

ELECTRICITY SHORTAGES  
AND THE SOUTH AFRICAN  
ECONOMY: REFLECTIONS  
BASED ON AN ECONOMY  
WIDE ANALYSIS

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Muldersdrift

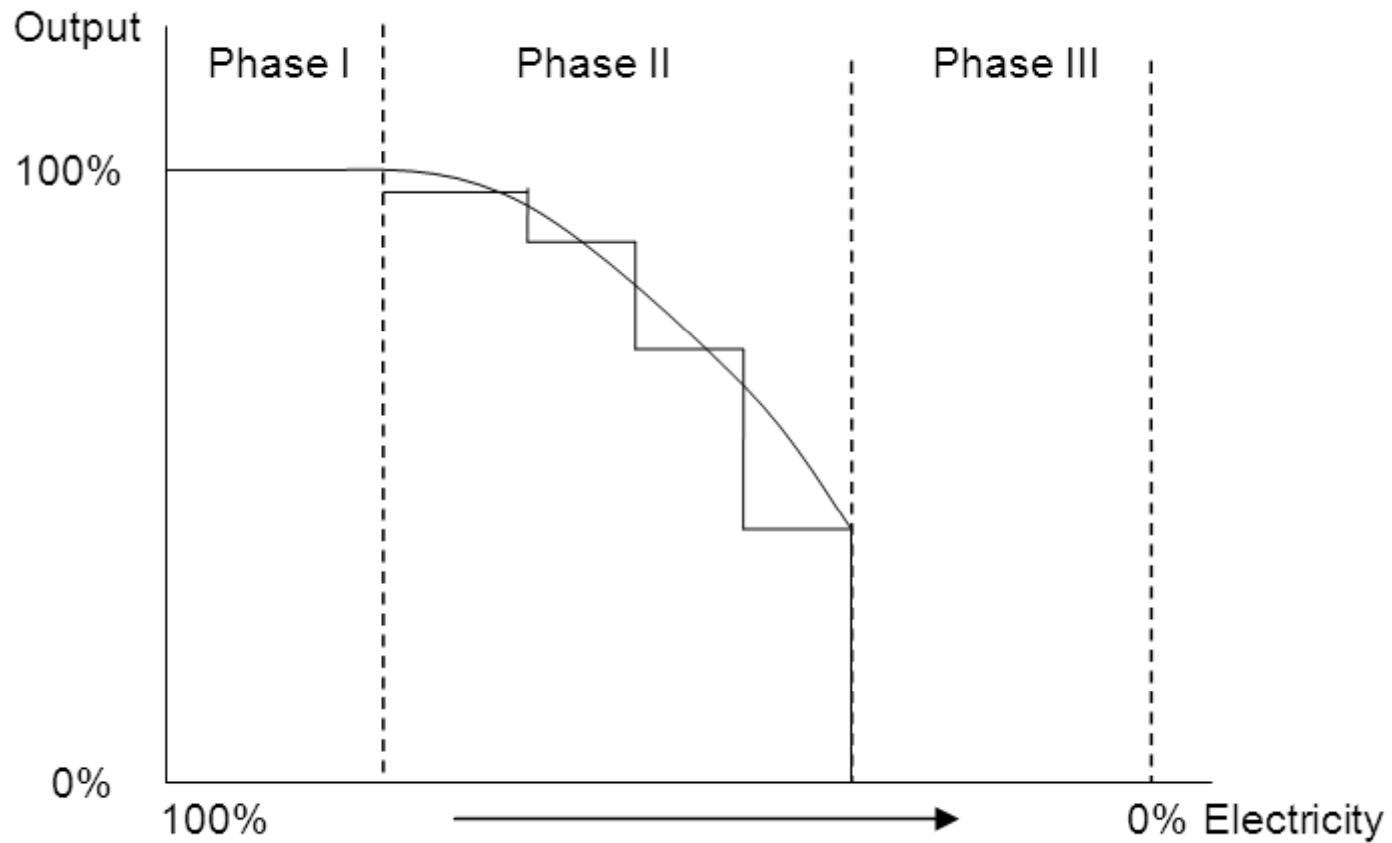
# Overview

- Concerned with two related questions:
  - What is impact of electricity shortage?
  - How should it be managed?
- But work highlights gaps in knowledge
  - Stimulate further research
- Paper highlights results not shortcomings

# Impact of Shortages

- Sector focused analysis → impact necessarily not positive
  - Reaction of sector interests may exaggerate likely impact
- But may be some feed-back/GE effects we need to consider
- These depend on policy response

# Schematic effect of reduced electricity inputs on a sector



# Policy Responses

- Actual immediate response was to ration
- Longer run using price increases
- So paper explores market vs rationing
- Modelling strategy:
  - Cut electricity output by 10%
  - Allow electricity price to restore equilibrium
  - Ration demand from some sectors
  - Price

# Modelling strategy

- Cut electricity output by 10%
- 'Market solution' → electricity price clears electricity market
- 'Rationing' → force some sectors to cut demand for electricity
  - Insufficient to clear market so price still rises
- Target different sectors
  - 'Mining and smelters' → Gold mining, other mining and non ferrous metals;
  - 'Commercial' → financial services, real estate, business services and other services excluding health
- Report two different rationing schemes
  - A: Uniform 10% cut across all rationed sectors
  - B: Release same aggregate electricity from rationed sectors

# Selected Results

		Market Solution	Rationing Solutions			
			Mining and smelters		Commercial	
		1	2A	2B	3A	3B
	Cut		10.0%	4.3%	10.0%	15.7%
1	Electricity price increase	71.3%	53.8%	65.0%	37.0%	13.9%
2	Impact on GDP	-0.9%	-1.6%	-1.1%	-5.9%	-10.1%
3	Employment	-1.4%	-1.9%	-1.5%	-7.9%	-13.9%
4	Household income	-1.2%	-0.5%	-0.9%	-6.8%	-11.5%
5	Impact on CPI	2.5%	1.86%	2.25%	1.28%	0.48%

# Summary Result

- Rise in electricity price can be mitigated by rationing
  - Rationing 'Commercial' reduces price increase most
- But at a cost in terms of foregone output, employment and income

# What drives results?

- Why bigger output declines under rationing than market?
  - Reduced electricity input to a sector causes output to fall
  - Sector can raise price - offsetting contractionary effect of electricity cut
  - Under rationing big cuts forced on small number of sectors
  - Under market - many sectors make small cuts in use
- Why effects bigger in 'commercial' than 'mining'
  - Mainly inter-industry linkages
  - Commercial more connected than Mining
  - Therefore more knock on effects

# Conclusion

- Better to use price adjustment than rationing!!!
- But paper cautions that we need more research and data to make result robust