

# Niger's' 2005 food crisis: theory, extent, causes, impact

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# What is a famine ?

It is a violent shock to the demand, supply or availability of food, leading to

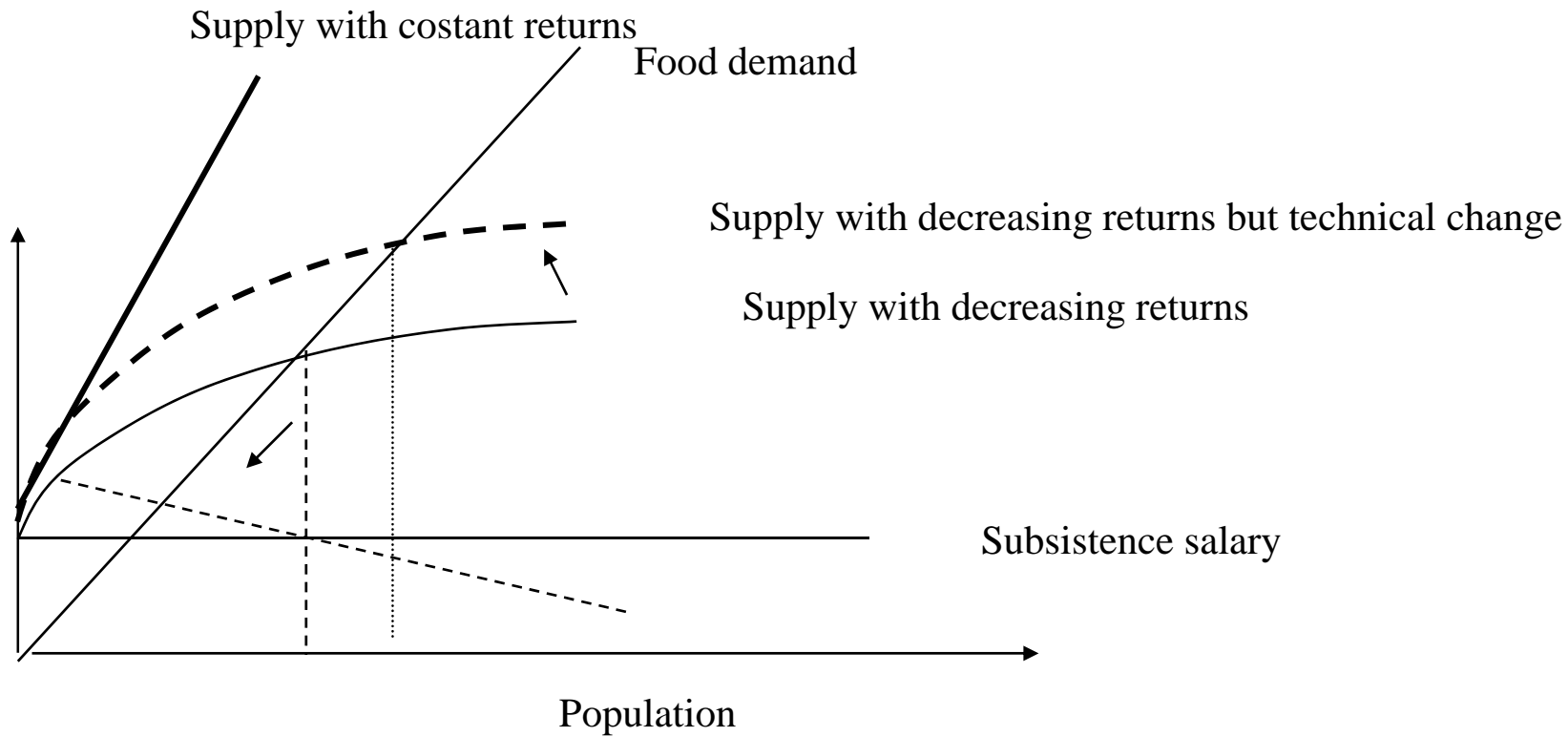
- a severe food scarcity for some (but not all)
- distress migration of destitutes to seek livelihoods towards big centers, refugee camps, ospices and feeding centers -facilitating in this way the spread of infectious diseases (tifus, cholera)
- increase in mortality of 80-100 % in only few months due to the joint impact of hunger and infectious diseases due to population movements, and collapse of health and hygiene services.
- Such mortality rises generally return to pre-famine values in a short time (1-3 years). The crisis is acute but short.

# Theory: famine models

- MA Malthusian approach (rapid pop. growth)
- FAD food availability decline (decline in supply)
- EF Sen's entitlement failure (drop in demand)
- MF Market Failure (market forces function poorly)
- FID Food Intervention Decline (by Govmnts – Donors)
- CHE Complex Humanitarian Emergencies

# Malthusian model

- Population growth raises the demand for food
- This is satisfied by cultivating new land and increasing intensity of cultivation of old land
- This reduces marginal productivity of land & labour – Ricardo's law
- Sooner or later, av. labour productivity falls below subsistence wage
- New equilibrium is re-established by famines and disease, mass migration, lower nuptiality and fertility, that reduce population stock
- But Malthus-Ricardo analyzed the English agriculture before the agricultural revolution (XVIII cent.) They ignored the effects
  - Non-famine driven migrations – and the demographic transition
  - Agricultural and industrial revolution raised land productivity by 1%/y for 70 years
  - Land productivity at the (geographical) frontier may not be less fertile even if distant
- Famine is not a population leveler (see China 1958-62 famine)



## The Malthusian Model

## A diversion: Malthus and the microeconomics of fertility decision (case of children as ‘investment goods’ )

\* Definition of problem:

‘n’ (= number of children desired by parents) depends on:

- U5MR. High U5MR → reduces probability child reaches adult age to help parents  
(in high fertility countries (TFR= 7-8) → U5MR = 20-30%)

- risk child will be poor in adulthood and unable to support the parents

- risk that child migrates and remits only small or no amounts of money (small remittances → high fertility)

-  $p > 0$  is overall probability that child: (i) survives, (ii) will not be poor, (iii) does not migrate, (iv) takes care of parents

- ‘q’ ( $> 0$ ) is acceptable probability level (50% ?) that old parents will be helped by their children

\* problem solution: the number of children generated ‘n’ will be set at a level such to satisfy the following relation:

$$1 - (1 - p)^n > q \quad (1-p) \text{ is prob. that each child } \underline{\text{does not take care}} \text{ of parents}$$

\* policy:

- if ‘p’ increases (fall in U5MR, low migration, income rises, social norms), given ‘q’, → n diminishes

- if ‘q’ falls (development of social security), given ‘p’, n falls

- consistency individual and collective choices:

- information asymmetries (about effects of a fall on U5MR – that should influence p)

- externalities (optimal private choices (high ‘n’ may be sub-optimal for collective)

# FAD - Food Availability Decline (climatological theories)

- sudden contraction in food supply due to natural disasters
  - Most common in 'famine belts' (e.g. Horn of Africa)
  - Drought, floods, pest infestation - climate change?
- Food supply drops  $\Rightarrow$  prices rise  $\Rightarrow$  caloric consumption falls  $\Rightarrow$  + deaths due to starvation-infectious diseases
- Model fits Great Irish Famine, Ethiopian Kifun, French subsistence crises of XVIII cent. (output, prices, mortality)
- Response ? Raise food availability (output and imports) and sanitary interventions
- Does not deny free food distribution to poor but focuses mainly on increasing food supply

## FAD Food demand, supply and deficit in N.Korea, 1989 -1995

	1989	1990	1991	1992	1993	1994	1995
Food demand	6000	6200	6400	6500	6580	6670	6720
Feeding	4219	4359	4500	4570	4627	4690	4725
Other uses	1781	1841	1900	1930	1953	1980	1995
Food supply	5901	6343	6081	5347	5358	4484	5018
Domestic Output	5210	5482	4812	4427	4268	3884	4125
Net Imports	691	861	1269	920	1090	600	893
Deficit - surplus	-99	-143	-319	-1153	-1222	-2186	-1702

# EF - Entitlements Failure

- EF criticizes FAD as incomplete + misleading from perspective of famine response
- famines can occur without a substantial decline – or even with an increase – in food output
- Even considerable drops in food output have not entailed an increase in malnutrition or death
- In these cases a further increase in output would not improve the situation.

## EF Drought and mortality in Africa

Country	Decline in food production 79/81-83/4	Decline in agricultural production 79/81-83/4	Growth rate of agricult. output p/c 70-84	Change in mortality	Change in nutritional status
Cape Vert	38.5	n.a.	n.A	Drop	Improve ment
Zimbabwe	37.5	18.5	-1.4	Drop	Worsening
Botswana	17.0	16.5	-3.8	Stable	Stable
Kenya	13.5	7.5	-1.3	Stable	Worsening
Ethiopia	12.5	12.5	-0.6	Strong Rise	Strong Rise
Sudan	11.0	7.0	-0.5	Strong Rise	Strong Rise

# EF approach

- Each person controls a **bundle of entitlements**
  - assets endowment (land  $\rightarrow$  food) , - goods to exchange for food (e.g. labor)
  - income transfers (e.g. from the state)
- **(i) One endowment (labor)**. Person  $j$  produces quantity  $q_j$  of good 'j' that has a price  $p_j$  , while food price is  $p_f$ . The amount of food  $q_f$  s/he can get is

$$q_f = q_j p_j / p_f = q_j a_j \text{ (where } a_j = p_j / p_f \text{ (exchange rate between j-f))}$$

$$q_f > q_f^* \text{ (survival min.) depends on } q_j \text{ (non food output) , } a_j \text{ (exchange rate)}$$

- **(ii) Two endowments (land and labor)**

$$q_f = q_f' + q_j a_j$$

$$q_f > q_f^* \text{ depends on } q_f' \text{ (food produced) , } q_j \text{ (non food output) , } a_j \text{ (exchange rate)}$$

