THE WORLD OIL MARKET

A SYSTEM DYNAMICS APPROACH

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For example (see Fig. 1) coverage and price are linked by an economic-type relation

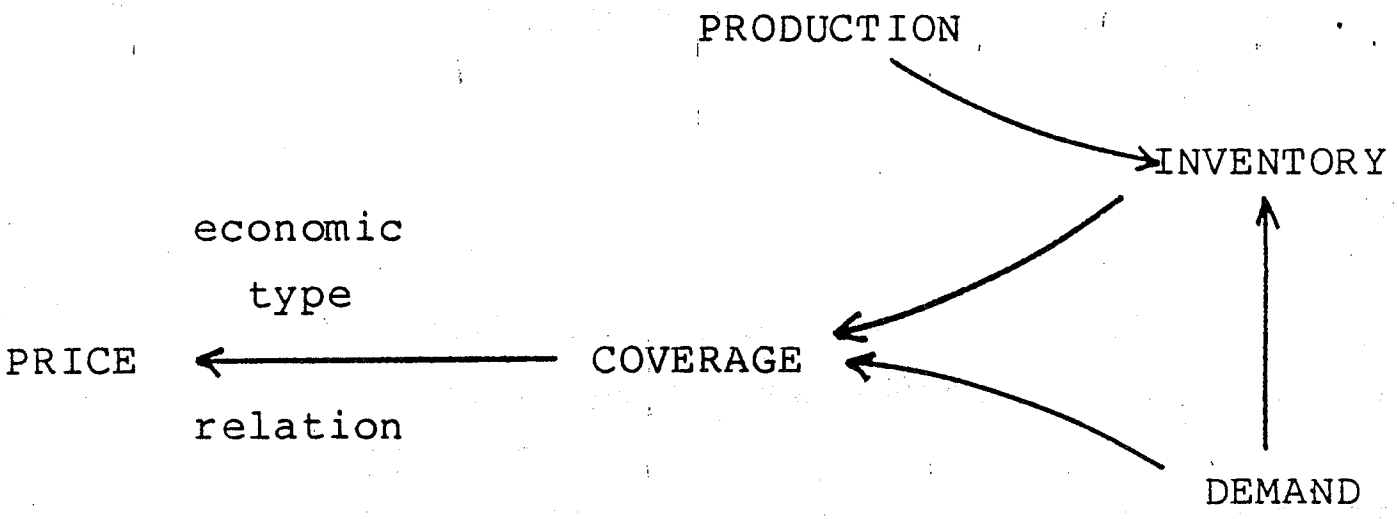


Fig. 1

But coverage acts relatively to its desired or usual va
(Fig. 2).
By introducing the notion of "desired" value, we define
"fuzzy" psychological link.

