



# An Impact of Johne's Disease on a Large-Scale Dairy Farm

- A Case Study Using Cash Flow Analysis -

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# objectives

- Cash Flow Statement : financial statements, P/L and B/S. for cash flow and treasury management.
- annual sales by large scale dairy farm is more than hundreds of millions yen. (more than ten millions USD)
- infection in dairy farm, impact on cash flow, turnover of total capital.
- objectives of this presentation: case of dairy farm infected by Johne's disease, clarify its impact and cause of shortage of cash flow using cash flow analysis, discuss the support for those farms.



# Cash Flow (CF) analysis

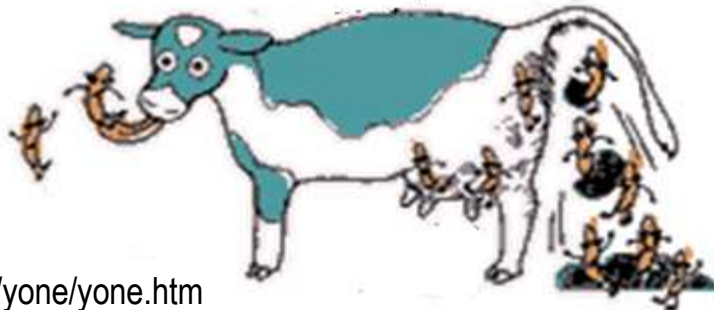
- cash flow: cash bases,
- cash: cash and cash equivalents
- CF from operating activities, from investing activities, from financing activities,
- CF not only as a reflection of outcome but also as analysis method
- CF from P/L statement (indirect method)
- Accounting service by agricultural cooperatives for member farmers, base of CF calculation.



# what's “Johne's disease” ?

- a contagious, chronic and usually fatal infection.
- All ruminants are susceptible.
- caused by *Mycobacterium avium* subspecies *paratuberculosis*,
- worldwide in distribution.
- Signs: include weight loss and diarrhea, rarely evidence until two or more years after the initial infection. at first delivery and lactation.
- Newborns most often become infected by swallowing small amounts of infected manure from the birthing environment or udder of the mother.
- infected must be culled and milk abandoned in Japan.
- for cleanup: voluntary cull of cow with no medical evidence

mother






# outline of the dairy farm of this study (as of Nov. 2009)

- multiparity cow: 304 head (in lactation 272 head)
- land for corn production for feed 70ha and land for grass production 50ha
- labour force 14 (including 3 family member, 8 haired labour, 2 internship, 1 short-time worker)
- free stall and milking parlor
- 9,760kg /cow/year in milking assessment record
- average delivery number 2.2, (3 year 2 month old in average)
- average life delivery number 3.2 (5 years life-span in average)
- average somatic cell count 170 thousand /ml



