains low realized price and revenue due to large export burden.

Swaziland’s resembles Malawi’s, close patrimonial relations between company and state: the state is the country’s largest sugar producer and is effectively controlled by the King’s personal trust, Tibiyo TakaNgwane (Daniel 1982).

Where the price premiums attending substantial European market access once stood at the foundation of Swaziland sugar’s profitability, this feature is now its chief liability.

Although the pattern is not completely clear, in this case Illovo appears to be blending mercantile and productive responses. Illovo has undertaken considerable capital expansion while downscaling employment and services, utilized EU relief funds to promote outgrower production, and should be benefitting from raised Southern African Customs Union prices following South Africa’s tariff increase (Ngwenya-Richardson & Richardson, 2014; Illovo 2014d; see Terry, forthcoming).
Similar results to Swaziland, but for different reasons:

- **Profits in Model I** come as a consequence of low capital commitments in purchasing Outgrower cane.

- Strain in Model II **due to low realized prices**. Unlike Swaziland, however, not a result of a high export burden. *Low* domestic prices in Tanzania have been the subject of great controversy and scandals surrounding the illicit import of sugar and the issue of import licences.

- In 2012/13, Illovo estimated that **17,000 tons** of produced sugar was withheld for the past year as a consequence (Illovo, 2014e), representing 13% of production in Model I, and 6% in Model II.

- **Interesting counterpoint to the contradictions endured in the state-led era of modernization and import-substitution.**

- Previously, **consumer-oriented pan-territorial pricing** criticized for not sufficiently supporting ‘producers’ (invoking outgrowers), despite being a net sugar importer, endured crisis in late 1970-80s as **cost of imported capital rose**, **international prices dropped** and companies were exposed to intense taxation (NDC, 1992).

- Despite ‘**rehabilitation**’ of production, however, structural adjustment and privatization, **Taxation is higher** for Illovo in Tanzania than elsewhere. **Sugar prices remain ‘too low’** without effective protection – with **outgrowers bearing the brunt** of the burden (see Sulle, forthcoming) – while Tanzania remains a net importer of sugar.
Regional expansion alleviated South African ‘over-production’ to the mid-1990s.

Despite Illovo’s disinvestment, South African operations still claim most production and least profit.

Low profits in Model I due largely to insufficient cane supply and high outgrower costs, only slightly offset by impressive mill labour productivity. Consistent with concerns over low rainfall, with Illovo’s Umzimkulu mill in particular being forced to close this coming year (Mokhema & Alberts, 2015).

Outright loss in Model II, suggesting that the South African operations inhabit the worst of both hypothetical worlds.

- Exhibit the highest capital and wage rates in the group
- Mitigated only by the exceptionally high average realized price, due to export of non-sugar value-added by-products (not high domestic prices).
- The importance of value-adding with non-sugar by-products, however, are likely overstated in this model, owing to its exclusion of the recent tariff and wage hikes.
Composition of realized values in Illovo’s operations across country

| Country      | Rate of Profit (S / (C₁ + C₂) + V) | Profit-Wage Ratio (Rate of Exploitation) S / V | Capital-Wage Ratio (Value Composition of Capital) C₁ + C₂ / V |
|--------------|------------------------------------|---------------------------------------------|----------------------------------------------------------|
| Malawi       | 109% (1)                           | 367% (1)                                    | 238% (2)                                                 |
| Mozambique   | 24% (3)                            | 80% (4)                                     | 228% (1)                                                 |
| Swaziland    | 16% (5)                            | 86% (3)                                     | 447% (5)                                                 |
| South Africa | 6% (6)                             | 39% (6)                                     | 585% (6)                                                 |
| Tanzania     | 19% (4)                            | 77% (5)                                     | 301% (3)                                                 |
| Zambia       | 29% (2)                            | 121% (2)                                    | 324% (4)                                                 |
Model 1: Composition of values by country

| Country      | Rate of profit | Profit-Wage Ratio  | Capital-Wage Ratio | Profit-Capital Ratio |
|--------------|----------------|--------------------|--------------------|----------------------|
|              | (Rate of exploitation) | (Organic composition) |                    |                      |
| Malawi       | 13% (4)        | 24% (5)            | 83% (1)            | 0.29 (4)             |
| Mozambique   | -18% (6)       | -55% (6)           | 196% (2)           | -0.28 (6)            |
| South Africa | 4% (5)         | 42% (4)            | 1013% (6)          | 0.04 (5)             |
| Swaziland    | 27% (3)        | 149% (2)           | 456% (5)           | 0.33 (3)             |
| Tanzania     | 32% (2)        | 125% (3)           | 293% (3)           | 0.43 (2)             |
| Zambia       | 45% (1)        | 221% (1)           | 387% (4)           | 0.59 (1)             |
Model II: Composition of values by country

| Country    | Rate of profit | Profit-Wage Ratio (Rate of exploitation) | Capital-Wage Ratio (Organic composition) | Profit-Capital Ratio |
|------------|----------------|----------------------------------------|------------------------------------------|----------------------|
| S          | \(\frac{S}{(C_1 + C_2) + (V_1 + V_2)}\) | \(\frac{S}{V_1 + V_2}\) | \(\frac{(C_1 + C_2)}{(V_1 + V_2)}\) | Rate of Exploitation |
| Malawi     | 57% (1)        | 628% (1)                                | 1010% (6)                                | 0.62 (1)             |
| Mozambique | 57% (2)        | 321% (2)                                | 468% (5)                                 | 0.69 (2)             |
| South Africa | -4% (6)     | -12% (6)                                | 232% (1)                                 | -0.05 (6)            |
| Swaziland  | 10% (4)        | 40% (4)                                 | 310% (3)                                 | 0.13 (4)             |
| Tanzania   | 11% (3)        | 45% (3)                                 | 314% (4)                                 | 0.14 (3)             |
| Zambia     | -1% (5)        | -5% (5)                                 | 294% (2)                                 | -0.02 (5)            |