📑Report + summary

1.

https://1drv.ms/b/s!Atj-rRuJ8WSEgzethveWG5tvDBEB?e=aIgoF2

2.

https://1drv.ms/b/s!Atj-rRuJ8WSEgzjxL-I7vIEdqJjF?e=9iW49A

3.

https://1drv.ms/b/s!Atj-rRuJ8WSEgzqX1XTZvWYqKqDK?e=sYfsOj

4.

https://1drv.ms/b/s!Atj-rRuJ8WSEgzlEA4tHeEoTqCx8?e=bhNHNC

5.

https://1drv.ms/b/s!Atj-rRuJ8WSEgzuxft_s0q-ceWc8?e=8bt3Ny

6

https://1drv.ms/b/s!Atj-rRuJ8WSEg1H5OtBpsZGvpr0V?e=c4Pe0K

https://github.com/hauzarn/Eskom-and-Inflation.git

Summary of findings so far:

So the country's GDP is mainly estimated using production or structural earnings/work, meaning the estimates are based on how much the country produced in a selected period(1). Production does not always equate to electricity use but most of the large cooperates in the secondary sector such as those in manufacturing, electricity, gas and water rely heavily on electricity. So they feel the pinch of the punch more compared to other sectors(2). Another factor that is of concern is that it doesn't seem like load-shedding will end soon. This is because due to poor maintenance of power stations, there are repairs, maintenance, and capital investment projects that are to take place in the second half of 2023 which are estimated to last for 12-18 months. All these will require about over 8000 MV and 7000 MV in 2023 and 2024 respectively, that is an equivalent of stage 8 and 7 which is about 12 times without power in a period of four days(1).

To add fuel to the fire, in the next five years we are expected to see about 7 seven power stations being shut down due to the Minimum Emissions Standards(MES) which can come up to a reduction of 5 288 MV in the grid(1). There are recommendations to convert these old power stations into renewable energy stations. There is also a conversation to allow private sector to come into the play. There has also been an increase of submissions from self-generation entities which accumulates to 2 600 MV(1).

In 2019 it was estimated that there is a loss of R773 Million per day of stage 4 load shedding and R386 Million per day of stage 2 load shedding excluding the curtailment agreement with certain sectors. Which the private sector can assist to alleviate if the additional 2 600 MV comes into play. This can decrease the loss by approximately R415 Million, this is determined by considering that 2,6k MV equates to stage 3 load-shedding which R415 Million is lost a day on it.

Now coming to consumer inflation side of things, it without a doubt that load-shedding has played a role. Particularly in the poultry sector, we have seen a significant negative effect of load-shedding as continuous energy is required in these factories. Inflation has increased to 5.9% in October which saw food increase by 8.7% and this can be assumed to hit consumers hard. However, cereals and bread inflation decreased to 8.8% from 9.2%(5). Eggs have spiked to 24% increase in inflation due to avian flu. However, there is another pandemic happening in retails called ‘rocket and feather’(6) whereby prices increase at instant in the event of inflation but take longer to go down. A Business Tech article explained that South Africa retails have seen an increase of revenue due to increased priced but not volume of customers. This is despite a decrease in staples inflation such as bread, cooking oil, and maize meal. The Essential Food Monitoring Report showed that retailers have been very reluctant to reduce prices despite the decrease in inflation even after the manufactures and produces, excluding poultry expressed that they have been getting substantial revenue despite the lowered prices.

So, how exactly does load-shedding affect food prices, excluding the rocket and feather phenomenon, if it does?

So I did some analysis and this is what I found:

Load-shedding started 2007(5) and 16 years later we still have the same problem. However, there is only data from 2019 from the Eskom website I could analyse. It seems there is a correlation between the frequency of load shedding and an increase in CPI. But, their mutuality I did not test.