# the chronology of Johne's disease in this farm

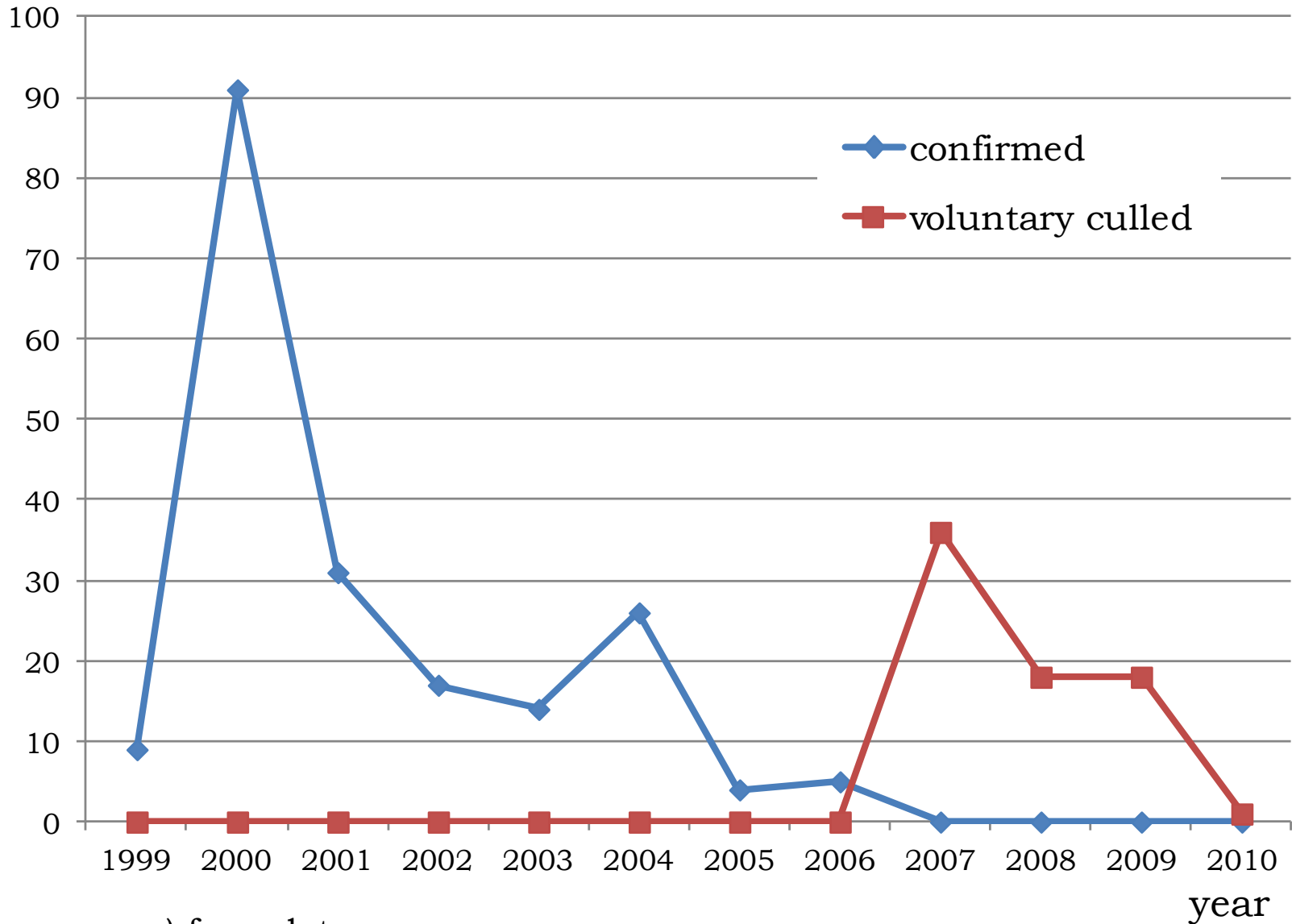
- 1999 • the first infected cow was confirmed
  - 2000 • **100 head were culled in first 2 years**
    - additional cost (3 workers for delivery monitoring, improving facilities, fertilizer because the moving of manure was banned)
  - 2004 • **began to feel the shortage of cash**
    - consultation of feeding
  - 2005 • consultation by tax accountant
  - 2007 • task force for recovery (a veterinarian was included)
    - started voluntary culling
  - 2009 • the cleanup was achieved (no confirmed cow in last two years)
    - total confirmed 197, voluntary culled 72
- 

1. why no problem in first 2 years when serious culling was enforced?
2. 4 years time gap between serious culling and shortage of cash ?