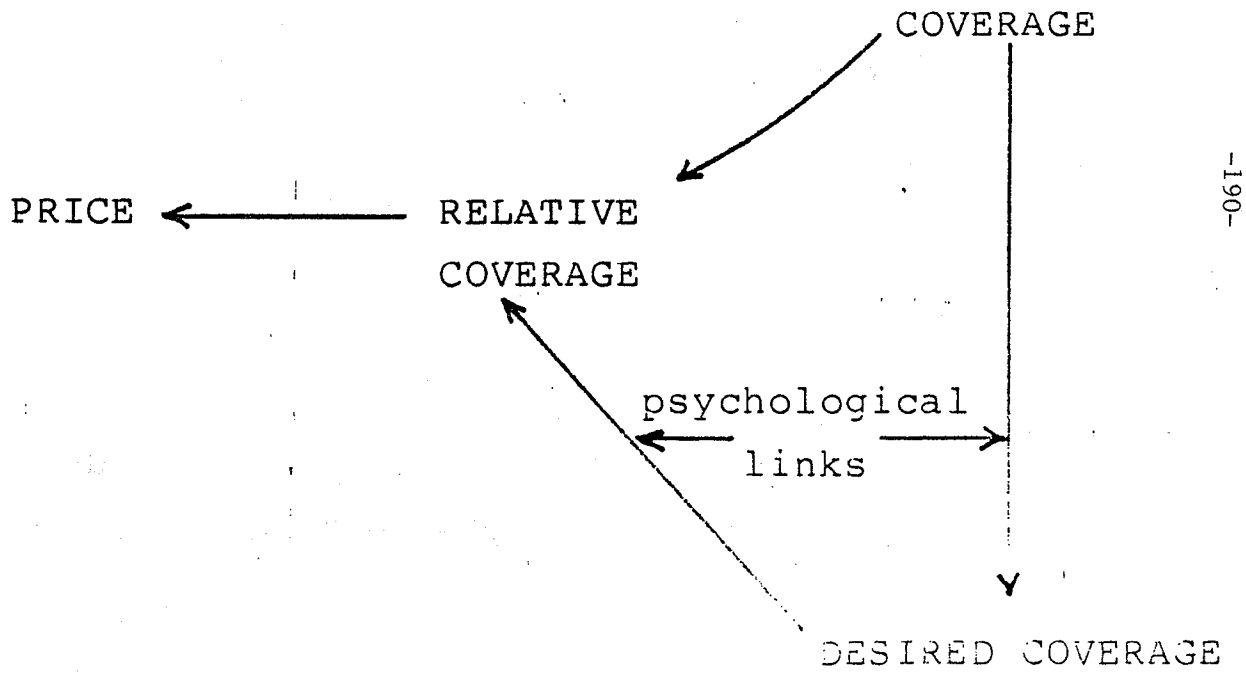


Fig. 2