- $q_f$  falls if
  - $q_f'$  falls,  $q_j$  falls,  $a_j$  falls (due to fall in  $p_j$  or rise in  $p_f$ ). Latter can occur if
  - decline in supply (natural disasters) with constant demand
  - A constant supply, with lower release of food in the market (hoarding by traders)
  - A constant supply, with increase in demand from social groups other than  $j$  due e.g. to an increase in public spending or the discovery of raw materials

# EF: Food availability, price indexes & exchange rates during the Great Bengal Famine

	Index food avail p/c	Food price index	Index wages agric workers	Exch.rate wage/rice	Exch.rate fish/grain	Exch.rate haircut/rice
• 1938-1939	123	. ...	....	....	....	....
• 1939-1940	122	100	100	100	....	....
• 1940-1941	112	109	110	101	100	100
• 1941-1942	115	160	115	72	118	70
• 1942-1943	119	385	125	32	70	30
• 1943-1944	...	385	130	34	....	58

# Main factors in the WBengal crisis

- Huge rise in prices due to
  - Supply side:
    - modest contraction in food supply
    - Hoarding by traders, as bazar bills had low interest rates + expectations of price rises
    - Import controls
  - Demand side: sharp rise in food demand by army
  - Administrative chaos – leading to inaction

# MF

- FAD –EF assume correct functioning of market forces
- Yet, famines take place because of ‘market failures’
- - Inability to use private stocks for consumption smoothing
  - Use of private grain stock as a speculative instrument
  - Imports from world market unable to stabilize prices
  - Asymmetric integration (between small-&-big economies) & asymmetric impact of shocks (Malawi-Zimbabwe)
  - Inefficient domestic markets + poor infrastructure and credit

# FID

- Shocks can happen, but can be offset by govmts & donors.
- ‘averted famines’ in case climate shocks (Zimb in early 1990s)
- Famines may happen as government interventions lack:
  - Correct monitoring of impending crises
  - food security policies by govmts (reduce food/cash security stocks)
  - implement free food/cash/work distribution
  - introduce price controls, controls of food exports
  - Delay the necessary state imports of foods
- Weak anti-famine and food-security policy

# CHE

- Prior models emphasize production and market exchange not expropriation
- This mode of acquisition of food is now key due to rapid rise in CHE (chart)
- Food shortage for many is caused by destruction by militias causing
  - Armed confrontations within a country
  - Food stores are destroyed or appropriated
  - Trade and aid flows are disrupted - Local economies are undermined
  - Government services are interrupted
  - Exodus of refugees and IDP who lose social networks and survival strategies
- Economic incentives of some to continue the conflicts
  - black market economy of food, gasoline,
  - capture of foreign aid,
  - monopolize exports of valuable raw materials (diamond, oil)
- Insecurity, uncertainty, erode economic activity
- Stocks of production factor, solidarity, trust & governance destroyed

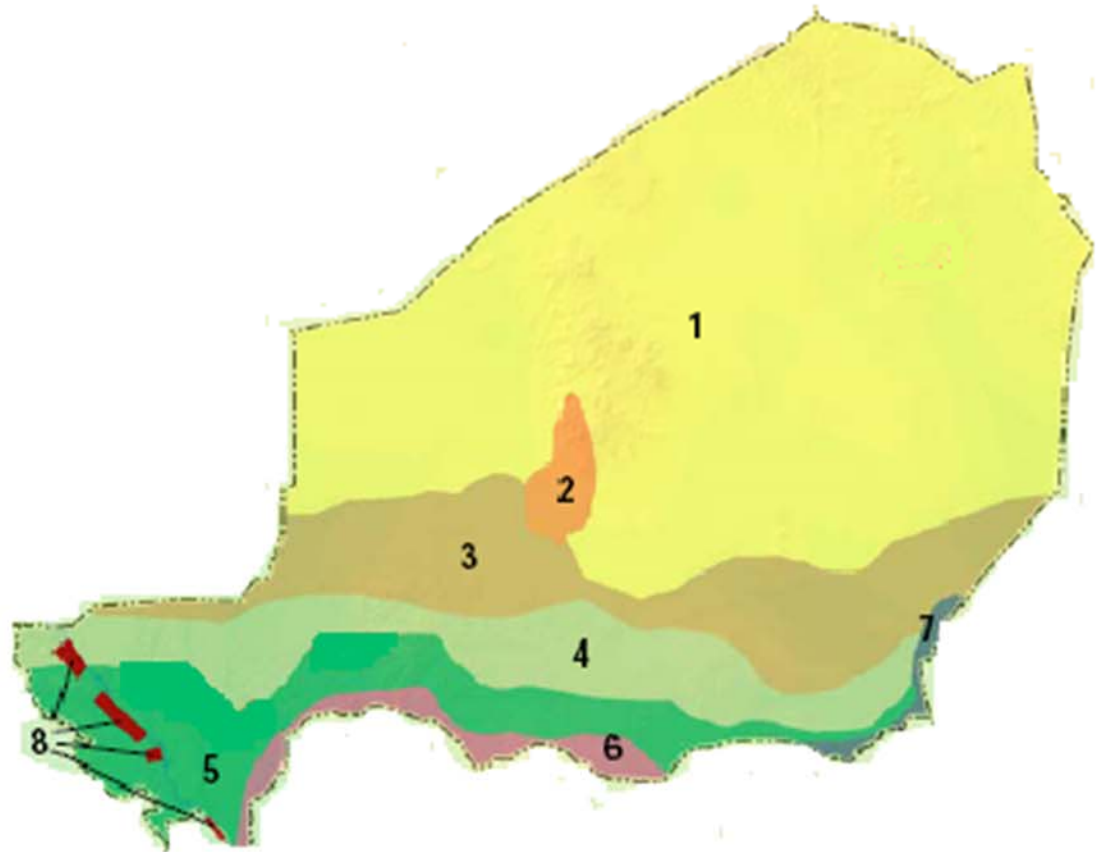
# Niger 2005 food crisis

# A. Niger's features

- 2/3 desert, landlocked, remote → high transport costs
- Closely integrated with 'big' Nigeria → asymmetric shocks
- Limited endowment of production factors (good land, water, h. capital, minerals) → persistent poverty
- Remains undiversified (rainfed agriculture and cattle raising) → limited ability to withstand risk
- Weak public finance → limited ability to respond to shocks
- High population growth (3.1-3.3%) → Malthusian effects ?

# Agricultural zones in Niger

- 1 desert
- 2 Air Mountains cultivation
- 3 Pastoral
- 4 Agropastoral
- 5 Rain-fed agriculture
- 6 irrigated cash-cropping
- 7 Kamadougou - Lake Chad irrigated and flood retreat cultivation
- 8 Niger river irrigated rice



source : FEWS-NET , January 2005

Most people live in area 3, 4 and 5

## B. Long term trends in food availability

Average food availability per capita (FAV/P) depends on

- net production (NFP, i.e. production - post harvest - storage losses & seeds for sowing),
- net food imports ( $\pm$  NFI),
- food aid (FA),
- changes in food stocks of priv. traders ( $\Delta$ FSPr)
- changes in food stocks of government ( $\Delta$ FSPu)
- population (P) level.

$$\text{FAV/P} = (\text{NFP} + \text{NFI} + \text{FA} \pm \text{DFSPr} \pm \text{FSPu})/\text{P}$$

# I.t. trends in output → stable food security

- |            | Farmland/c | Output/c (Kg) | Net dom avail/c | Land yields (Kg/Ha) |
|------------|------------|---------------|-----------------|---------------------|
| • Av '80-4 | 0.7        | 260           | ....            | 375                 |
| • Av.'85-9 | 0.7        | 256           | 218             | 388                 |
| • Av.'90-4 | 0.8        | 259           | 205             | 313                 |
| • Av.'95-9 | 0.7        | 239           | 208             | 322                 |
| • Av'00-4  | 0.7        | 254           | 225             | 372                 |

# But (i) rising output volatility

- expansion of agricultural frontier towards areas of low rainfall and high erosion raise risk of climatic shocks:
  - before 1980s, severe droughts were recorded on average every 10 yrs (permitting farmers to rebuild their assets)
  - over '80-2000 there was a production crisis every 5 yrs
  - over 1998-2004 there were three crises

## (ii) Mounting asset & income inequality

- Output volatility affects l.t. food insecurity of poor as during crises:
  - The poor sell their non-land assets (animals, jewels and household goods)
  - Mortgage/sell their land at distress prices to large farmers/cereal wholesalers
  - borrow (millet) at usury interest rates .
- This leads to rising land/income concentration, and formation of class of medium-large farmers and indebted (quasi) landless labourers
- 88% own the land they till, sharecropping and tenancy are limited (2-3%) but farm size falls & % of people involved in casual agric work is rising
- All this affects net asset position of the poor, raises their debt servicing obligation and erodes their ability to survive future crises
- This is new and worrying in rural areas, as Niger lacks formal insurance mechanisms and safety nets, and community substitutes are few

# 2.growing dependence on food imports

- 1960s: cereal trade balance was positive, imports were safety valve in bad years
- Imports (from Nigeria, Benin, BF, Mali) in 80s-90s & became key to food security
  - they account for only 5 percent of total consumption (85% is self-consumed),
  - But for 1/3 of the food marketed, thus influencing a lot domestic prices
  - and cover 50-60% of the cereal deficit (the rest is food aid)
- Increased dependence on imports from neighbours exposes Niger to risks of:
  - co-variant shocks, hampering use of regional imports to cover shortfall and cap prices.
  - importing food from distant places at high transport costs (up to 50 % of final price)
  - 'price-contagion' from Sahel countries. Niger is smallest, poorest, most remote Sahel country. Its integration is in a condition of weakness.
- Nigeria has a market 30 times bigger. Because of their close integration, changes in her domestic prices affect purchasing power of Niger's pastoralists/farmers.