# change in the number of confirmed and voluntary culled cow

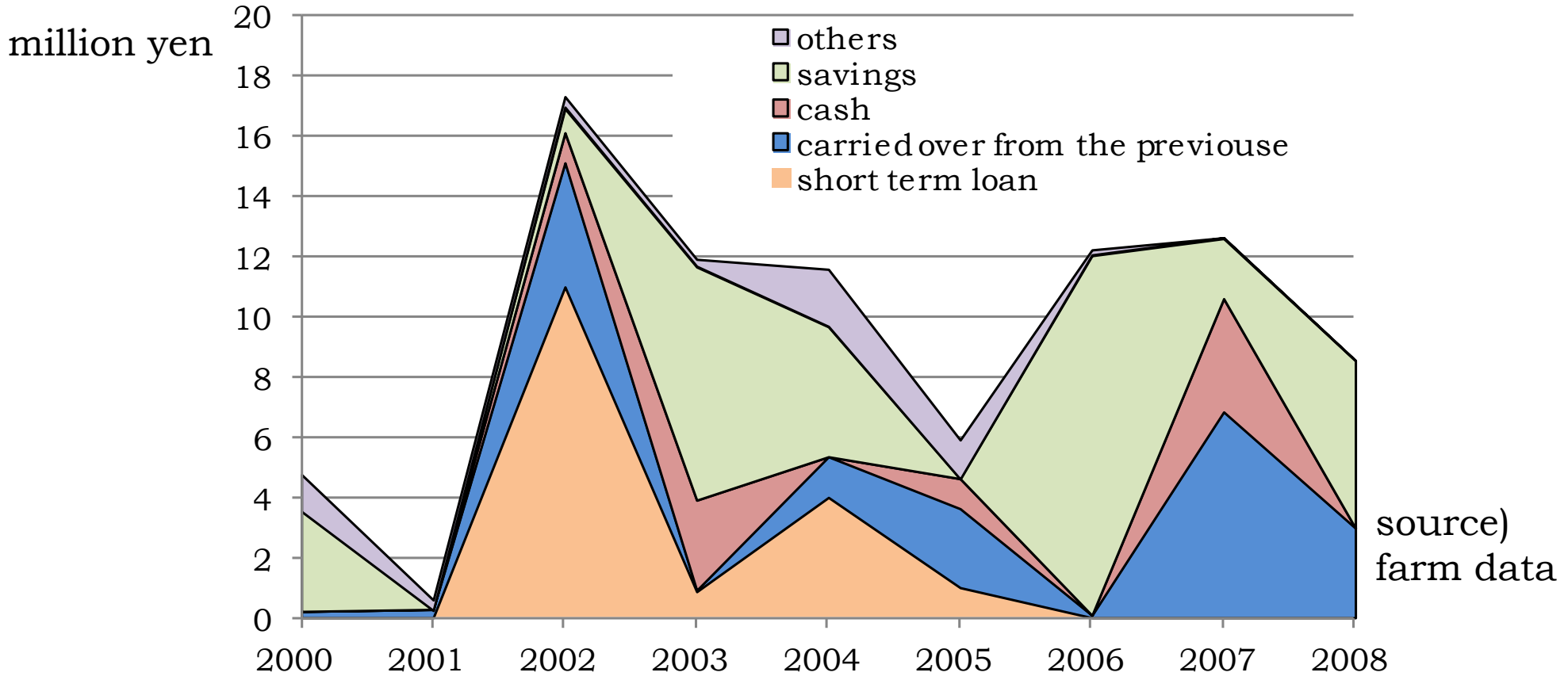
head



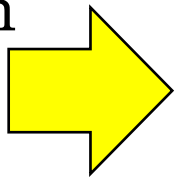
source) farm data



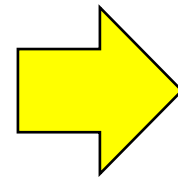
# shortage of cash



short term loan = shortage of cash



no shortage around serious culling but shortage in 4 years later ?



CF?





# CF from operation activities by indirect method

CF from operation activities  
= income before income tax  
+ depreciation cost  
+ **(aged) cow sales cost**  
+ increase of an inventory  
+ exceptional advanced depreciation deduction  
- tax