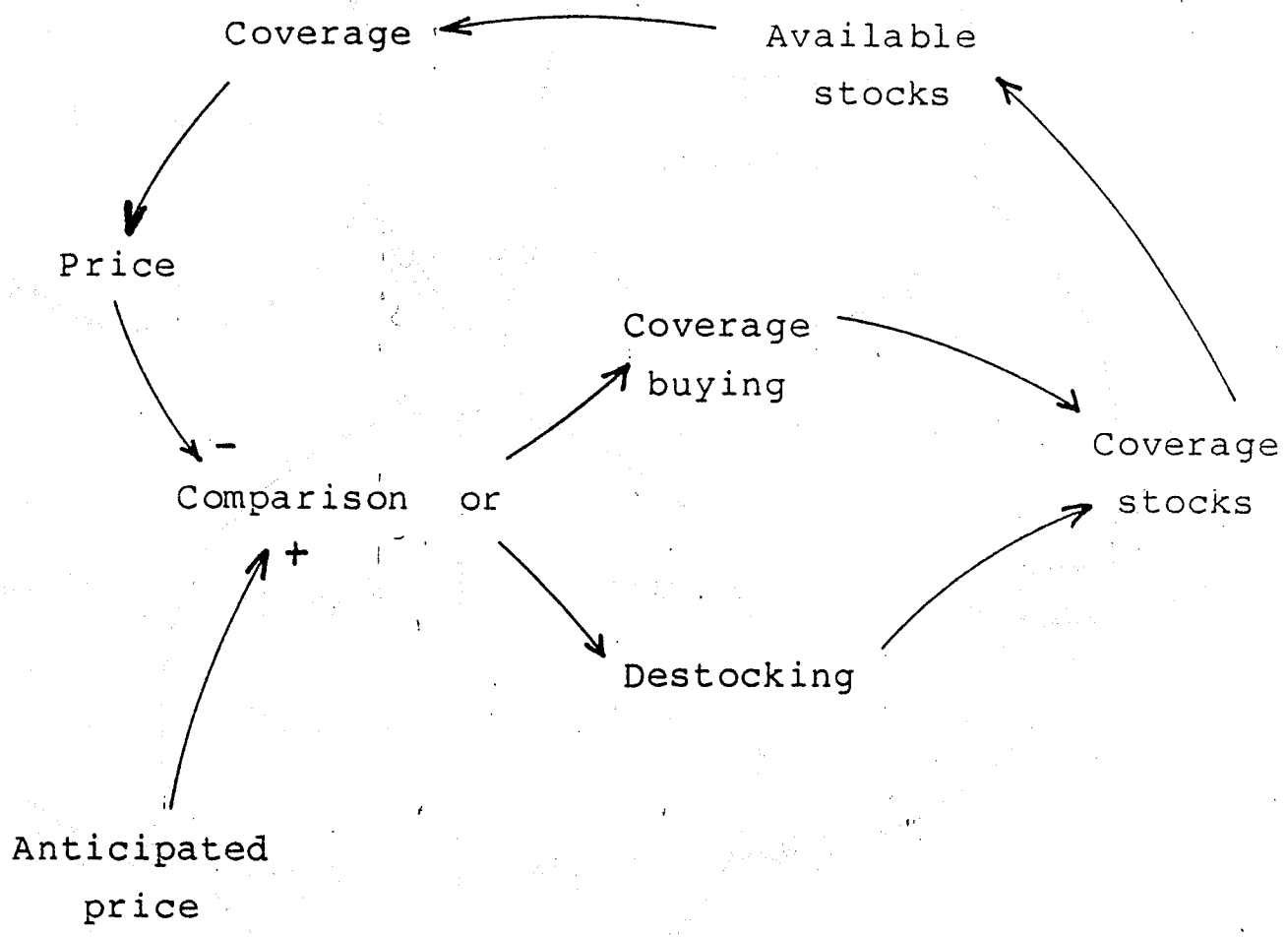
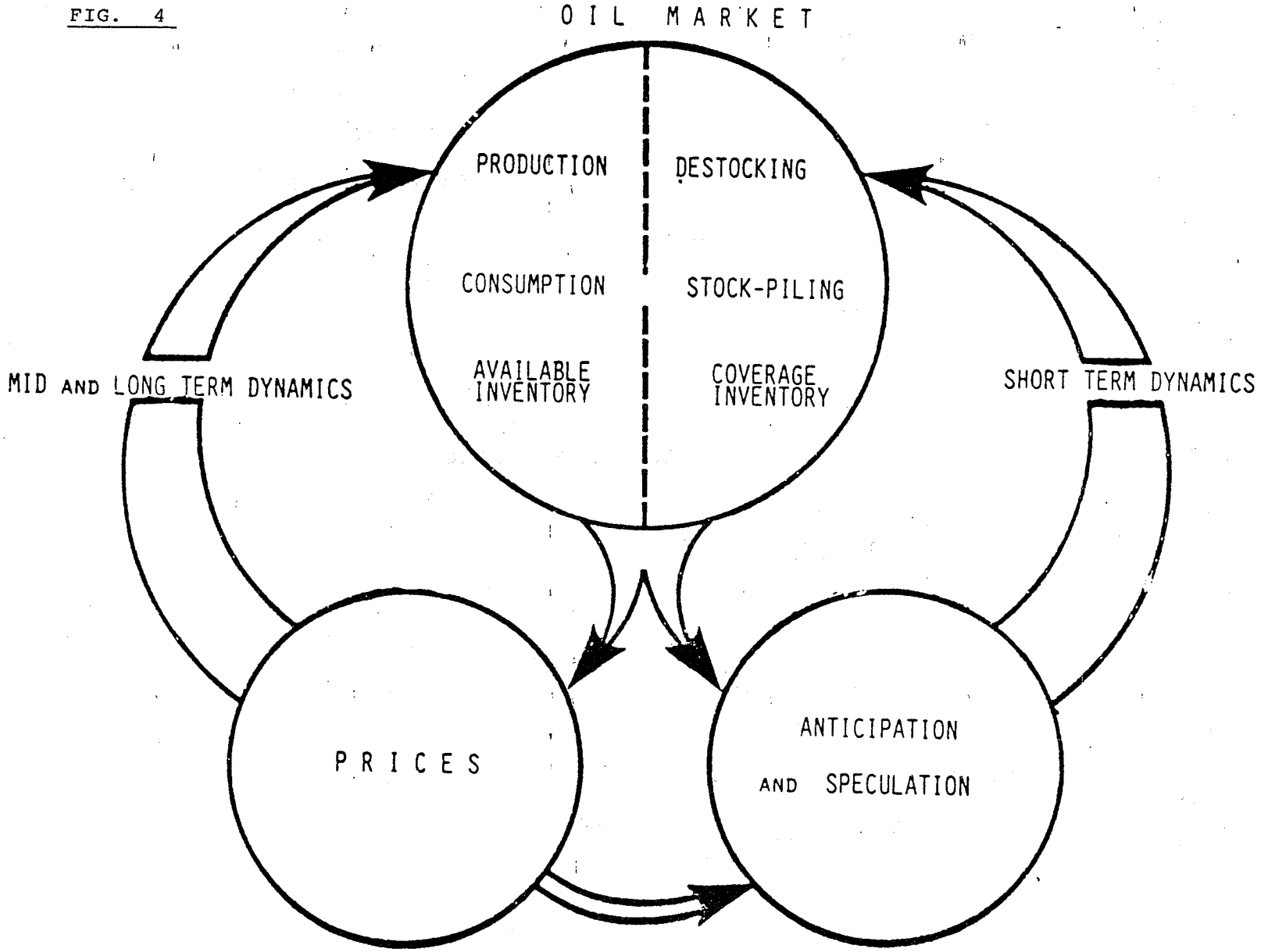

