

《研究ノート》

A Tentative Model of Development Based on SEWA Philosophy

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1. Introduction

In Bhatt (1995) a view on development different from conventional wisdom is given, and Ekuni (2000) presented brief critical comments on traditional neoclassical models of development. In the latter paper, three key concepts appear: (1) women labour force, especially as self-employed, (2) phantom marginal products, and (3) growth in an arithmetical progression rather than a geometrical one. In this short note, we concentrate on the first element, i.e., women labour force.

It is supposed labour force is heterogeneous and segmented into two parts: men and women. We suppose two regimes. In the first one, women are partly dominated by men, and the national surplus goes into men's hand, while in the second regime, women are independent of men, and they secure their surplus as self-employed workers. Using various simplifying assumptions, we conduct simulation on a PC.

In Section 2, we explain our assumptions and our models. Then Section 3 contains some results found in simulation, and the final Section 4 gives remarks. The programs written in Turbo Pascal are in Appendix.

2. Assumptions and Models

Labour force is classified into two categories : men workers and women workers. Each worker is a self-employed farmer or peasant when she/he can successfully obtain 'seeds' (circulating capital). Otherwise they are unemployed. There exists a reserve army, and labour supply can be considered virtually unlimited. In the beginning of a period, there is available a certain amount of 'seeds' in the hands of men as well as women. Men's sector employs men while women's sector employs women. For employees the wage rates are fixed both for men and women. Depending on available amount of 'seeds' the size of employment is determined. The average productivities of men and women are also fixed and constant. The surplus of a sector is the value of product reduced by the cost of wages.

Depending upon how the surplus is distributed, two regimes are considered. In the first regime, the national surplus is appropriated by the men's sector, and a fraction of that surplus is donated to the women's sector. In the second system, each sector obtains its own surplus.

In both regimes, all the wages are consumed, while from each surplus, some portion is left for 'seeds' in the next period with the rest consumed by people including the unemployed. Wage rates are below the subsistence level. We do not question in what way the unemployed and other dependents can survive.

Now our models are described by use of symbols.

a_m : the average product of a male worker employed ;

a_f : the average product of a female worker employed ;

k_m : the amount of circulating capital per male worker ;

- k_f : the amount of circulating capital per female worker ;
 w_m : the wage rate for a male worker ;
 w_f : the wage rate for a female worker ;
 b : the proportion of the total surplus accruing to the men's sector in the first regime ;
 cs_m : the proportion of the secured surplus consumed by men ;
 cs_f : the proportion of the surplus consumed by women ;
 c_m : the amount of circulating capital in the men's sector ;
 c_f : the amount of circulating capital in the women's sector ;
 m : the number of employed male workers ;
 f : the number of employed female workers ;
 y : the total (national) product ;
 s : the total (national) surplus.

At the beginning of each period, two magnitudes representing the amounts of circulating capitals in two sectors are given. Then the number of workers who are employed by the two sectors can be calculated as follows :

$$m = \frac{c_m}{k_m} \quad \text{and} \quad f = \frac{c_f}{k_f}.$$

In the first regime, the total product and surplus are :

$$y = m \times a_m + f \times a_f, \text{ and}$$

$$s = y - (m \times w_m + f \times w_f).$$

The circulating capital carried over to the next period in the first regime can then be calculated as

$$c_{m,t+1} = (1 - cs_m) \times b \times s, \text{ for the men's sector, and}$$

$$c_{f,t+1} = (1 - cs_f) \times (1 - b) \times s, \text{ for the women's sector,}$$

where the subscript $t + 1$ means the concerned variable is for the

following period. Thus the process can repeat.

In the second regime, the circulating capitals carried over to the next period in two sectors can be derived as

$$c_{m,t+1} = (1 - cs_m) \times m \times (a_m - w_m), \text{ for the men's sector, and}$$

$$c_{f,t+1} = (1 - cs_f) \times f \times (a_f - w_f), \text{ for the women's sector,}$$

Thus the process can also repeat.

3. Simulation Results

When we give certain values to respective constants and suitable initial values to circulating capitals as well, it is possible to perform simulation on a PC. The language Turbo Pascal is used in writing the programs we need, which are given in Appendix.

The basic diagrams generated by the two regimes are presented as Fig. 1 and Fig. 2. Fig. 1 is for the first regime, and Fig. 2 for the second. The first noteworthy result is that, when the same values are assigned to the constants, the growth curve of c_f is much steeper in the second regime than in the first while that of c_m is more or less the same in both regimes.

The second result to be noticed is that the courses of c_m and c_f are very sensitive to the consumption coefficients cs_m and cs_f . One percent change will drastically shift growth curves, from modestly positive rate of growth to an acute declination.

4. Remarks

We can increase the number of variables so far as their magnitudes are determined by the value of the variables of the present period and the

