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Egalitarian Policies and Effective Demand: Considering Balance of Payments (Note 1)

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Abstract
This study examines the effectiveness of redistribution policies considering balance of payments. Unlike Bowles (2012) and Abe (2015, 2016), we assume that capital movement is sluggish to consider the short-run effects. Results indicate that conventional egalitarian policies such as increasing unemployment compensation and strengthening dismissal regulations can be effective, whereas an asset-based redistribution such as a decrease in the ratio of monitoring labor cannot be. These results contradict Bowles (2012). We need to reevaluate conventional egalitarian policies if the effects of effective demand and adjustment of capital continue in the long run.
Keywords
egalitarian policies, redistribution, effective demand, globalization, balance of payments

1. Introduction

Worries persist that globalization may expand inequality and make it difficult to redistribute, thereby decreasing international competitiveness and encouraging capital flight. Results from Bowles' (2012) sharking model featuring free cross-border movement of capital endorse asset-based redistribution over traditional pro-worker policies because the former improves labor productivity whereas the latter induces capital flight. Bowles (2012) disregards the issue of effective demand to focus on supply, but Stock hammer (2015) argues that deterioration in effective demand instigates stagnation in the global economy. Abe (2015) introduces effective demand into Bowles' (2012) basic model and shows that asset-based redistribution under globalization is not always effective, given the effective demand constraints. Like Bowles (2012), Abe (2016) extends his 2015 model to consider budget constraints but disregards influences on effective demand. Abe (2016) shows that asset-based redistribution policy is not always effective, whereas income-based redistribution is effective under demand and budget constraints.

These studies apparently adopt the extreme assumption that capital moves swiftly across borders to illustrate globalization. That assumption is unrealistic in the short run because capital confronts many barriers. Therefore, we introduce balance of payments into our model to consider sluggish capital movements and to discuss the effectiveness of egalitarian policies.

We assume an economy in which goods produced using labor and capital are either for consumption or investment. Labor is homogeneous and immobile across borders. Employers extract labor by monitoring workers and giving threats of dismissal. Capital moves globally to pursue domestic and foreign rates of profit. Workers receive and spend all wages and unemployment compensation. Capital consumes a fraction of the profit. Employment falls (rises) with excess (deficient) supply in the goods market.

This study proceeds as follows. Section 2 explains our basic model. Section 3 introduces governmental budget constraints to our basic model. Section 4 concludes.

2. Basic Model

Gross output Q is

$$Q=yeh(1-m) \tag{1}$$

where h, e, y and m denote the total hours of work supplied in the economy, labor effort per hour, production per unit of effort, and the fraction of total work time accounted for by monitors, respectively. We normalize h to $0<h<1$ and assume that workers can choose effort unit to be 0 or 1.

Firms monitor workers and determine wage rates to equate payoffs between employees who work and those who shark. Thus,

$$w-a=(1-\tau)w+\tau hw+\tau(1-h)b \tag{2}$$

where w, a, τ and b denote the wage rate, disutility of labor, probability of firing, and unemployment compensation, respectively. The left (right) side shows the payoff for employees who work (shark). The first term on the right side represents the case of continued employment; the second, the case where the dismissed employees find new jobs; and the third, the case where the employees are dismissed and remain unemployed.

From Eq. (2),

$$W=\frac{a}{\tau(1-h)}+b \tag{3}$$

In Eq. (3), w is the minimum wage rate that prevents sharking. Profits and workers' utility are optimal at that wage. Wage rate w is an increasing function of disutility of labor (a), the employment rate (h), and unemployment compensation (b). Eq. (3) is the equilibrium condition for labor supply.

The rate of profit is

$$r=\frac{y-k-\frac{w}{1-m}}{k} \tag{4}$$

where k denotes capital per labor hour. k as an intermediate good is absent from the numerator in Eq. (4) because the goods produced have the characteristics of both investment and consumption. Workers identified for monitoring receive wages.

The after-tax rate of profit (π) is

$$\pi=r(1-t)=\frac{(1-t)(y-k-\frac{w}{1-m})}{k} \tag{5}$$

where t is the tax rate for profit.

The expectation of after-tax rate of profit E(π) is

$$E(\pi)=\pi(1-d) \tag{6}$$

where d is the probability of confiscation, which depends on countries' macroeconomic policies and political factors.