Coverage
Available stocks
Price
Coverage buying
Coverage stocks
-
Comparison
or
+
Destocking
Anticipated price

FIG. 3

FIG. 4


OIL MARKET
PRODUCTION
DESTOCKING
CONSUMPTION
STOCK-PILING
AVAILABLE INVENTORY
COVERAGE INVENTORY
MID AND LONG TERM DYNAMICS
SHORT TERM DYNAMICS
PRICES
ANTICIPATION AND SPECULATION

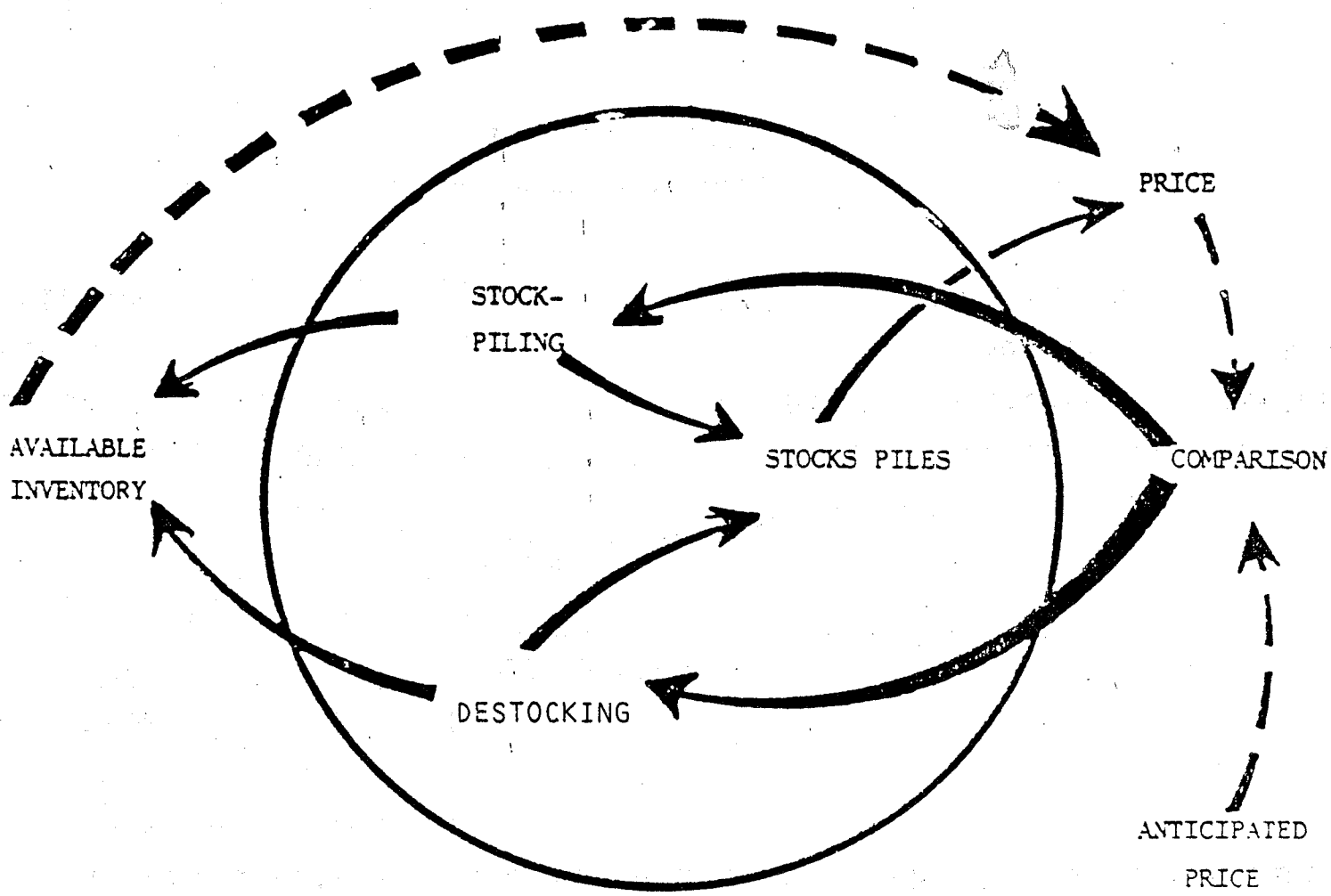

PRICE
STOCK-
PILING
AVAILABLE
INVENTORY
STOCKS PILES
COMPARISON
DESTOCKING
ANTICIPATED
PRICE

Fig. 5

Although physically undistinguishable (hence difficult to quantify), running inventories and stock-piles result from very different types of transactions and also have very distinct effects on price and on the behavior of the consumers in our model.