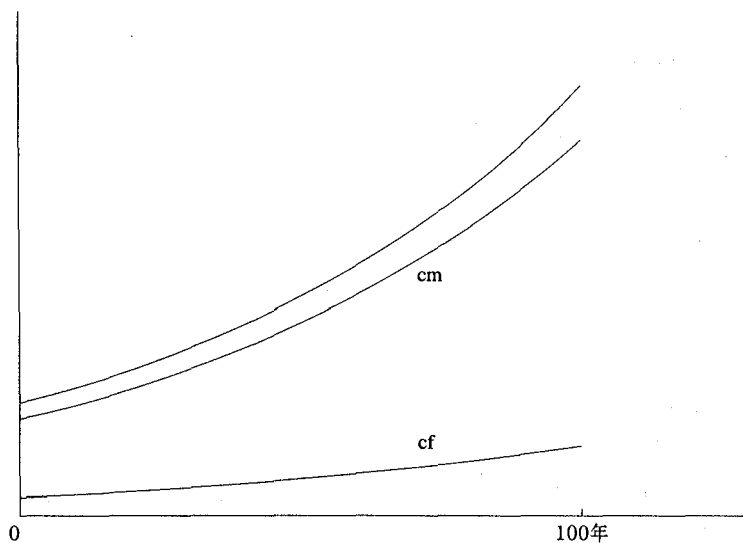


Fig. 1

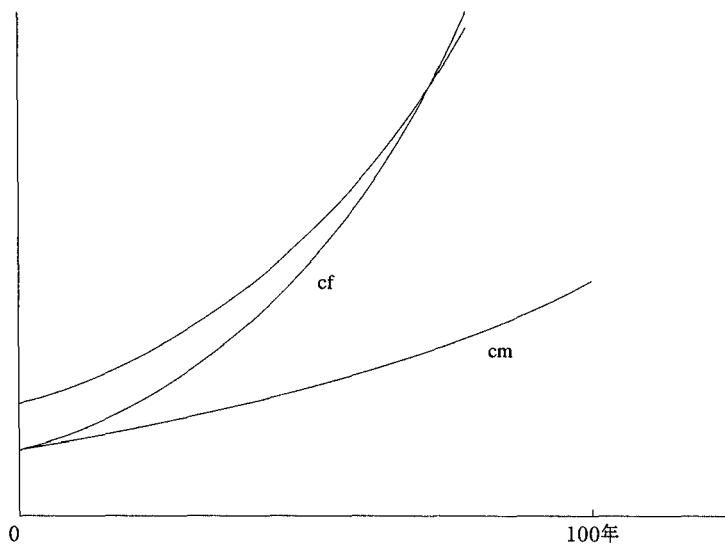


Fig. 2

constants. The technique of simulation allows us to pay little attention to the number of variables.

The complication of the models should be tried as explained in an appendix of Ekuni (2000), incorporating various dualities in developing countries such as rural vs urban, formal vs informal. And through simulation experiments we may draw some general propositions.

References

- [1] Bhatt, Ela R. (1995), "Women and Development Alternatives : Micro-and Small-Scale Enterprises in India", in Louise Dignard and José Havet (eds.), *Women in Micro-and Small-Scale Enterprise Development*, San Francisco : West View Press.
- [2] Ekuni, Fumiko (2000), "The Self-Employed Women's Association—Its History and the Present Structure", *Journal of Humanities and Social Sciences*, (Graduate School of Humanities and Social Sciences, Okayama University), No. 9.

Appendix: Programs in Pascal

* Program 1:

```

program bhatt0;
(* A Tentative Model Based on SEWA Philosophy: Mrs Ela R Bhatt. *)
(* Fmk & TF: 16th, March, 2000: "Okayama Economic Review", 32(1). *)
{$C-}
{$i TPLIO.LIB}

const
am: real=5.2;
af: real=3.0;
km: real=1.0;
kf: real=1.0;
wm: real=0.6;
wf: real=0.3;
b : real=0.9;

                                (* Ceteris paribus *)
csm : real=0.78;                (* 0.78 increasing; 0.79 decreasing *)
csf : real=0.62;
years: integer=100;            (* the number of years *)

R5: real=5.0;
R10: real=10.0;
I4 : integer=4;

var
m, f: real;
cm, cf: real;
cmt, cft: real;
y, s: real;
i : integer;
col : integer;
ch: char;
PH, PV : integer;

const
Left: integer=120;
Down: integer=360;

procedure quit2; (* {$C-}をブレイク先頭に. *)
begin
  IF KeyPressed then (* to pause *)
  begin
    Read(Kbd, g_ch);
    if UpCase(g_ch)='Q' then halt
    else Read(Kbd, ch);
  end;
end;

procedure frame;
begin
  gbegin;
  gJMes:='  ';
  gwrite(Left,10,gJMes,0,0);
  gline(Left,Down,639,Down,7,0);
  gline(Left,0,Left,Down,7,0);
  gJMes:='0';

```

```

gWrite(Left-20,Down+5,gJMas,6,0);
gLine(Left+100*I4, Down, Left+100*I4, Down+4, 7, 0);
gJMas:= '1 0 0年';
gWrite(Left+100*I4-20, Down+7,gJMas,6,0);
end;

```

```

procedure draw;
begin
  PH := i*I4 + Left;
  PV := Down - Round(cm*R5);
  col := 6;
  gpsset(PH, PV, col);
  FV := Down - Round(cf*R5);
  col := 3;
  gpsset(PH, FV, col);

  PV := Down - Round(y);
  col := 4;
  gpsset(PH, FV, col);
end;

```

```

begin
  frame;
  cm := 10.0;
  cf := 10.0;
  for i:=1 to years do
    begin
      draw;
      (* ***** *)
      m := cm/km;
      f := cf/kf;
      y := m*am + f*af;
      s := y - m*wm - f*wf;

      cmt := (1-csm)*b*s;
      cft := (1-csf)*(1-b)*s;
      cm := cmt;
      cf := cft;
      (* ***** *)
    end;
  quit2;
  end;
  curson;
end.

```

* Program 2: (変更箇所のみ)

```

(* ***** *)
m := cm/km;
f := cf/kf;
y := m*am + f*af;

cmt := (1-csm)*(m*am-m*wm);
cft := (1-csf)*(f*af-f*wf);
cm := cmt;
cf := cft;
(* ***** *)

```