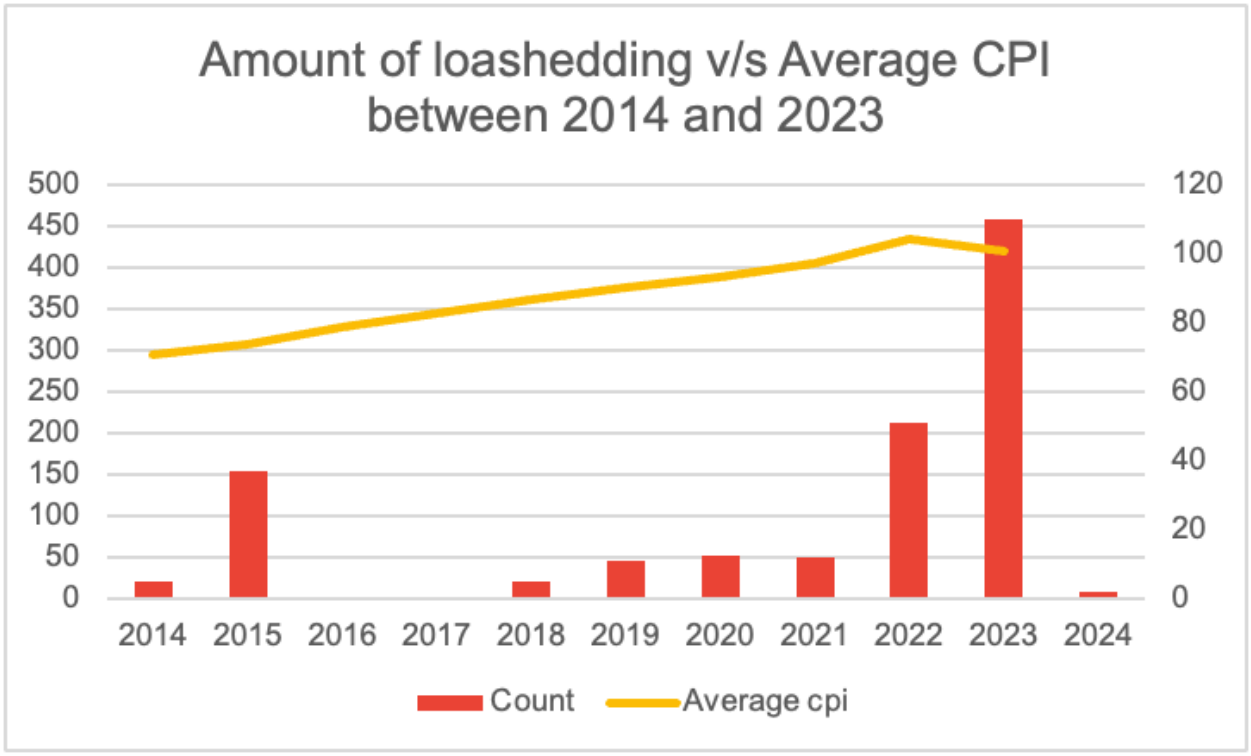

Figure 1. Shows that inflation was still increasing in 2016 and 2017 even though there was no load shedding. On the right axis is the is CPI index average and the left axis shows the amount(number of times) load shedding occurred in each year. We can also see that in 2022 cpi peaked, and this was the same year Russia invaded Ukraine. 2023 recorded the highest number of load shedding occurred, 459 times.

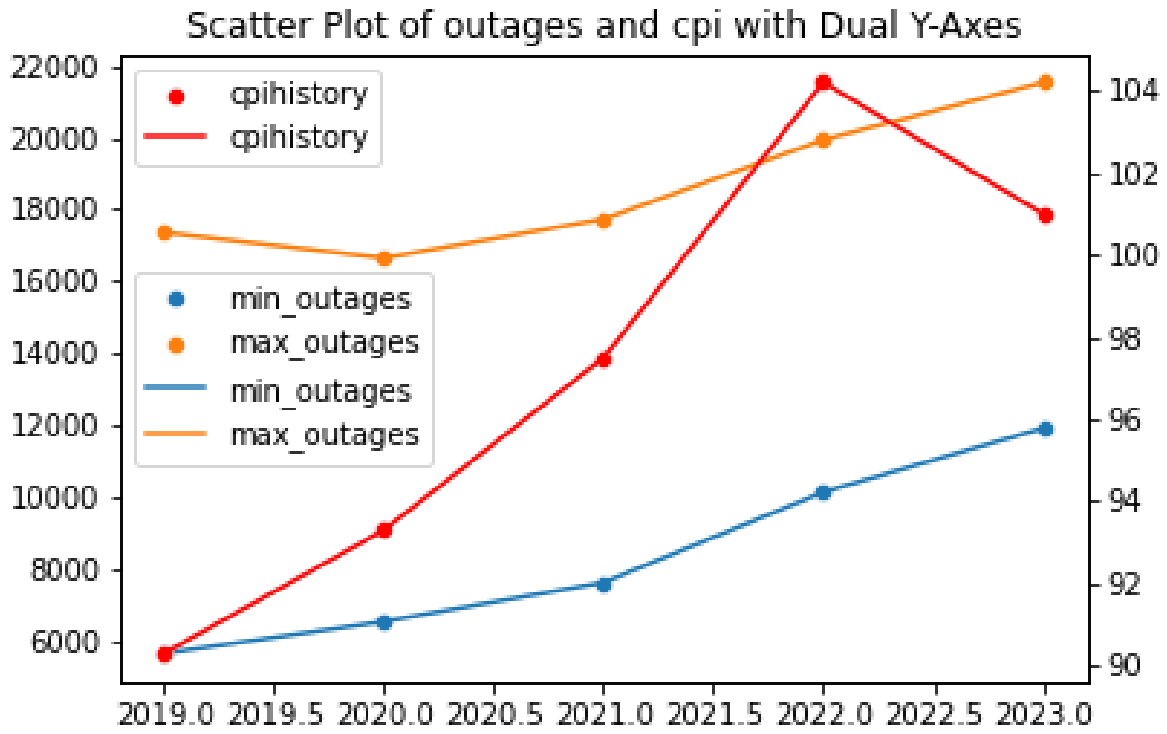

Figure 2. The right axis shows the CPI average index and the left axis average min and max UCLF+OCLF between 2019 and 2023(Nov). From the data we can see that the UCLF+OCLF has been constantly increasing, we are still waiting to see what the December 2023 CPI looks to determine if the CPI is also increasing or decreasing

So far, both seem to be increasing, but is this relationship mutual?

Then I checked the coefficient variance and did a t-test with python and this is what I found:

```
Correlation Coefficient: 0.5317264781112211
T-Statistic: -3.942273459543591
P-Value: 0.0033942377776697563
```

So we can see that from the T test that there is a difference between the means of average CPI and number of occurrences of load shedding. Meaning there is indeed a significant difference between the two datasets. The hypothesis test was set to the standard 0.05, which tested if there is no significant difference between two datasets ,

which was rejected. I also calculated the correlation coefficient to see if the data is correlates. There is moderate correlation, but it does not explain causal of correlation.

So from what I can see is that load shedding does definitely have an impact on CPI, however, it is moderate. But, it is worth noting that there are a number factors that impact CPI that were not considered in this analysis.