Next, we address the goods market, for which the equilibrium is defined as

$$(y-k)(1-m)h=i+c+g+x \tag{7}$$

In Eq. (7), i, c, g and x denote investment, consumption, governmental spending, and net exports, respectively.

We assume that investment depends on after-tax profit as in Bowles and Boyer (1988). The investment function is

$$i=i_0+i_r rk(1-m)(1-t)(1-d)h,\ i_0>0,\ i_r>0 \tag{8}$$

where i_0, i_r, and k(1-m)h are animal spirits, responsiveness of investment to profit, and the amount of capital, respectively.

Income from all wages and some profit is spent, rendering the consumption function as

$$c=[w+(1-s_r)r(1-t)k(1-m)]h \tag{9}$$

The balance of payments is

$$x+z(E(\pi)-\rho)=0 \tag{10}$$

where ρ and z are respectively, the in terest rate on safe assets in the foreign sector and the capital account, which is an increasing function of $E(\pi)-\rho$. When $E(\pi)-\rho$ increases, x decreases because the domestic currency appreciates.

Assume employment rises (falls) from excess (deficient) demand for goods. The dynamic equation for unemployment compensation is (Note 2)

$$\dot{h}=\alpha[(y-k)(1-m)h-(i+c+g+x)] \tag{11}$$

Results from analyzing comparative statics appear in Table 1 (Note 3).

Table 1. Analysis of Comparative Statics

	h	w	r
m	+	+	-
t	∓	∓	∓
b	+	+	-
τ	-	-	+
a	+	+	-
k	+	+	-
ρ	+	+	-
d	∓	∓	∓
s_r	-	-	+
i_0	+	+	-
i_r	+	+	-

An increase in m creates excess demand for goods through decrease in production; therefore, h increases. Thereafter, w increases because of sharking and r decreases.

An increase in t leads to a decrease in international demand in the goods market because of the decrease in the rate of after-tax profit. However, it stimulates exports because the decrease in the rate of profit leads to a decline in the exchange rate. Therefore, the effect on employment is ambiguous.

Increases in b, a, ρ, i_0 , and i_r and decreases in τ and s_r create excess demand in the goods market through wage increases; therefore, h increases. Thereafter, w increases because of sharking and r decreases.

An increase in k creates excess demand for goods through increase in the intermediate inputs and decline in the exchange rate due to a decrease in the rate of profit.

An increase in d decreases domestic demand because of the decrease in the expectations of the rate of after-tax profit. However, it leads to a decline in exports through devaluation of the domestic currency. Therefore, the effect on employment is ambiguous.

3. Governmental Budget Constraints

Government spending on labor productivity (p) includes support for nutrition, medicine, education, and infrastructure. We assume its effectiveness to be λ, giving

$$y=y(\lambda p) \tag{12}$$

Next, we address governmental budget constraints. Tax revenues received only from profits are th{(1-m)[y(λp)-k]-w}. Government expends funds on unemployment compensation (b(1-h)) and p. Thus,

$$g=b(1-h)+p=th\{(1-m)[y(\lambda p)-k]-w\} \tag{13}$$

Substituting (3) and (12) for (13) delivers

$$b(1-h)+p=th\{(1-m)[y(\lambda p)-k]-\frac{a}{\tau(1-h)}-b\} \tag{14}$$

Substituting (3)–(6), (8)–(10) and (12)–(14) for (7),

$$[s_r-i_r(1-d)](1-t)\{(y(\lambda p)-k)(1-m)-[\frac{a}{\tau(1-h)}+b]\}h=i_o-z\{(1-t)(1-d)\frac{y(\lambda(\lambda-k-\frac{1}{1-m}[\frac{a}{\tau(1-h)}]+b}{k}-\rho\} \tag{15}$$

We could sum the model using Eqs. (14) and (15) and the two endogenous variables h and p (Note 4). Results from analyzing comparative statics appear in Table 2 (Note 5).

Table 2. Analysis of Comparative Statics

	h	w	y	p
m	∓	∓	∓	∓
t	∓	∓	∓	∓
b	∓	∓	∓	∓
τ	∓	∓	∓	∓
a	∓	∓	∓	∓
k	∓	∓	∓	∓
ρ	+	+	∓	∓
d	∓	∓	∓	∓
s_r	-	-	∓	∓
i_r	+	+	∓	∓
i_{0r}	+	+	∓	∓

Several notable results are evident.