# 4. Declining trends in food aid

- Declining trend in food aid
- 30 000 tons of food aid are distributed in normal year through DNP-GCA or NGO's to support
  - cereal banks,
  - 'food for work'
  - 'food for training ' schemes,
  - basic education through school meals,
  - targeted distribution via nutritional centres
  - and subsidized sales.
-

# C. Food demand & food entitlements

Food entitlements depend on:

$$Q_{fh} = Q_{f-sch} + Q_j P_{jh}/P_f + Q_{wh} P_w/P_f + T_h/P_f + |-DA|h/P_f$$

- **food-deficit agro-pastoralists.** self-consumption (4-6 months), then buy food at high prices by selling small animals, remittances, borrowing. Their food entitlements depend on:
  - millet prices (September-October)/millet prices (April-August)
  - millet prices (lean season) / goats-ships
  - millet price (lean season) /local/foreign wage rate
- **cash crop farmers.** Their entitlements to cereals can be approximated by the price ratio 'millet/onions'.

# food demand & food entitlements

- **landless or near landless farm labourers.** Their food entitlements depend on the price ratio 'millet/daily wage'
- **the pastoralists** buy millet selling cattle & small animals. Their food entitlements depend on the price ratios animals/ fodder, and millet/animals
- **problem families** (incomplete, handicapped, women headed). Their food entitlement depends on 'millet prices/returns on small trade, remittances, private transfers
- **urban families.** Their food entitlements depend on the price ratio 'millet (+tax)/ daily wage rate'

# D. Access to basic health services

- malnutrition depends on health status & access to health care.
- PHC centres (CSI) available in 35% of villages. Distance and poor roads are main barrier
- Till mid 1980s, health services were state financed, but with 1983 fiscal crisis hospital user fees were introduced
- Mid 1990s: local cost recovery initiative. 2000 survey of user fees effects in Tillaberi shows drop in PHC attendance by 40 %.
- Consultation fee is 500-1000 FCFA without drugs. Health fees discriminate against the poor.

# The 2005 food and nutrition crisis

## A. Supply side : production

$$FAV/P = (NFP + NFI + FA \pm DFSP_r \pm FSP_u)/P$$

- Domestic net food production (NFP) fell by 11% in relation to 5yrs average
  - Poor rain fall in 2004
  - Locust infestation

$\Delta$ Stocks: some evidence of hoarding

- (Domestic availability improve in Sept – October 2005 due to bumper crops + imports of corn/rice)

# Cereal imports (Oct-June) estimated marketed food & total marketed food

	Average 1999- 00/ 2003-04	2000/ 2001 ( <b>crisis year</b> )	2004/ 2005 ( <b>crisis year</b> )	Sources of decline in total food supply btw 2004/5 and average of prior 5 years (% changes in parenthesis)	Sources of decline in total food supply btw 2004/5 and 2000/2001 (% changes in parenthesis)
Imports of Millet	27884	79190	12016	.....	.....
Imports of Sorghum	5904	16459	695	.....	.....
Imports of Maize	37146	61135	12016	.....	.....
<b>Total Imports</b>	<b>70.934</b>	<b>156784</b>	<b>24728</b>	.....	.....
<u>Hypothesis</u> (marketed output =15%net output)					
Total Imports	70934	156784	24728	-46206 ( <b>55.6</b> )	-132056 ( <b>-190.7</b> )
Marketed Net Prodct.	380760	270900	344250	-36510 (44.4)	73350 (90.7)
Total Marketed Supply	451694	<b>427684</b>	<b>368978</b>	-82707 (100.0)	-58706 (-100.0)

# Net imports

- Net imports fell sharply against 5yrs average due to:
  - Rising demand for feed (poultry) and food processing in Nigeria
  - Rising domestic demand in relation to slowing production
  - Higher prices in Nigeria and real appreciation of Nigerian Naira
  - Export controls o by Nigerian custom police
  - Caps on exports by B.Faso/Mali (affected by drought) despite provisions of UMOA
  - Mali/Benin exports fell due to high prices purchases by others
- Some suggest that exports towards Nigeria rose due to better prices there, but there are no data to prove it

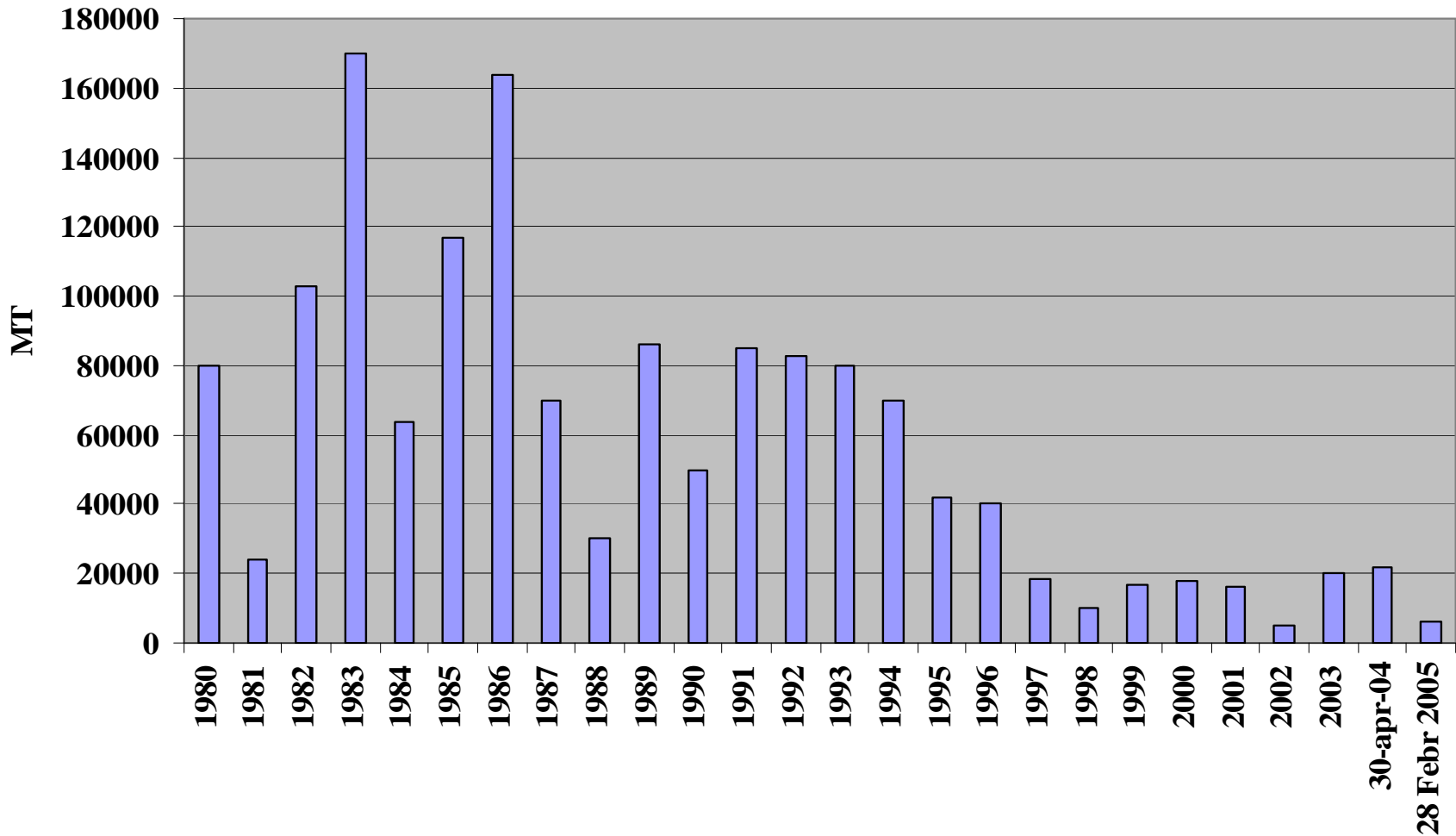
# Food aid

- WFP slow in recognizing the problem - focus on output not overall availability or entitlements
- First appeal ignored by donors
- MSF 1st appeal (Feb-Mar) based on admission to CRENI
- ambivalence by gov./donors about free food distribution
  - subsidized sales preferred. Then:
    - Al-Jazeera + BBC shows children dying in CRENI
    - Large increase in private aid
    - free food distribution (60.000 t) but too late (early August )