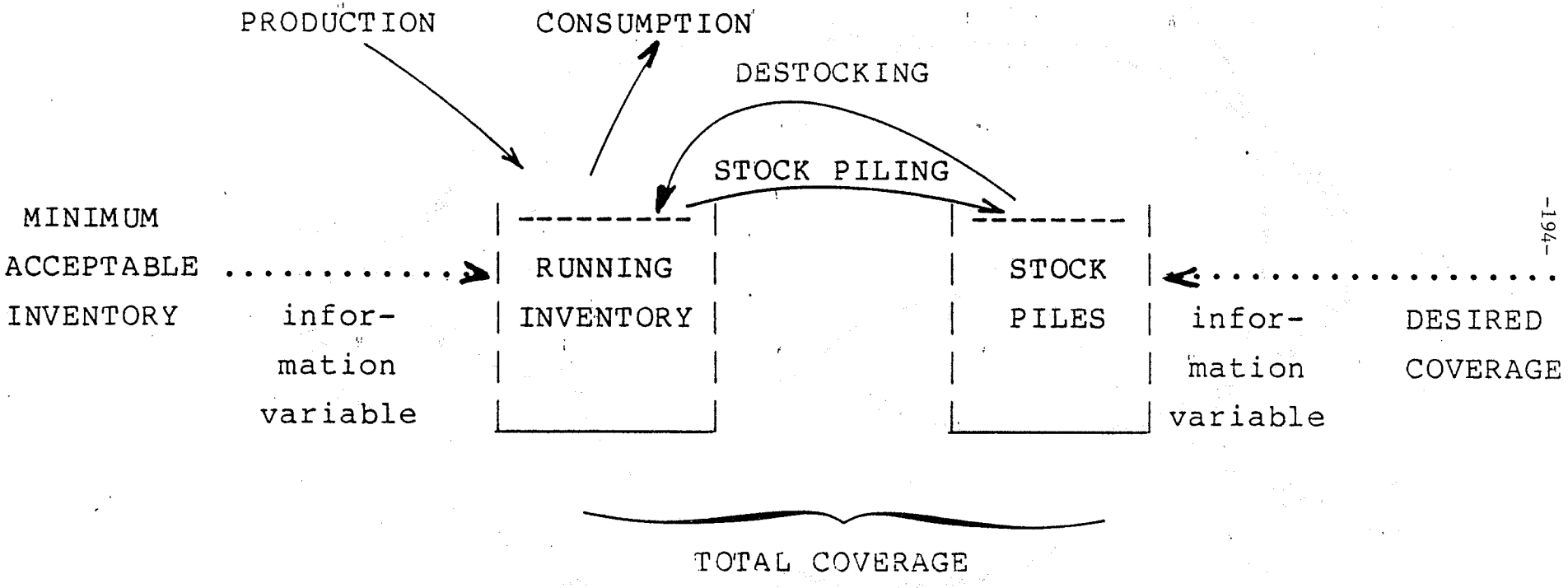


Fig. 6

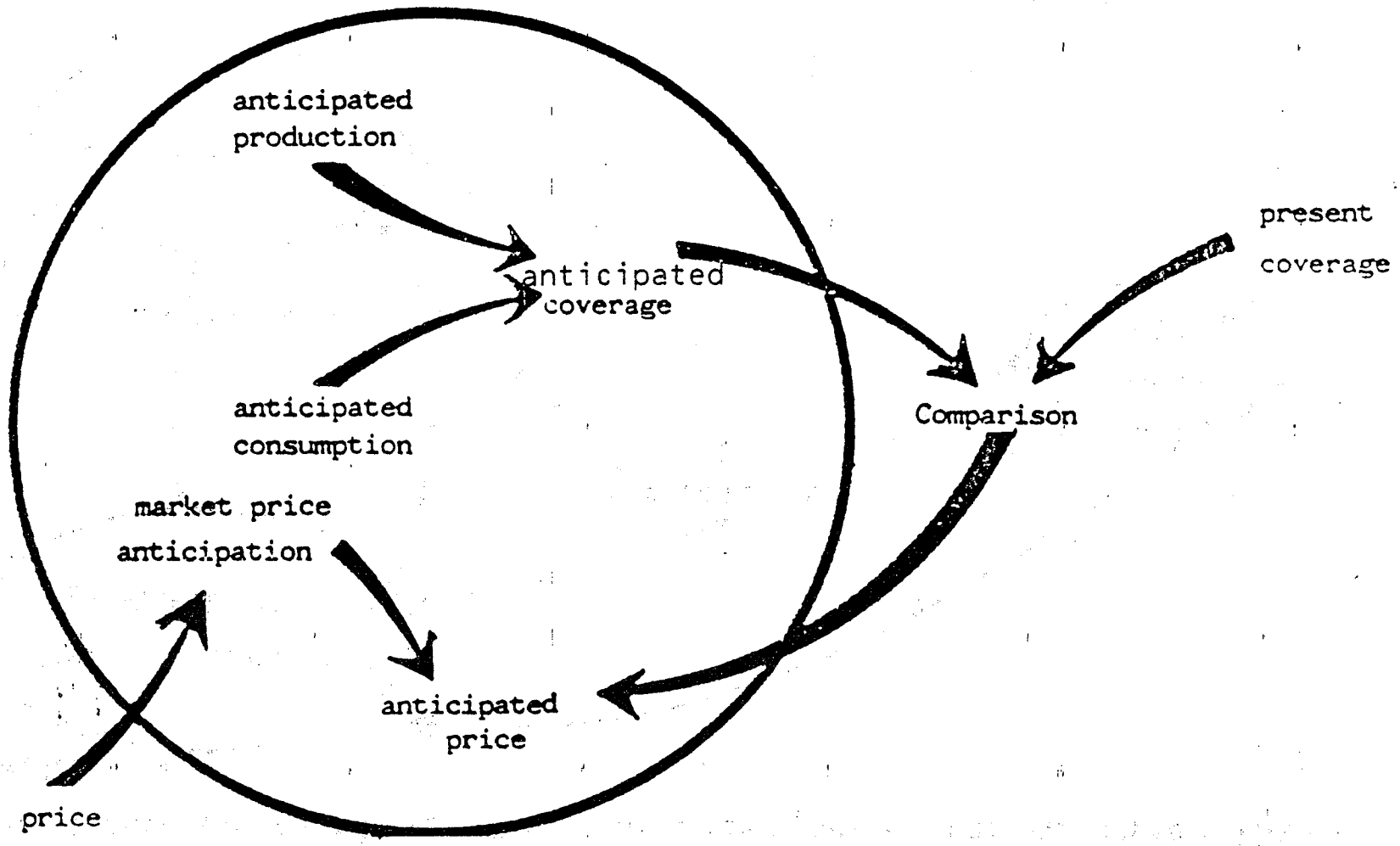

anticipated
production
anticipated
coverage
present
coverage
anticipated
consumption
Comparison
market price
anticipation
anticipated
price
price

Fig. 7

The complete model is thus the interconnection of these three sectors :