When m increases, employment (h) rises directly through excess demand for goods. However, the indirect effect on the goods market through p is unclear because the direction of p is not deterministic. If the effectiveness of y' is sufficiently large, p can increase. Therefore, the effect on h is ambiguous.

When t increases, employment (h) rises through excess demand for goods via income distribution and higher exports attributable to currency depreciation. In addition, tax revenues increase. Whether p increases is not deterministic. If y' is sufficiently effective, p and h can increase. In short, the total effect on h is ambiguous. Furthermore, cases wherein a and b decrease give the same results as in case of an increase in t.

An increase in τ decreases h directly because the wage rate and exports decrease. However, the indirect effect on the goods market through p is unclear because the direction of p is not deterministic. If the effectiveness of y' is sufficiently small, p can decrease; thereafter, h increases. The total effect of τ on h is ambiguous.

An increase in k increases h directly because excess supply in the goods market due to decrease in net production and increase in exports. However, the indirect effect on the goods market through p is unclear because the direction of p is not deterministic. If the effectiveness of y' is sufficiently small, p can increase; thereafter, h decreases. The effect of k on h is ambiguous.

An increase in ρ directly increases h because exports rise as the domestic currency depreciates, then w increases and r decreases. The direction of p is not deterministic and depends on the effectiveness of y'.

Whether an increase in d increases h is unclear because it reduces investment but stimulates exports via depreciation in the domestic currency. The direction of p is not deterministic and depends on the effectiveness of y'.

An increase in the saving rate on profit income (S_r) decreases employment (h) through an excess supply in the goods market. The direction of p is not deterministic. Dec in i_r and $i_0$equal the increase in s_r.

4. Conclusion

The author examined the effectiveness of redistribution policies considering balance of payments. Unlike Bowles (2012) and Abe (2015, 2016), we assumed sluggish international movements of capital to consider short-run effects.

We first showed that enlarging unemployment compensation and strengthening dismissal regulations are effective conventional policies but asset-based redistributions such as the decrease in the ratio of monitoring labor are not. These results conflict with Bowles (2012). We also confirmed the effectiveness of income redistribution.

We introduced budget constraints on government spending for labor productivity and found that the effectiveness of egalitarian policies depends on the effectiveness of government spending.

These results support the effectiveness of conventional egalitarian policies and consideration of an asset-based redistribution in the short run. However, if the effects on demand and adjustment of capital persist in the long run, policymakers must reevaluate conventional egalitarian policies.

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Notes

Note 1. This study is part of a research scholarship undertaken by the Department of Economics, Nagoya Gakuin University, in 2016. Any errors are mine alone.

Note 2. See Appendix 1 for the stability condition.

Note 3. See Appendix 2 for calculations.

Note 4. See Appendix 3 for a stability condition.

Note 5. See Appendix 4 for calculations.

Appendix 1

Substituting (3)–(6) and (8)–(10) for (11), we get

$$\dot{b} = \alpha\left\{\{[s_r - i_r(1-d)](1-t)+t\}\left\{(y-k)(1-m) - \left[\frac{a}{\tau(1-h)}+b\right]\right\}h - i_0 + g - z\left\{(1-t)(1-d)\frac{y-k-\frac{1}{1-m}\left[\frac{a}{\tau(1-h)}+b\right]}{k} - \rho\right\}\right\} \tag{16}$$

Thus, a stable condition is

$$D = \{[s_r - i_r(1-d)](1-t)+t\}\left\{(y-k)(1-m) - [\frac{a}{\tau(1-h)}+b]\right\} - (\{[s_r - i_r(1-d)](1-t)+t\}h + z'(1\text{-}t)(1\text{-}d)(-\frac{1}{k(1-m)}))\frac{a}{\tau}\frac{1}{(1-h)^2} > 0 \tag{17}$$

Appendix 2

From (20):

$$\frac{dh}{dm} = \frac{\{[s_r-i_r(1-d)](1-t)+t\}(y-k)+z'\frac{(1-t)(1-d)}{k}[\frac{a}{\tau(1-h)}+b]\frac{1}{(1-m)^2}}{D} > 0 \tag{18}$$

$$\frac{dh}{dt} = \frac{[s_r - i_r(1-d)-1]\left\{(y-k)(1-m) - \left[\frac{a}{\tau(1-h)}+b\right]\right\}h + z'(1-d)\frac{y-k-\frac{1}{1-m}\left[\frac{a}{\tau(1-h)}+b\right]}{k}}{D} \tag{19}$$

$$\frac{dh}{db} = \frac{\{[s_r-i_r(1-d)](1-t)+t\}+z'\frac{(1-t)(1-d)}{k(1-m)}}{D} \tag{20}$$