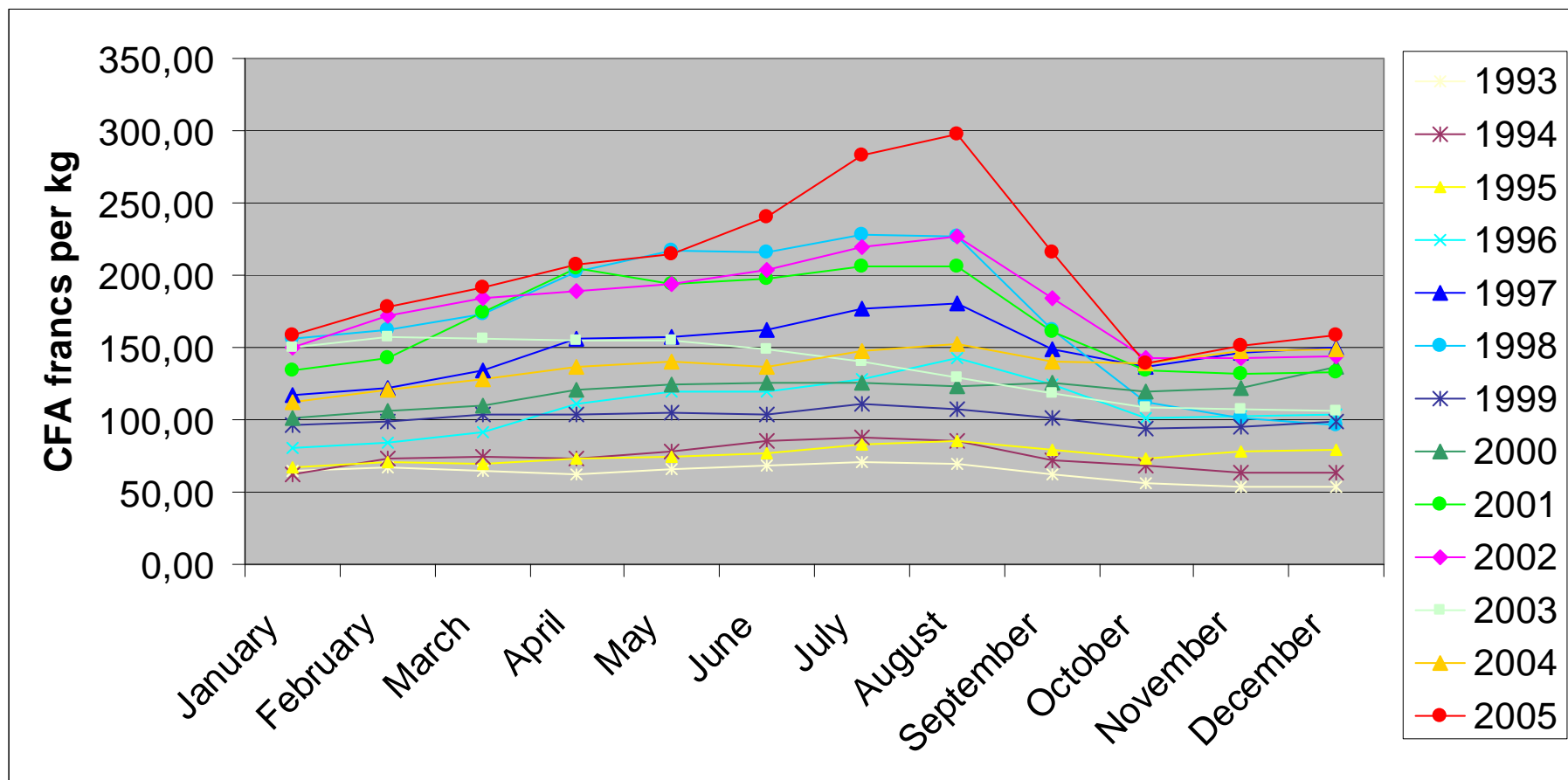
# Release of emergency food reserves

- Gov. cut role OPVN after liberalising agriculture, new philosophy
  - Food security to be ensured by imports
  - Food emergency reserves to be held in cash not kind
- But in 2005 government had minimal resources available
- In January introduces VAT on food and other basic needs
- First survey on child malnutrition shows acute crisis
- Attempt (April'05) to buy food on local market, but no supply available - orders for 30,000 tons not fulfilled
- 10,000 t. of sorghum were bought in India, arrived after 3 months

# 3.Trends in national food security reserves



# Surge and seasonality of millet prices



Why prices rose? Ratio of millet producer prices in small & main collector markets, 2000-4 versus 2004-5

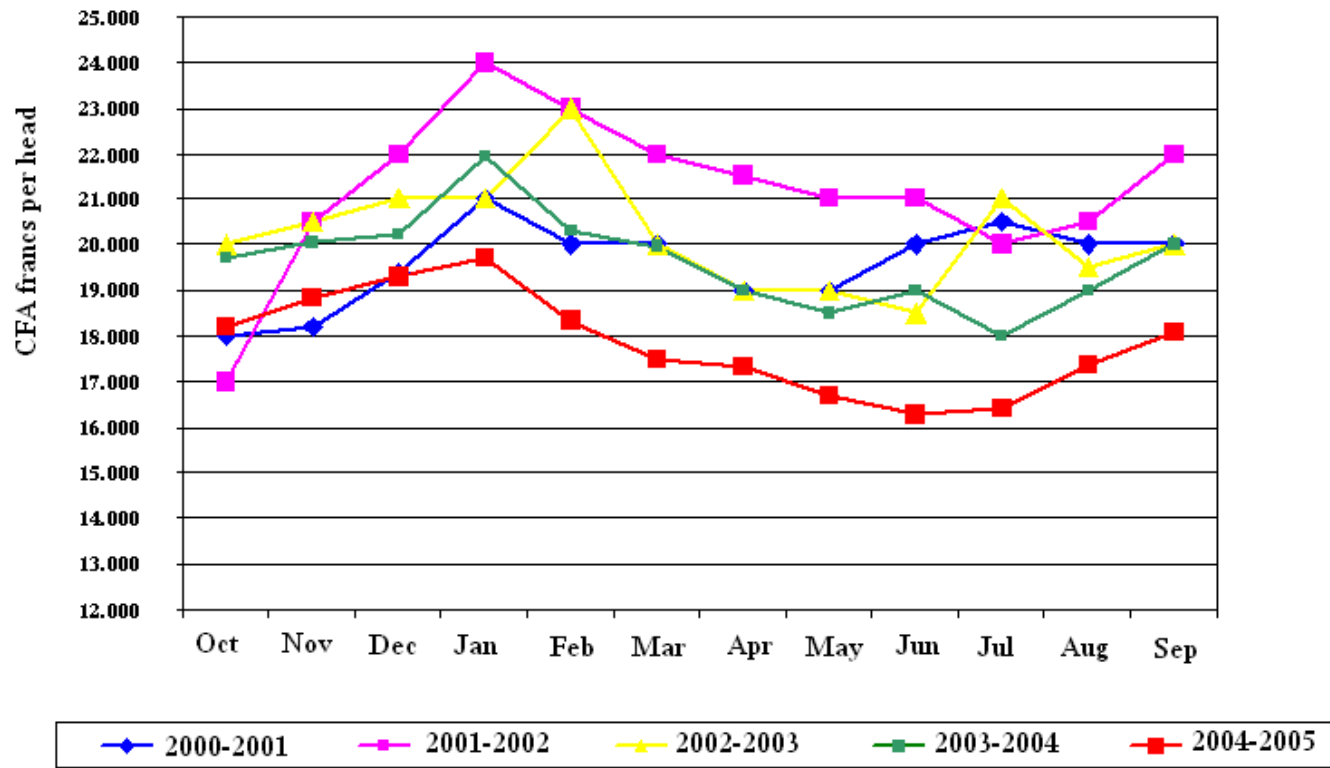
	October		November		December		July		August	
	2000	2004	2000	2004	2000	2004	2000	2004	2000	2004
	- 2004	- 2005	- 2004	- 2005	- 2004	- 2005	- 2004	- 2005	- 2004	- 2005
<b>P Mayahi/P Maradi</b>	0.88	<b>0.81</b>	0.86	<b>0.77</b>	0.92	<b>0.90</b>	1.05	<b>0.96</b>	1.02	....
<b>P Tessaoua/P Maradi</b>	0.88	<b>0.83</b>	0.80	<b>0.78</b>	0.89	<b>0.86</b>	1.06	....	0.98	....
<b>P Tchadaoua/P Maradi</b>	0.91	<b>0.82</b>	0.92	<b>0.78</b>	0.94	<b>0.86</b>	1.02	1.02	0.88	....
<b>P Bakin Birgi /P Zinder *</b>	0.87	<b>0.76</b>	0.94	<b>0.86</b>	0.92	<b>0.91</b>	....	0.97	....	1.18
<b>P Koundoumawa/P Zinder *</b>	0.89	<b>0.79</b>	0.96	<b>0.90</b>	0.94	0.97	....	1.10	....	1.12
<b>P Bouza /P Badaguichiri</b>	1.07	....	1.00	1.03	0.96	0.98	1.05		1.03	<b>0.87</b>
<b>P Kirtachi/P Torodi °</b>	0.69	<b>0.64</b>	0.81	<b>0.52</b>	0.82	<b>0.50</b>	0.91	0.96	....	....
<b>Average Ma radi</b>	0.89	<b>0.82</b>	0.86	<b>0.78</b>	0.92	<b>0.87</b>	1.04	<b>0.99</b>	0.96	....
<b>Average Zinder</b>	0.88	<b>0.77</b>	0.95	<b>0.88</b>	0.93	0.94	....	1.03	....	1.15
<b>Total Average</b>	0.88	<b>0.78</b>	0.90	<b>0.81</b>	0.91	<b>0.85</b>	1.05	<b>0.92</b>	0.98	1.06