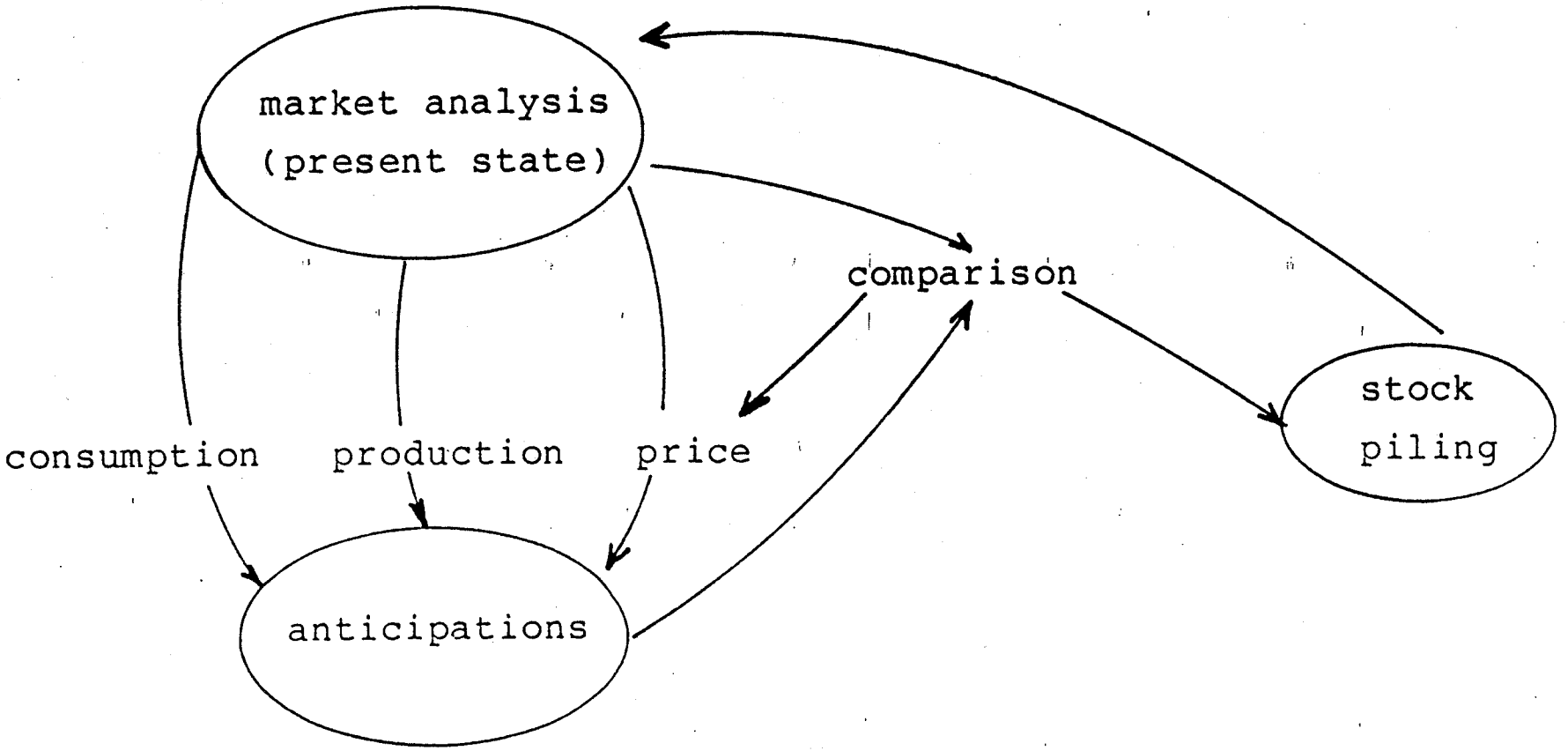


Fig 8

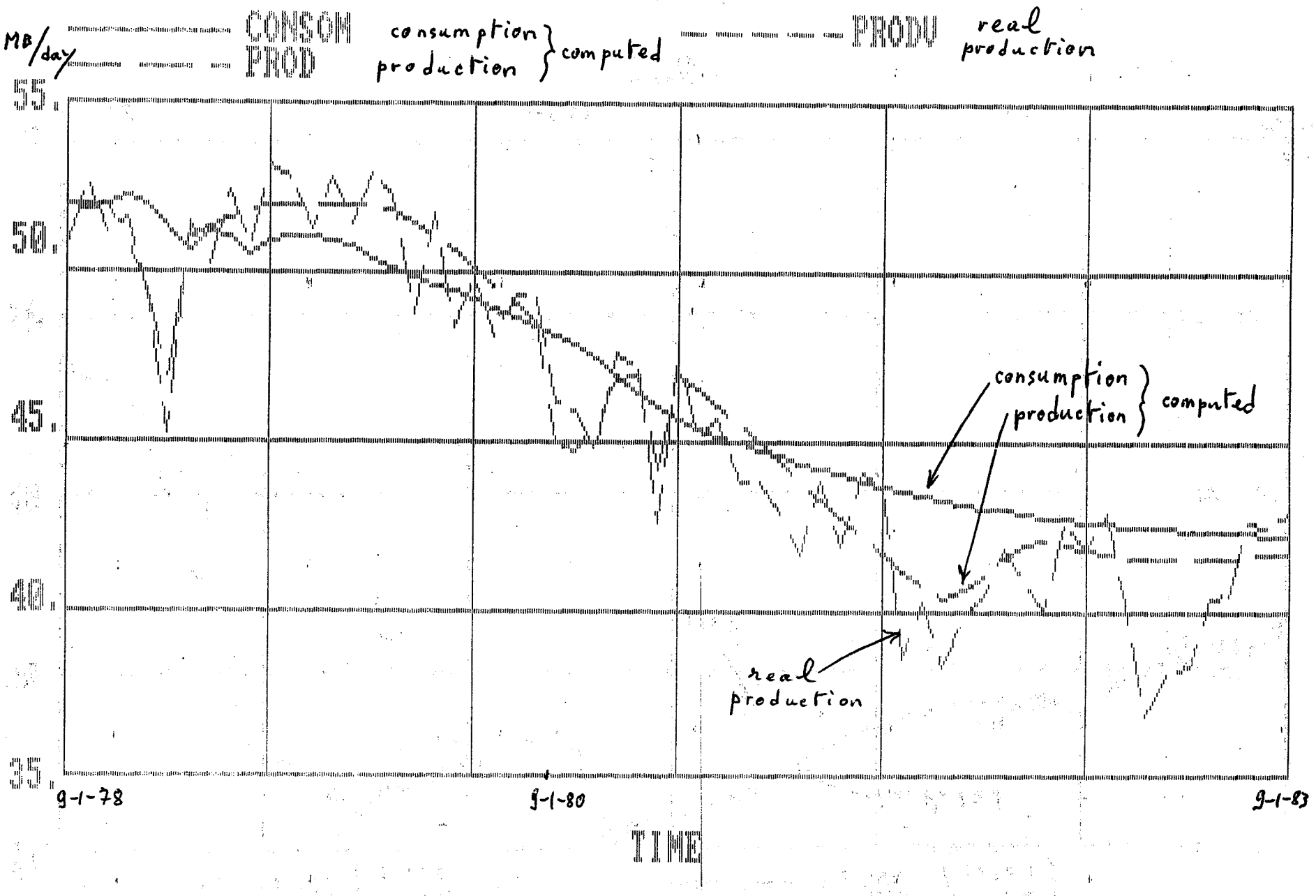

MB/day
CONSOM
PROD
consumption
production
computed
PRODU
real
production
55.
50.
45.
40.
35.
consumption
production
computed
real
production
9-1-78
9-1-80
9-1-83
TIME