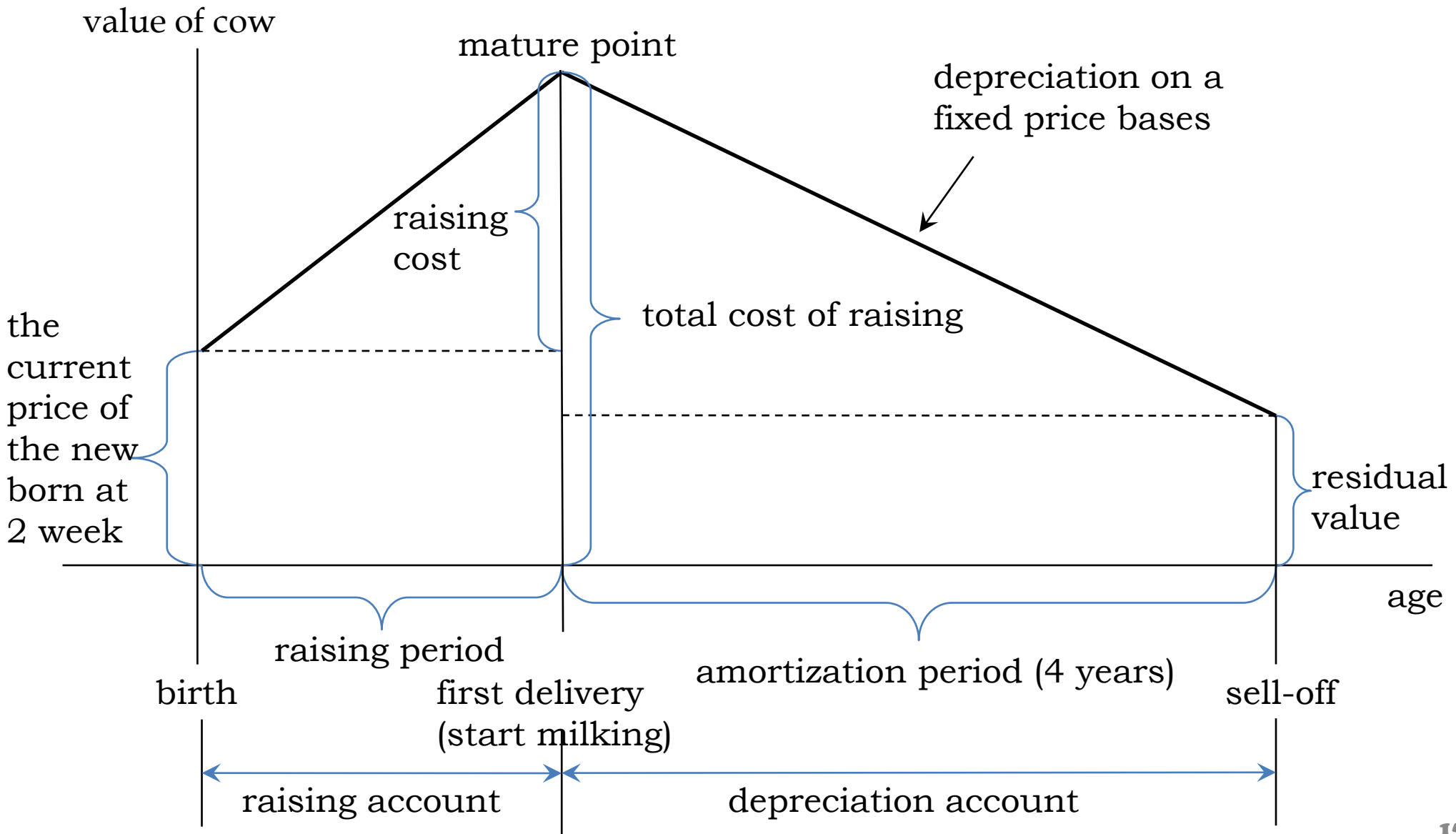
(aged) cow sales cost:

if the milking period is shorter than the amortization period, rest of depreciation cost is deducted as “cow sales cost” at the year the cow is sold-off