# Why prices rose? Differences btw consumer and producer prices of millet in selected locations, 2000-4 and 2004-5

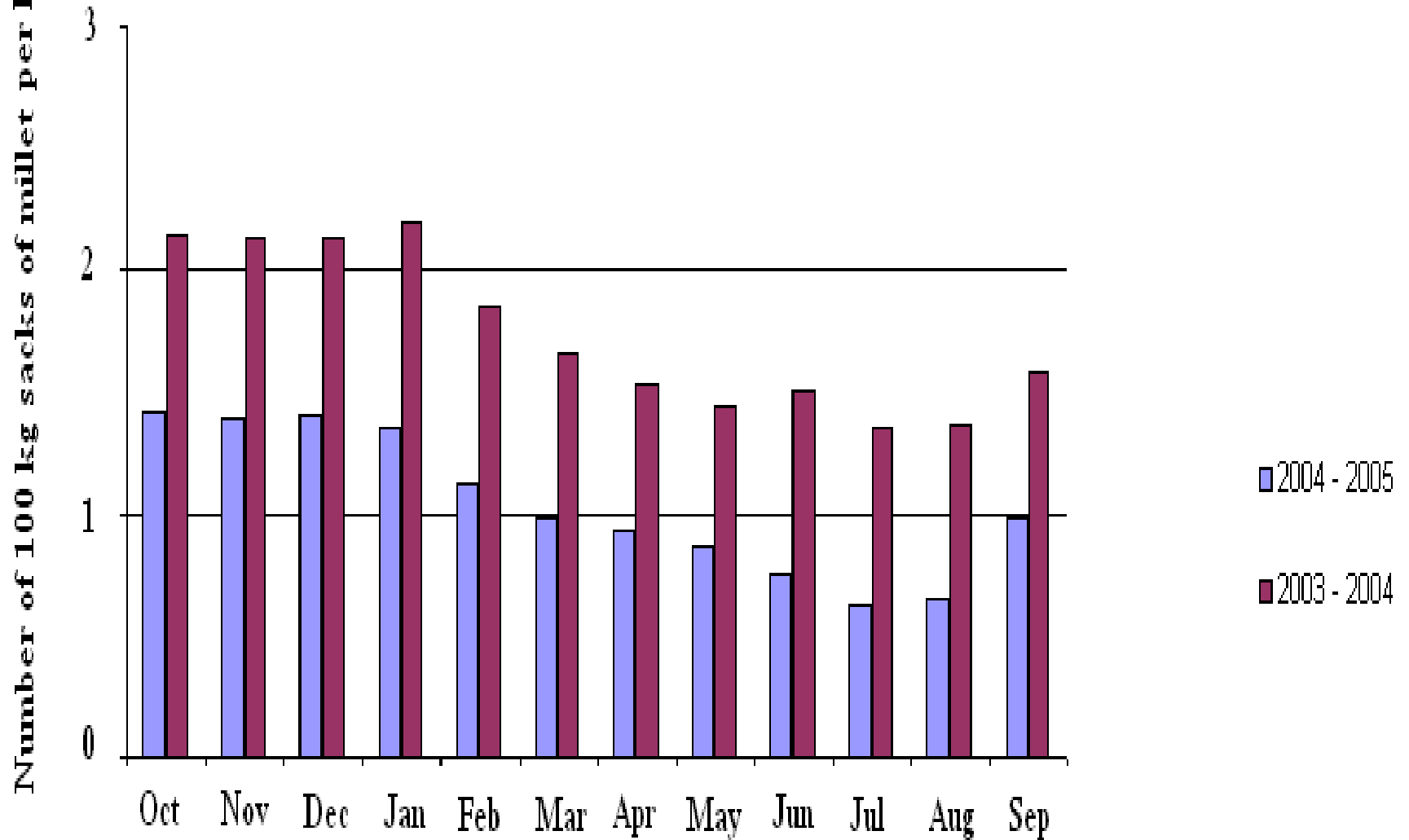
		JAN		JUNE		JULY		AUG		SEPT	
		00-04	05	00-04	05	00-04	05	00-04	05	00-04	05
<b>Maradi</b>	CFA francs	14	17	11	25	21	18	10		12	61
	% of prod.price	12	12	8	<b>12</b>	14	8	7		20	<b>57</b>
<b>Tessaoua</b>	CFA francs	7	5	9	<b>11</b>	10		11	<b>74</b>	11	<b>14</b>
	% of prod.price	7	3	7	5	7		8	<b>41</b>	12	11.1
<b>Tchadaoua</b>	CFA francs	10	11	8	<b>15</b>	13	13	11	<b>24</b>	9	<b>18</b>
	% of prod.price	10	9	6	<b>7</b>	9	5	8	<b>9</b>	10	<b>16</b>
<b>Dungass</b>	CFA francs	10	10	22	-7	20	12	10	<b>74</b>	10	<b>28</b>
	% of prod.price	9	8	14	-3	12	5	7	<b>30</b>	11	<b>20</b>
<b>Torodi</b>	CFA francs	21	<b>36</b>	15		30	<b>180</b>	28	<b>193</b>	11	<b>145</b>
	% of prod.price	21	<b>33</b>	13		22	<b>155</b>	20	<b>166</b>	10	<b>125</b>
<b>TOTAL NIGER</b>	CFA francs	11	<b>13</b>	11	<b>15</b>	14	<b>29</b>	14	<b>39</b>	12	<b>32</b>
	% of prod price	10	10	8	7	10	<b>18</b>	10.8	<b>23</b>	12	<b>27</b>

# Impact. **Agro-pastoralists** suffer fall in price of animals (below), rising millet price & worsening terms of trade

Evolution of female sheep 2000-2005

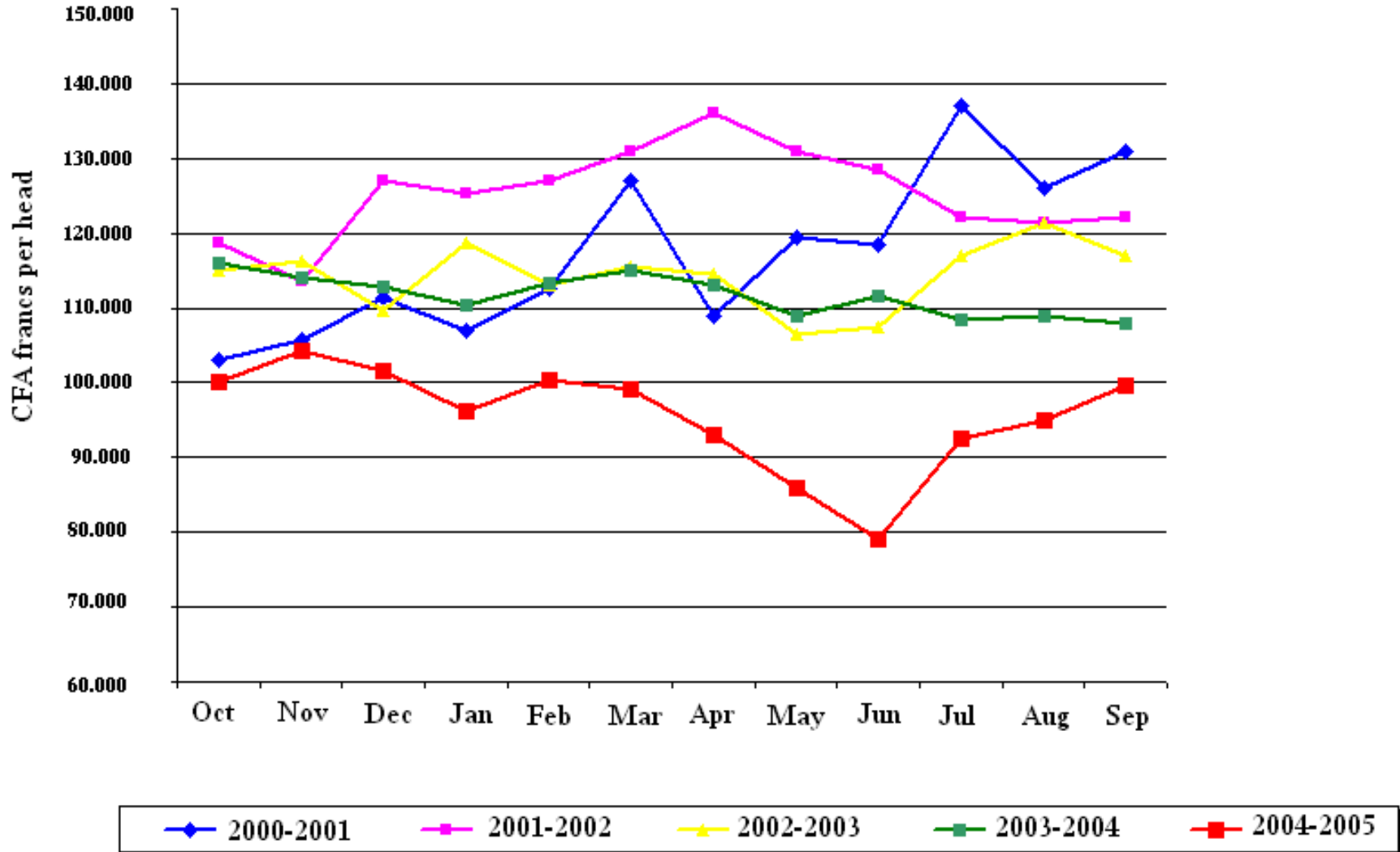


## Terms of trade between female sheep and millet



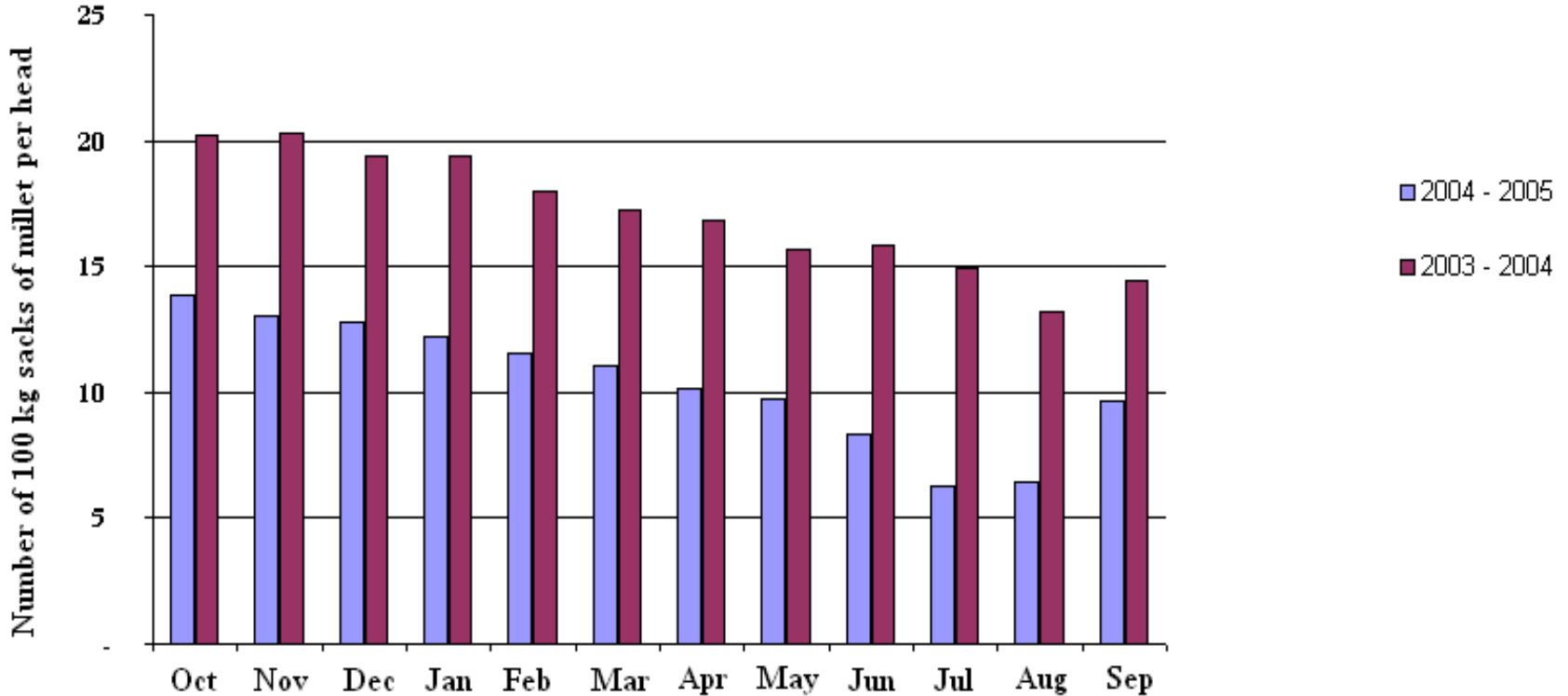
# Northern cattle herders also affected by rising millet prices and falling animal prices