If Keynesian stability holds, $\frac{dh}{db} > 0$ because of $\{[s_r - i_r(1-\mathrm{d})](1-\mathrm{t})+\mathrm{t}\} > 0$.

$$\frac{dh}{dk}=\frac{\{[s_r-i_r(1-d)](1-t)+t\}h+z^{'}(1-t)(1-d)\{y-\frac{1}{1-m}[\frac{a}{\tau(1-h)}+b]\}\frac{1}{k^2}}{D}>0 \quad (21)$$

$$\frac{dh}{d\rho}=\frac{z'}{D}>0 \quad (22)$$

$$\frac{dh}{dd}=\frac{-\left\{(y-k)(1-m)-\left[\frac{a}{\tau(1-h)}+b\right]\right\}i_r(1-t)h+z'(1-t)\frac{y-k-\frac{1}{1-m}[\frac{a}{\tau(1-h)}+b]}{k}}{D} \quad (23)$$

$$\frac{dh}{ds_r}=-\frac{(1-t)\left\{(y-k)(1-m)-\left[\frac{a}{\tau(1-h)}+b\right]\right\}h}{D}<0 \quad (24)$$

$$\frac{dh}{da}=\frac{\{[s_r-i_r(1-d)](1-t)+t\}\frac{h}{\tau(1-h)}}{D}>0 \quad (25)$$

Appendix 3

From (14), we get

$$\frac{dp}{dh}=\frac{(1-t)b+t\{(1-m)[y(\lambda p)-k]-\frac{a}{\tau(1-h)^2}\}}{1-th(1-m)y'\lambda}\lesseqgtr 0 \quad (26)$$

From (11), (15), and (26), a stable condition is

$$\text{A}=\{[s_r-i_r(1-\text{d})](1-\text{t})\}\left\{(\text{y}-\text{k})(1-\text{m})-\left[\frac{a}{\tau(1-h)}+\text{b}\right]\right\}-\left\{[s_r-i_r(1-\text{d})](1-\text{t})\text{h}-\text{z}^{'}(1-\text{t})(1-\text{d})\frac{1}{k(1-m)}\right\}\frac{a}{\tau(1-h)^2}+\left[\{[s_r-i_r(1-d)](1-t)\}h+z^{'}\frac{(1-t)(1-d)}{k}\right]y'\lambda\frac{dp}{dh}>0 \quad (27)$$

Appendix 4

Calculation of m

From (14) and (15):

$$\frac{dh}{dm}=\frac{[s_r-i_r(1-d)](1-t)h\left(y-k-y'\lambda\frac{dp}{dm}\right)+z^{2}\frac{(1-t)(1-d)}{k}\{\left[\frac{a}{\tau(1-h)}+b\right]\frac{1}{(1-m)^2}+y'\lambda\frac{dp}{dm}\}}{A} \quad (28)$$

$$\frac{dp}{dm}=\frac{-th(y-k)}{1-th(1-m)y'\lambda} \quad (29)$$

If the effect of y' is minor, $\frac{dp}{dm}<0$.

Calculation of t

From (14) and (15):

$$\frac{dh}{dt}=\frac{[s_r-i_r(1-d)]\left\{(y-k)(1-m)-\left[\frac{a}{\tau(1-h)}+b\right]\right\}h+z^{'}(1-d)\frac{y-k-\frac{1}{1-m}\left[\frac{a}{\tau(1-h)}+b\right]}{k}}{A}-\frac{[s_r-i_r(1-d)](1-t)(1-m)y^{'}\lambda+z'(1-t)(1-d)\frac{y'\lambda}{k}}{A}\frac{dp}{dt} \quad (30)$$

$$\frac{dp}{dt}=\frac{\left\{(y-k)(1-m)-\left[\frac{a}{\tau(1-h)}+b\right]\right\}h}{1-th(1-m)y'\lambda} \quad (31)$$

If the effect of y' is sufficiently large, $\frac{dp}{dt}<0$, $\frac{dh}{dt}>0$. Thus, $\frac{dw}{dt}>0$ and $\frac{dr}{dt}<0$ hold.