Fig 9

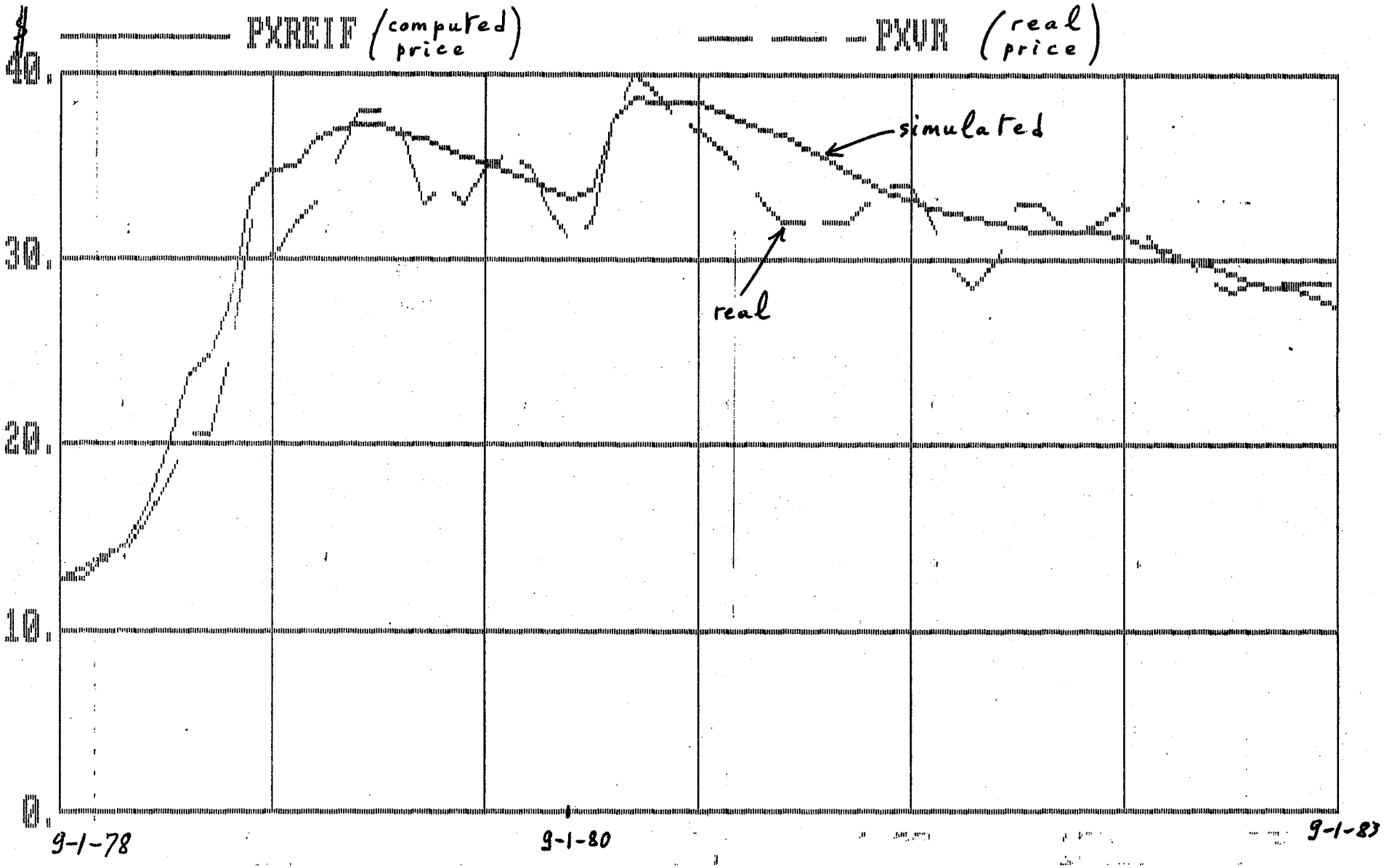

PXREIF (computed price)
PXUR (real price)
40.
30.
20.
10.
0.
simulated
real
9-1-78
9-1-80
9-1-83
TIME