Evolution of cow prices 2000-2005

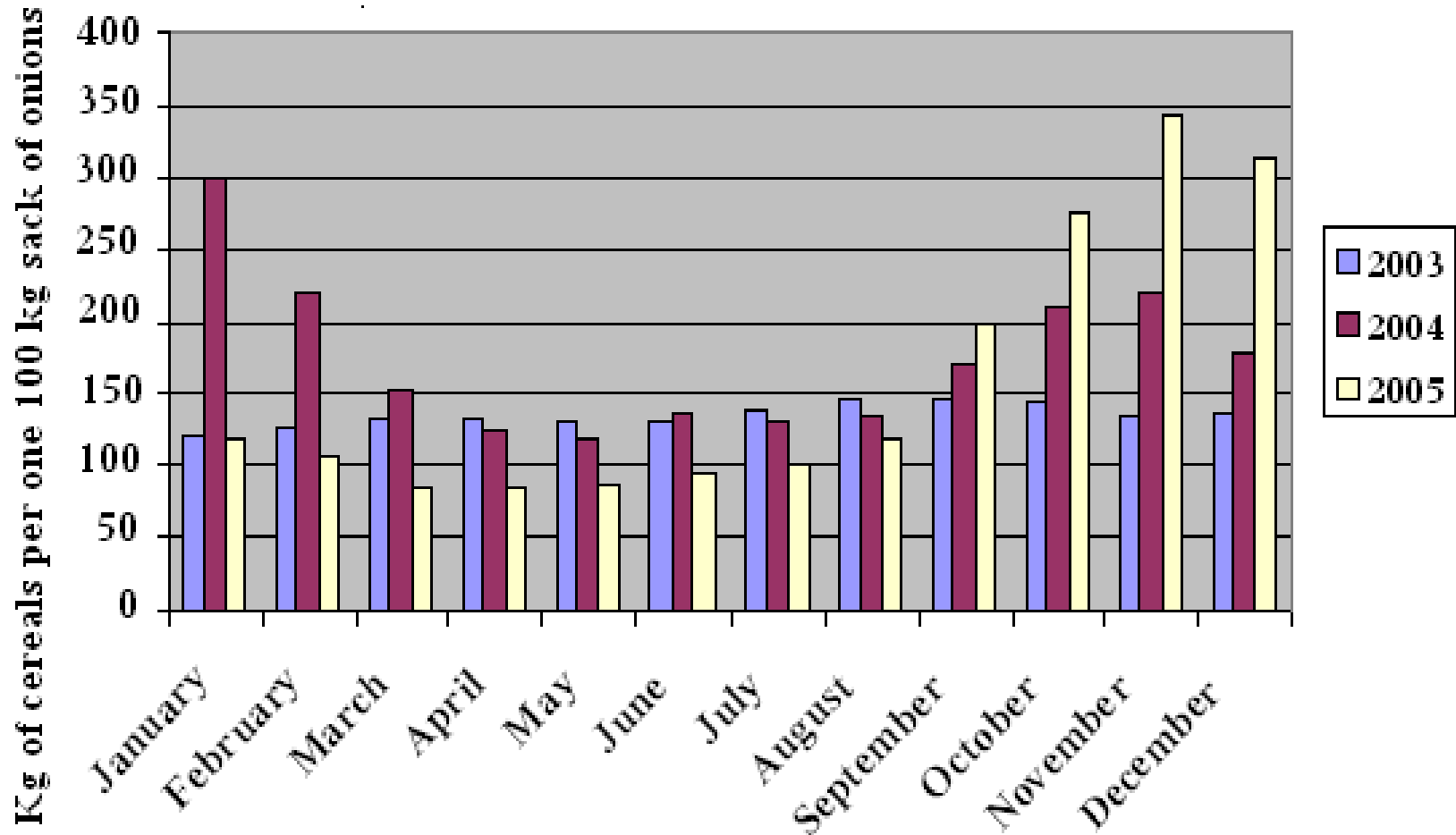


**Northern cattle herders** (who have bigger herds) suffer similar total effect, due also to skyrocketing fodder prices

Terms of trade between bulls and millet



# Onion producers see falling prices, rising millet prices, worsening food entitlements



# Daily farm workers and 'problem families'

- Casual daily workers in agro-pastorale zone (limited data)
  - Faced a fall in days of casual work and (perhaps?) fall in remittances from C d' I & Nigeria (due to local problems)
  - The wage rate fell (from 750-1000 f CFA to 500-750 f cFA) due to falling labor demand
  - Rising prices of millet
- problem families
  - Affected by decline in transfers (charitable and remittances)

# changes in terms of trade for different food entitlements,2003/4-2004/5

	Quintals of millet per female <u>sheep</u>			Quintals of millet per female <u>goat</u>			Quintals of millet per <u>cow</u>			Quintals of millet per100 kg of <u>onions</u>			Quintals of millet per <u>20 days rural wage</u> °		
	2003 /04	2004 /05	% change	2003 /04	2004 /05	% change	2003 /04	2004 /05	% change	2003 /04	2004 /05	% change	2003/ 04	2004/ 05	% change
<b>Oct</b>	2.1	1.4	-33.3	1.5	1.0	-33.3	12.6	7.8	-38.1	3.4	2.1	-37.6	2.45	0.97	-60.3
<b>Nov</b>	2.1	1.4	-33.3	1.4	1.0	-28.6	12.1	7.7	-36.4	3.7	2.2	-40.6	2.39	0.92	-61.5
<b>Dec</b>	2.1	1.4	-33.3	1.5	1.1	-26.7	11.9	7.4	-37.8	3.6	1.8	<b>-50.2</b>	2.37	0.91	-61.5
<b>Jan</b>	2.2	1.4	-36.4	1.5	1.0	-33.3	11.0	6.6	-40.0	3.0	1.2	<b>-59.8</b>	2.25	0.86	-61.7
<b>Feb</b>	1.8	1.1	-38.9	1.4	0.9	-35.7	10.3	6.2	-39.8	2.2	1.1	<b>-51.4</b>	2.05	0.77	-62.4
<b>Mar</b>	1.7	1.0	-41.2	1.2	0.8	-33.3	9.6	5.6	-41.7	1.5	0.9	-43.8	1.88	0.70	-62.4
<b>Apr</b>	1.5	0.9	-40.0	1.2	0.7	-41.7	9.1	5.0	-45.1	1.3	0.9	-31.1	1.81	0.68	-62.7
<b>May</b>	1.4	0.9	-35.7	1.1	0.7	-36.4	8.5	4.5	-47.1	1.2	0.9	-25.2	1.75	0.65	<b>-62.7</b>
<b>Jun</b>	1.5	0.8	<b>-46.7</b>	1.1	0.6	<b>-45.5</b>	8.8	3.7	<b>-58.0</b>	1.4	0.9	-31.0	1.78	0.58	<b>-67.6</b>
<b>Jul</b>	1.3	0.6	<b>-53.8</b>	1.0	0.5	<b>-50.0</b>	8.1	3.5	<b>-56.8</b>	1.3	1.0	-22.5	1.68	0.47	<b>-71.9</b>
<b>Aug</b>	1.4	0.7	<b>-50.0</b>	1.0	0.5	<b>-50.0</b>	7.8	3.6	<b>-53.8</b>	1.3	1.2	-11.1	1.62	0.47	<b>-71.0</b>
<b>Sept</b>	1.6	1.0	-37.5	1.2	1.0	-16.7	8.5	5.4	-36.5	1.7	2.0	17.6	1.78	0.68	-61.6