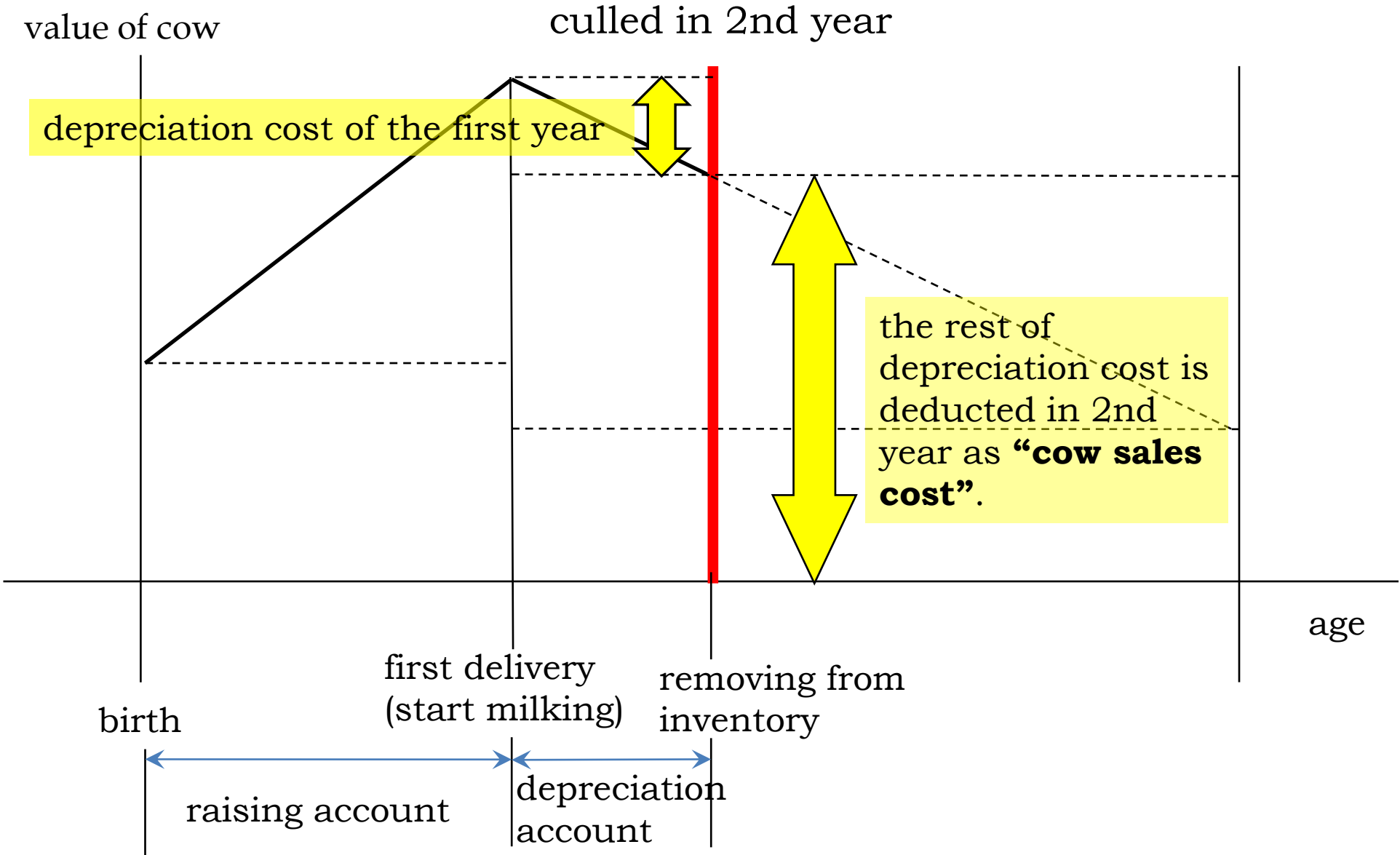
# the evaluation of self-raising asset

source) Furutsuka and Takada (modified)