Fig 10

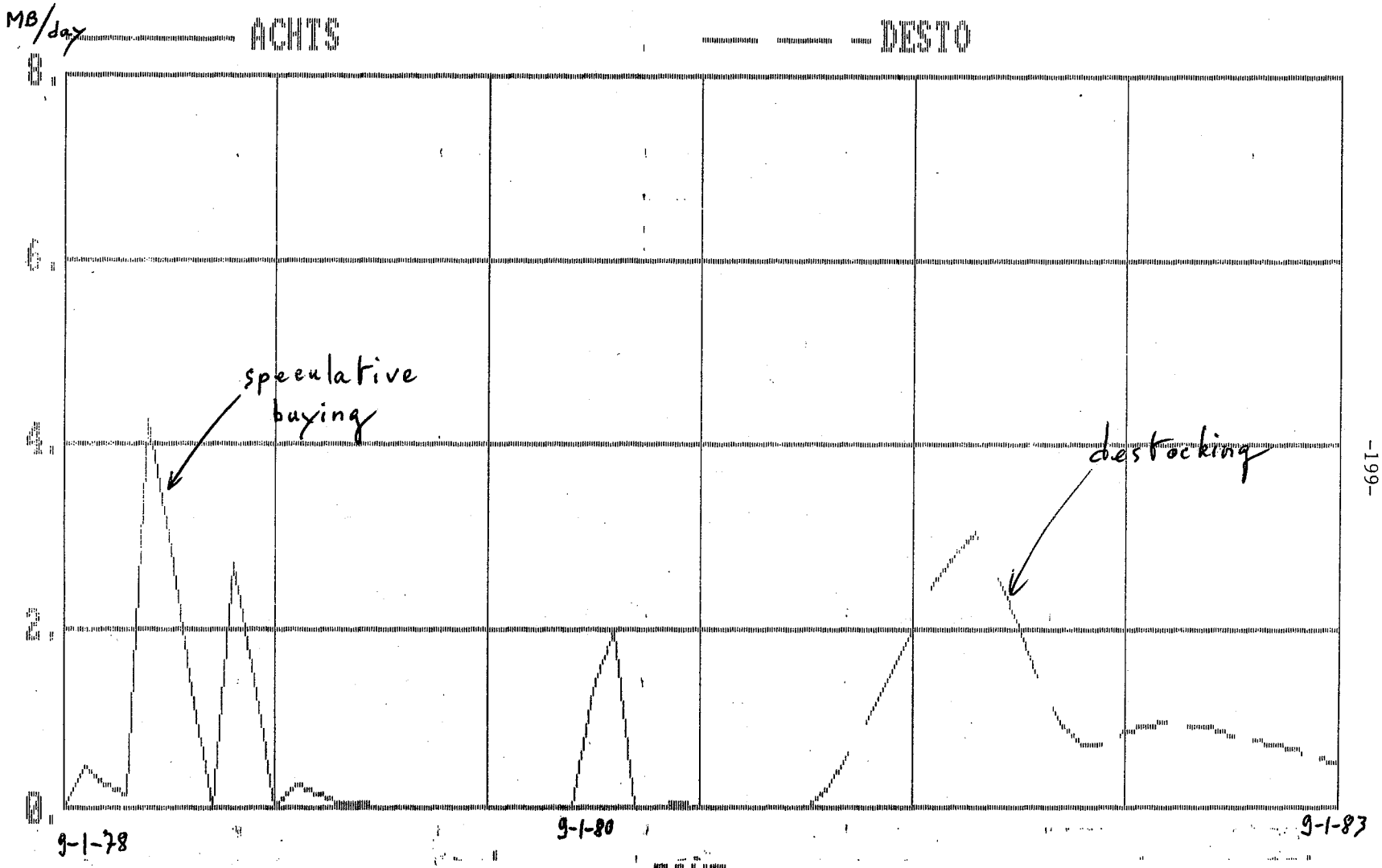

MB/day
ACHTS
DESTO
8
6
4
2
0
speculative buying
destocking
9-1-78
9-1-80
9-1-83
TIME

Fig 11

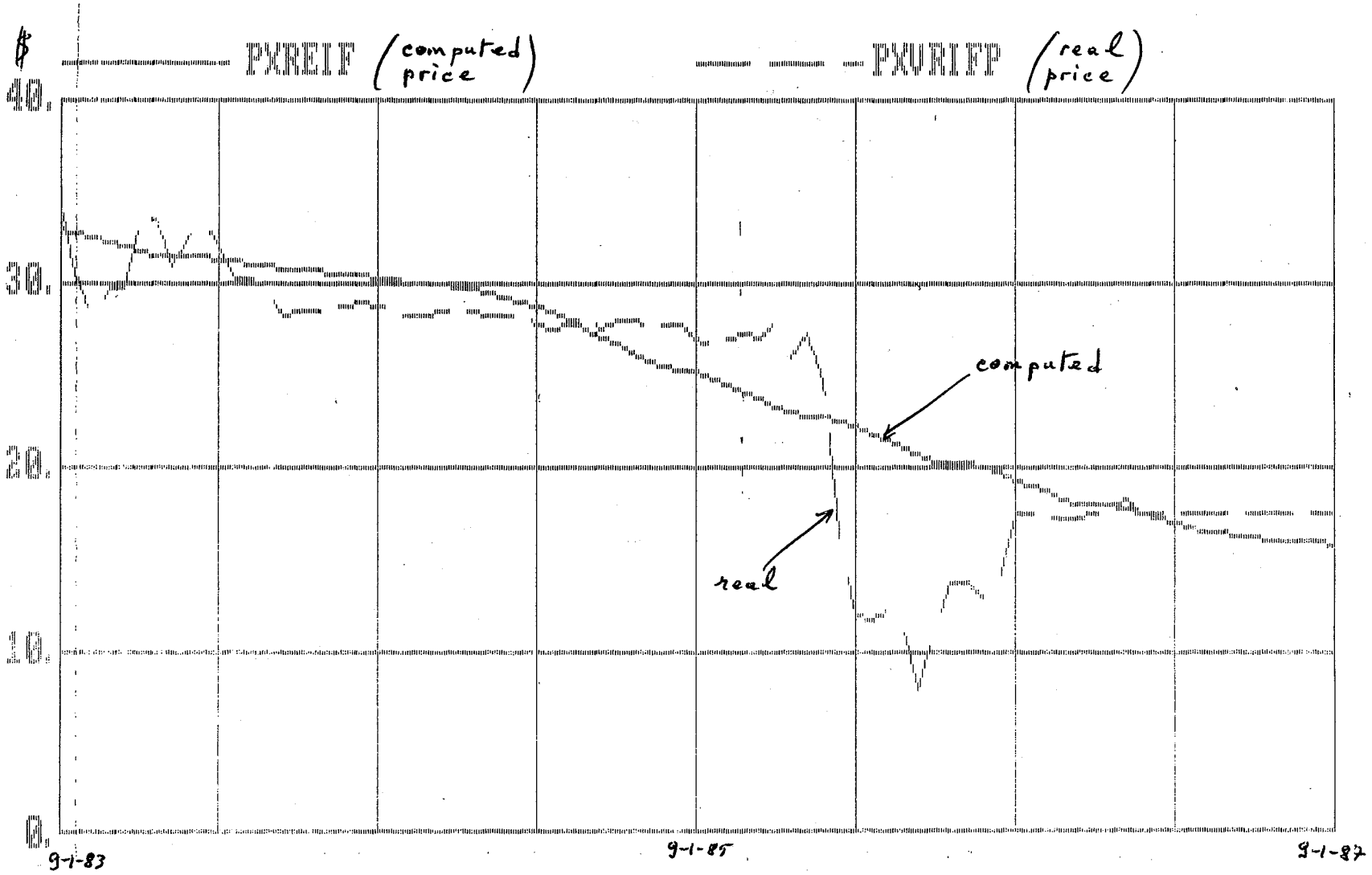

$
PXREIF (computed price)
PXURIFP (real price)
40.
30.
20.
10.
0.
computed
real
9-1-83
9-1-85
9-1-87
TIME

Fig 12