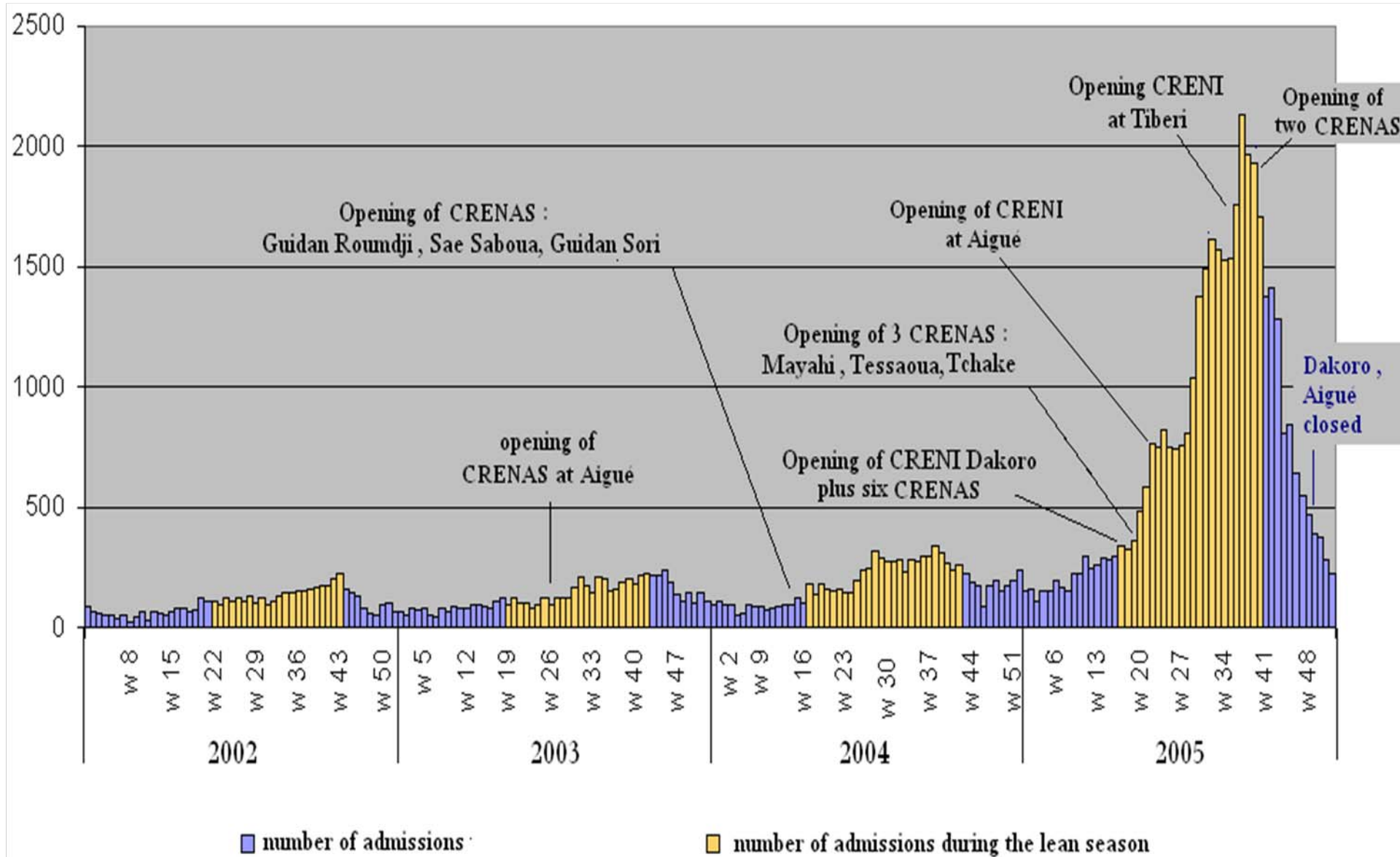
# FID: Measures to control prices

- Price subsidizes not enough, prices kept rising
- Since Sept 2005 food prices fell, cattle prices rose
- But people still affected as they (i) sold their assets, (ii) no production asset (iii) repay debt contracted year's before
- Implicit interest rate paid by poor rose (ratio of the price of millet April/September)

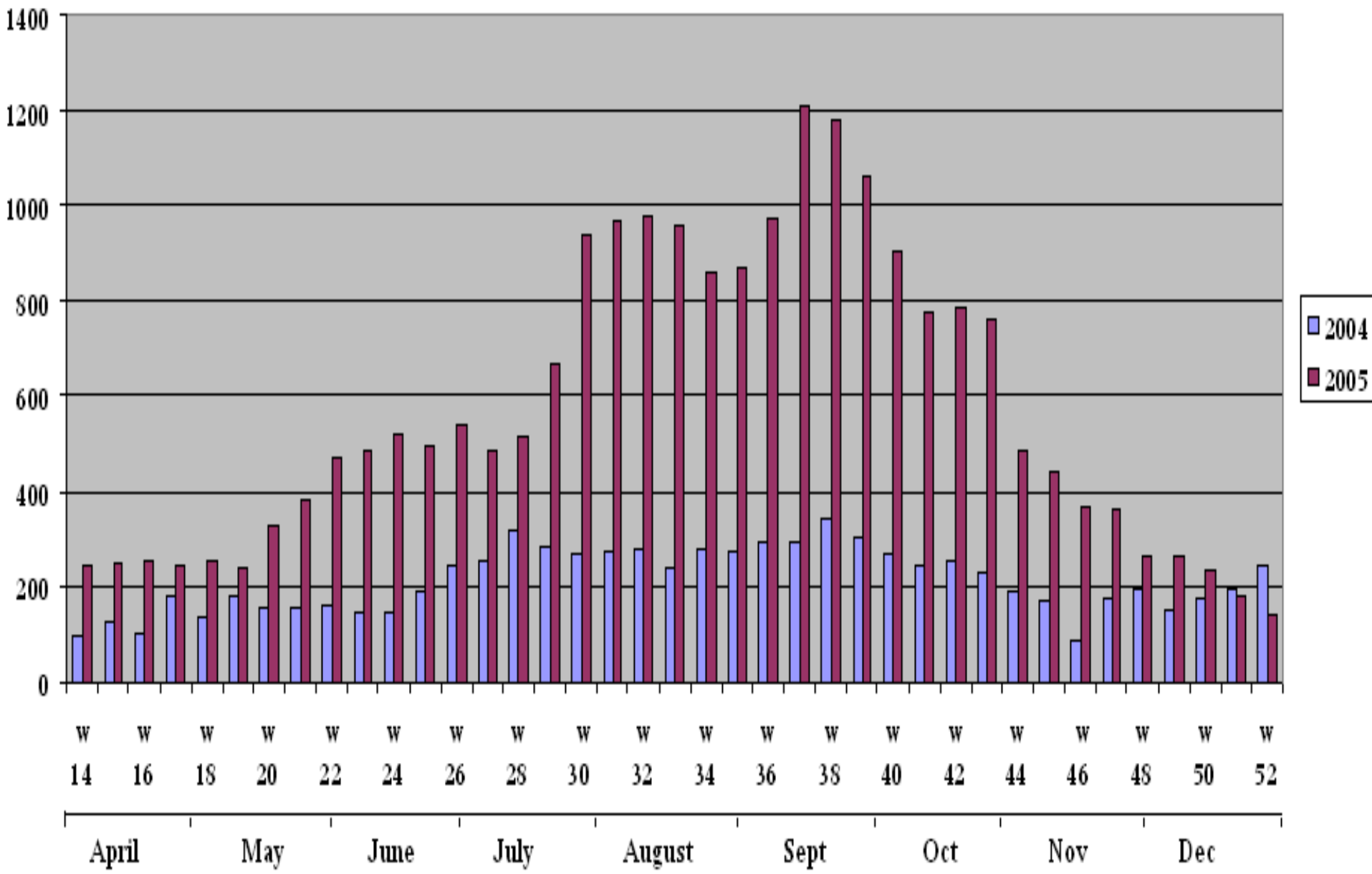
# E. Malnutrition and mortality

- indirect evidence of severe food shortages (eating of non-foods, one meal a day, distress sales, out-migration)
- Sharp rise admission of children at feeding centres
  - N. deaths in feeding centers rises then stabilizes
  - High % of children come from agro-pastoralist, herders and rural workers families
- Rise in IMR-CDR difficult to document due to different type of surveys
- Several surveys under way
- Admission of children to feeding centers

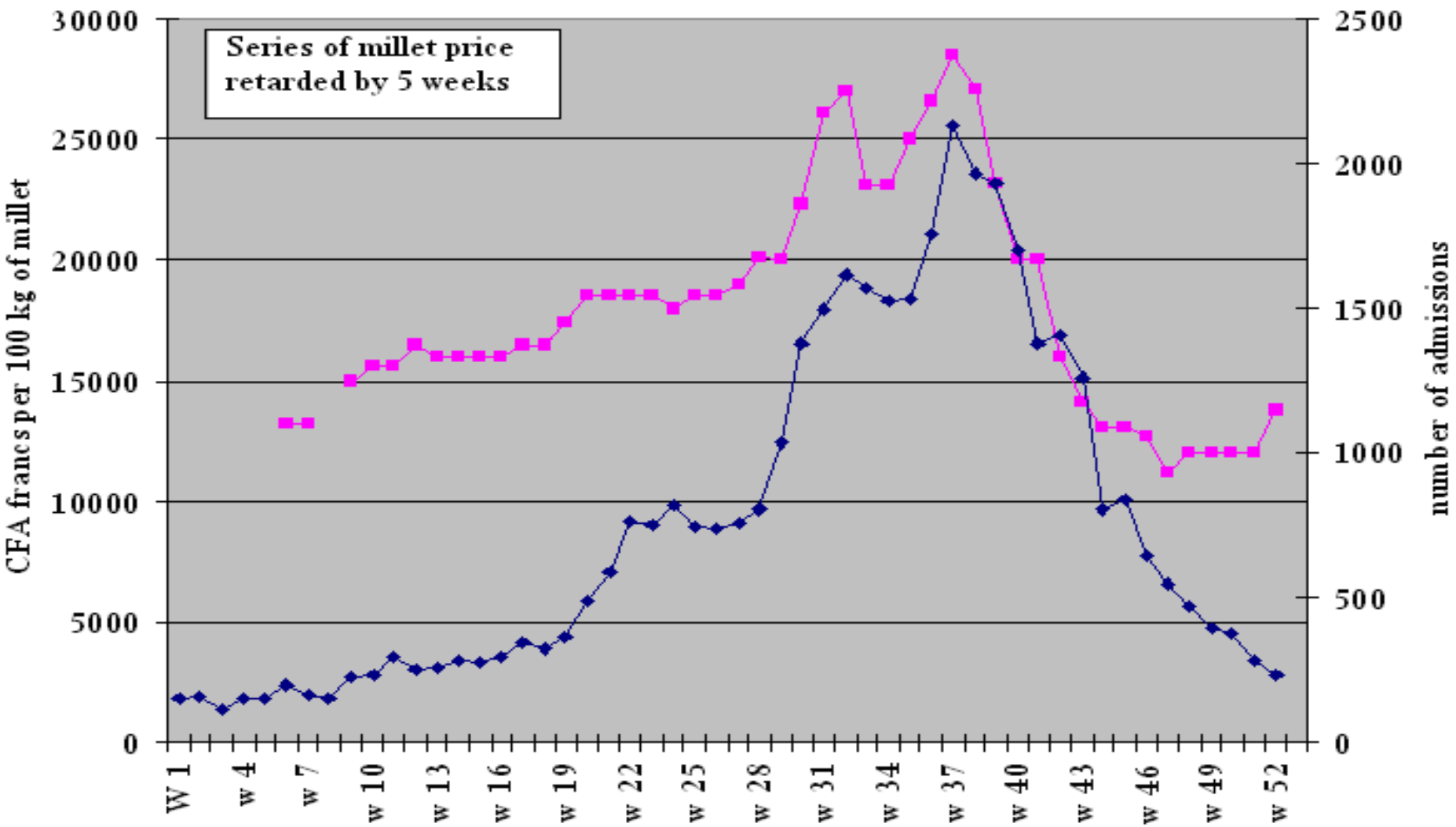
# Weekly admissions at MSF child feeding centers in Maradi, 2002-5