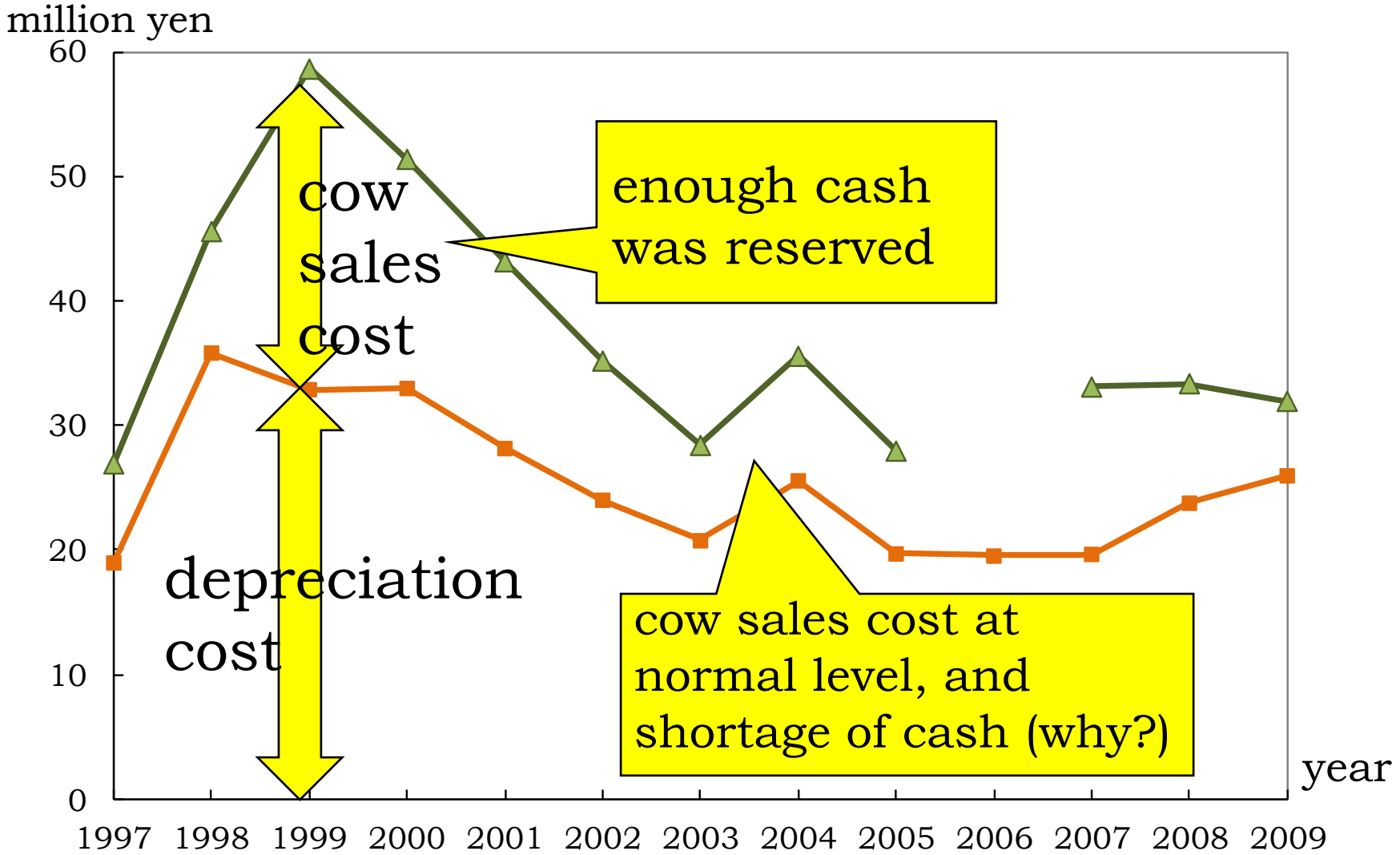


# the evaluation of self-raising asset and cow sales cost





# change in depreciation cost and cow sales cost

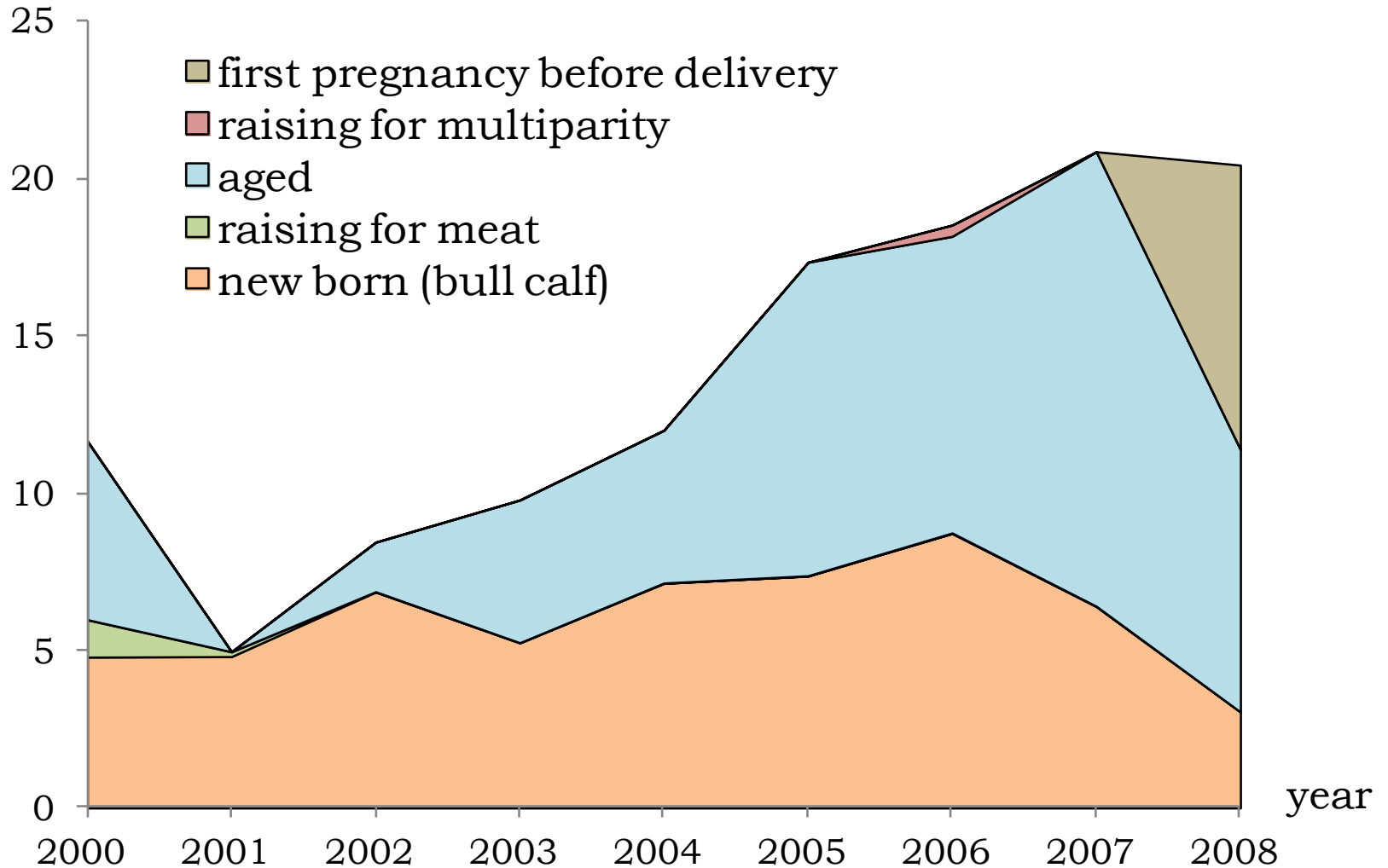


source ) farm data



# change in sales of cow and new born (bull calf)

million yen



source ) farm data

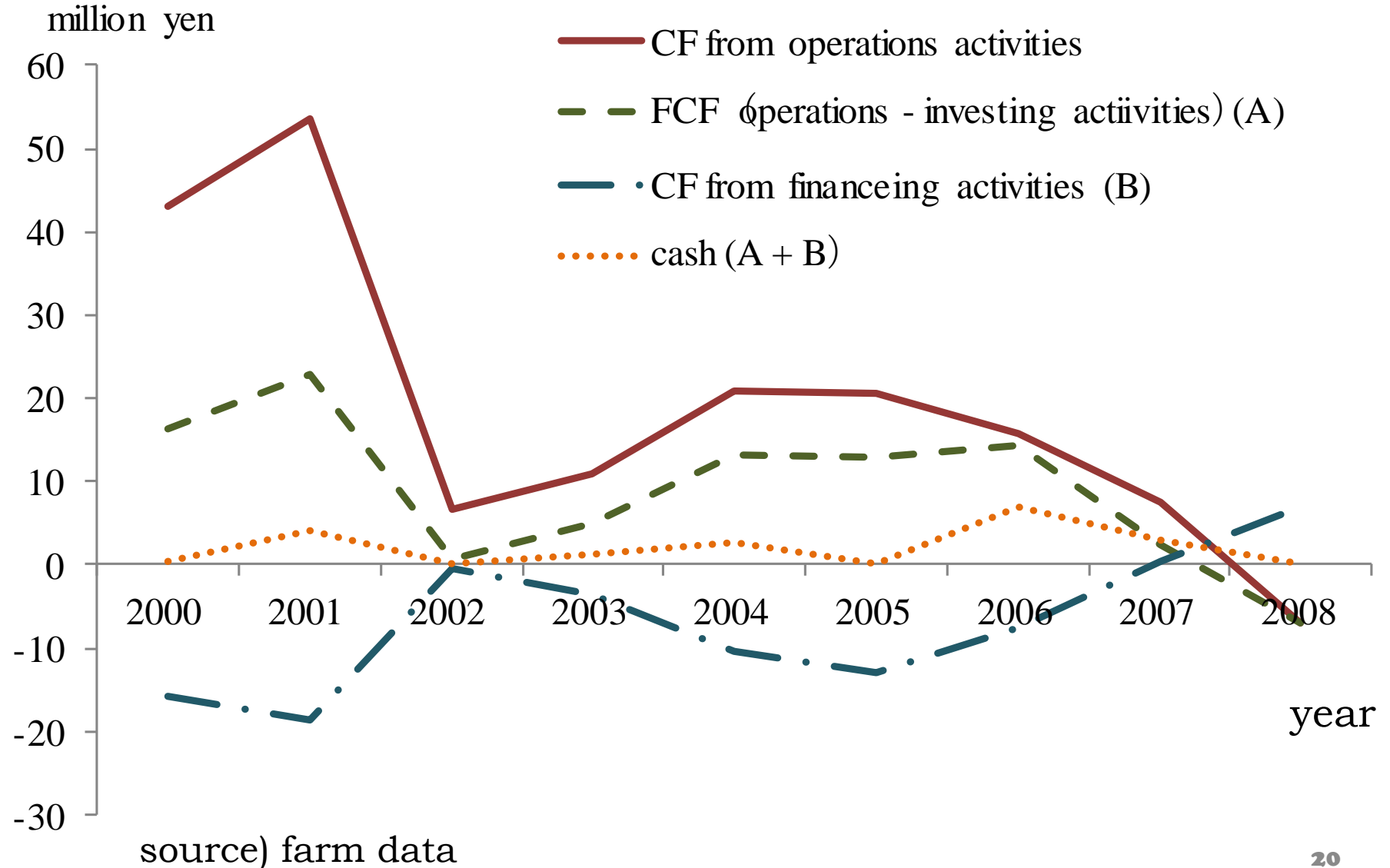


# the proportion of herd by age and cow sales cost, sales of cow

- 1999, 2000: 100 cow culled, increase in cow sales cost and CF from operation activities, reserved cash, number of head was kept. ratio of younger cow increased,
- 2001, 2002: decrease in sales of cow and CF from operation activities.
- 2003, 2004: shortage of CF, introduction of short-term loan.
- after 2005: increase in sales of cow, cash flow went back to normal.



# summary of cash flow





# conclusions and implications

- time gap between cull and shortage of cash: cow sales cost, ratio of younger cow, decrease in cow sales, decrease in CF from operation activities.
- validity of CF analysis to confirm the impact of infection in Large scale dairy farming.
- support for infected farm:
  - appropriate culling program for cleanup
  - gap of cash shortage, short-term or middle-term loan, an appropriate consultation about budget