# Admissions at 8 MSF child feeding centers in Maradi 2004-5



# Millet prices & admissions to MSF feeding centers (lagged 5 weeks) in Maradi, 2005



# Regression analysis of child admissions to feeding centers in Maradi2002-5

	<b>Model 1</b> (Log-log)	<b>Model 2</b> (Log-log with time dummies for n.of centers)	<b>Model 3</b> (Log-log with time dummies for n.of centers & interact with log price)	<b>Model 4 <sup>a</sup></b> (Log-log spline)	<b>Model 5</b> (Log-log spline with time dummies for n. of centers)
	Dependent variable: Log child admissions to feeding centres (lagged 5 weeks)				
Constant	-9.95 ***	-5.93 ***	- 3.31*	4.72	6.22
LogPrice	1.60 ***	1.09 ***	0.83***	.....	.....
Dummy 1	.....	0.86 ***	10.09**	.....	0.52 ***
Dummy 2	.....	0.93 ***	- 2.16	.....	0.93 ***
Dummy 3	.....	1.91 ***	- 19.41***	.....	1.66 ***
Dummy 4	.....	1.97 ***	-14.17***	.....	1.99 ***
LogPrice*Dummy1	.....	.....	-1.02**	.....	.....
LogPrice*Dummy2	.....	.....	0.32	.....	.....
LogPrice*Dummy3	.....	.....	2.15***	.....	.....
LogPrice*Dummy4	.....	.....	1.69***	.....	.....
LogPrice (price range 1)	.....	.....	.....	.018	-0.20
LogPrice (price range 2)	.....	.....	.....	1.38***	1.17 ***
LogPrice (price range 3)	.....	.....	.....	5.45***	2.83 ***
R2	0.266	0.811	0.842	0.399	0.831
F statistics	76.18	178.37***	117.28***	45.25***	147.12 ***
Numb. of obs	208	208	208	208	208

# Estimated number of children admitted to nutritional centres due to the rise in millet prices

	2005 Millet Price	2002-2004 Average Price	2005 Effective number of admissions	Estimated number of admissions <u>based on</u> <u>Model 2</u> assuming	Estimated child admissions due to price rises (absolute number, and % of total admissions)	Estimated number of admissions <u>based on</u> <u>Model 3</u>	Estimated child admissions due to price rises (absolute number, and % of total admissions)
	(a)	(b)	(c)	(d)	(e) = (c)-(d)	(f)	(g) = (f)-(d)
February-March	14725	11402	1776	562	1214 (70%)	1560	216 (12%)
April-May	16738	13073	2957	653	2304 (78%)	1868	1089 (37%)
<b>June-July</b>	<b>19222</b>	<b>13348</b>	<b>7814</b>	<b>751</b>	<b>7063 (90%)</b>	<b>2188</b>	<b>5626 (42%)</b>
<b>August- September</b>	<b>25511</b>	<b>13970</b>	<b>15517</b>	<b>789</b>	<b>14728 (95%)</b>	<b>2516</b>	<b>13001 (84%)</b>
<b>October- November</b>	<b>14644,44</b>	<b>10224</b>	<b>9061</b>	<b>562</b>	<b>8499 (94%)</b>	<b>2990</b>	<b>6071 (67%)</b>
<b>December</b>	12525	10229,25	1285	250	1035 (80%)	1307	-22 (..)
<b>Total number of children admitted during the whole 2005</b>			38410	3566	<b>34844 (91%)</b>	12428	<b>25982 (67%)</b>

# Interpretation of the crisis

# Seven views on 2005 food crisis

- (i) There was no crisis (dominant in government circles) But:
  - 2005 behaviour trends of food prices
  - erosion of food entitlements
  - rise in admissions to feeding centers
  - peaks in survey-based malnutrition among children
  - evidence of growing migration, casual work, begging, eating wild food
- 
- (ii) A Malthusian crisis'. But
  - no evidence of significant change in food production/c land yields over last 20 yrs
  - high population growth aggravated the impact of crisis but was not its main cause

# Seven views on 2005 food crisis

- (iii) A Food Availability Decline (FAD) crisis. But
  - Output fell 11%, less than 2000/1 when no rise in mortality malnutrition
  - sizeable decline in food imports that dropped to 16 percent of 2001 value,
  - even if account is taken of fall in imports, FAD does not capture effect of hoarding, + erosion entitlements
- (iv) An Entitlement Failure (EF) crisis. purchasing power decreased considerably due to failure of
  - *production-based entitlement* due to fall in output due to drought;
  - *trade-based entitlement* resulting from the erosion of the terms of trade
  - *labour-based entitlement*, due to low employment, falling wages casual workers
  - *transfer-based entitlements* due to the erosion of solidarity and remittances.

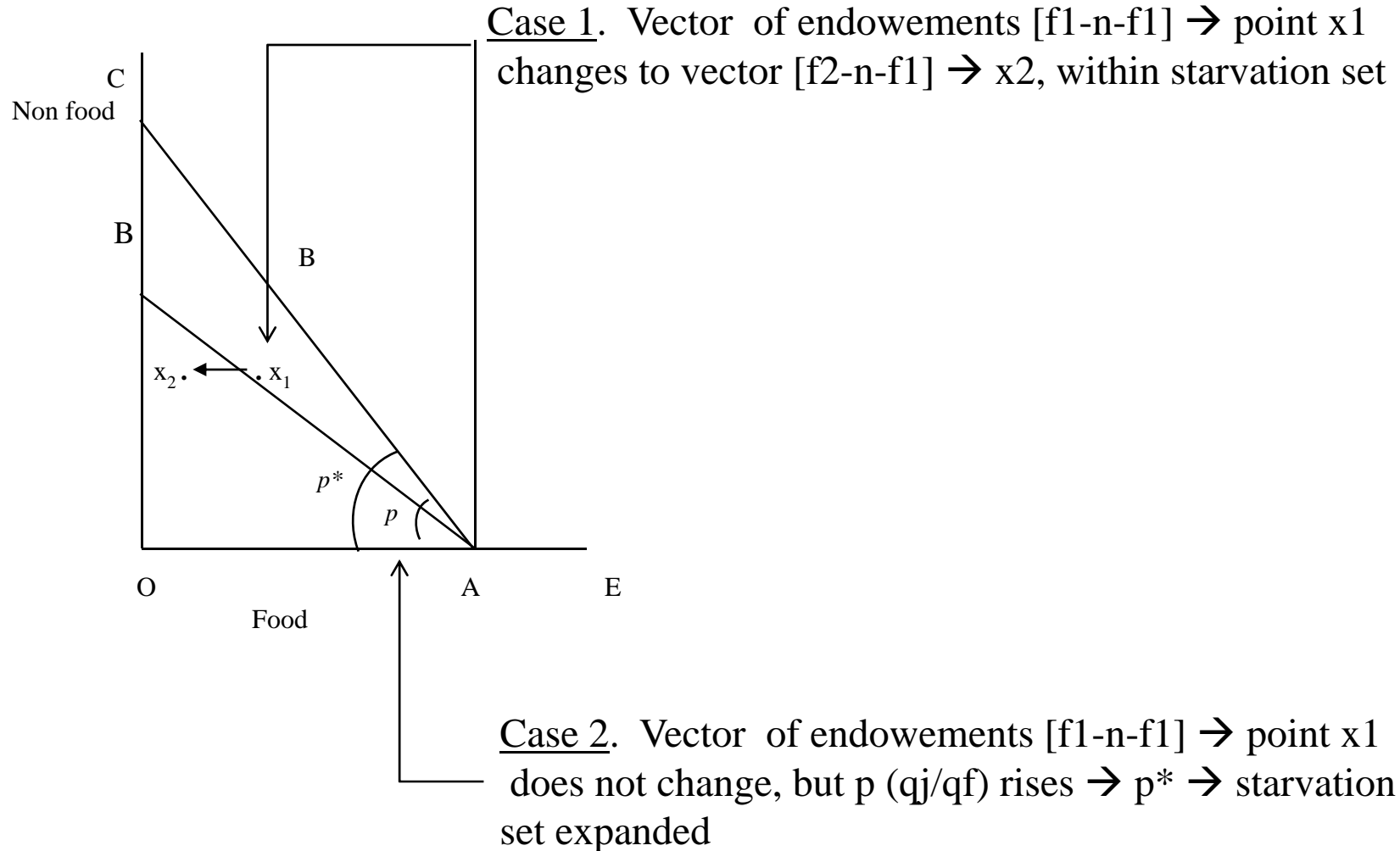
# Seven views on 2005 food crisis

- (v) A 'Food Intervention Decline (FID) crisis'. Govmt-donors did not offset crisis
  - food security policy: cut National Food Security Reserve, rely on imports?
  - But Sahel mkt is narrow and affected by covariant shocks
  - flawed Early Warning System
  - No free food distribution – health fees sustained
  - Flawed fiscal policy
  - Delayed response by international community
- (vi) A 'Market Failure (MF) crisis'.
  - Failure Sahelian -Nigerian millet market (narrow, covariant, poor infrastr.)
  - asymmetric integration ( Nigeria -Niger)
  - Absence of regional stabilizers and safety nets to offset the cross-country price 'contagion' suggests adoption of prudent and independent policies
  - 'market failures' are evident also at domestic level, (credit market, oligopolistic food markets, and lack of infrastructure).

# In conclusion ...

- (vii) A 'composite crisis':
  - EF (entitlements erosion suffered by various groups)
  - FID (poor response to crisis – poor long term food security policies)
  - MF (poor functioning of Sahelian millet market - unable to cover Niger's millet shortfall, domestic market failures)

# Graphical representation of EF with two endowments



# The decline in millet-sorghum imports