Calculation of τ

From (14) and (15):

$$\frac{dh}{d\tau}=\frac{-[s_r-i_r(1-d)](1-t)h\frac{a}{(1-h)\tau^2}-z'\frac{(1-t)(1-d)a}{k(1-m)(1-h)\tau^2}}{A}$$

$$-\frac{[s_r-i_r(1-d)](1-t)hy'\lambda+z'(1-t)(1-d)\frac{y'\lambda}{k}}{A}\frac{dp}{d\tau} \tag{32}$$

$$\frac{dp}{dt}=\frac{\frac{tha}{(1-h)\tau^2}}{1-th(1-m)y'\lambda} \tag{33}$$

If the effect of y' is minor, $\frac{dp}{d\tau}>0$, $\frac{dh}{d\tau}<0$. Thus, $\frac{dw}{d\tau}<0$ and $\frac{dr}{d\tau}>0$ hold.

Calculation of a

From (14) and (15):

$$\frac{dh}{da}=\frac{[s_r-i_r(1-d)]\frac{(1-t)h}{(1-h)\tau}+z'\frac{(1-t)(1-d)}{k(1-m)(1-h)\tau}}{A}$$

$$-\frac{[s_r-i_r(1-d)](1-t)hy'\lambda+z'(1-t)(1-d)\frac{y'\lambda}{k}}{A}\frac{dp}{da} \tag{34}$$

$$\frac{dp}{da}=-\frac{\frac{th}{(1-h)\tau}}{1-th(1-m)y'\lambda} \tag{35}$$

If the effect of y' is minor, $\frac{dp}{da}<0$, $\frac{dh}{da}>0$. Thus, $\frac{dw}{da}>0$ and $\frac{dr}{da}<0$ hold.

Calculation of k

From (14) and (15):

$$\frac{dh}{dk}=\frac{[s_r-i_r(1-d)](1-t)h+z'\frac{(1-t)(1-d)}{k^2}\{y-\frac{1}{1-m}\left[\frac{a}{\tau(1-h)}+b\right]\}}{A}$$

$$-\frac{[s_r-i_r(1-d)](1-t)hy'\lambda+z'(1-t)(1-d)\frac{y'\lambda}{k}}{A}\frac{dp}{dk} \tag{36}$$

$$\frac{dp}{dk}=-\frac{th(1-m)}{1-th(1-m)y'\lambda} \tag{37}$$

If the effect of y' is minor, $\frac{dp}{dk}<0$, $\frac{dh}{dk}>0$. Thus, $\frac{dw}{dk}>0$ and $\frac{dr}{dk}<0$ hold.

Calculation of ρ

From (14) and (15):

$$\frac{dh}{d\rho}=\frac{z'}{A}>0 \tag{38}$$

$\frac{dw}{d\rho}>0\frac{dr}{d\rho}<0$.

Calculation of d

From (14) and (15):

$$\frac{dh}{dd}=\frac{-\left\{(y-k)(1-m)-\left[\frac{a}{\tau(1-h)}+b\right]\right\}h(1-t)i_r+z'(1-t)\frac{y-k-\frac{1}{1-m}\left[\frac{a}{\tau(1-h)}+b\right]}{k}}{A} \tag{39}$$

Calculation of s_r

From (14) and (15):

$$\frac{dh}{ds_r} = -\frac{(1-t)}{A}\left\{(y-k)(1-m) - \left[\frac{a}{\tau(1-h)} + b\right]\right\} h < 0 \quad (40)$$

$\frac{dw}{ds_r} < 0 \, \frac{dr}{ds_r} > 0.$

Calculation of b

From (14) and (15):

$$\frac{dh}{db} = \frac{[s_r - i_r(1-d)](1-t)h + z^{'}(1-d)\frac{1}{k(1-m)}}{A}$$

$$-\frac{[s_r - i_r(1-d)](1-t)hy^{'}\lambda + z'(1-t)(1-d)\frac{y'\lambda}{k}}{A}\frac{dp}{db} \quad (41)$$

$$\frac{dp}{db} = -\frac{1-b+th}{1-th(1-m)y^{'}\lambda} \quad (42)$$

If the effect of y' is minor, $\frac{dp}{db} < 0m,$ $\frac{dh}{db} > 0.$ Thus, $\frac{dw}{db} > 0$ and $\frac{dr}{db} < 0$ hold.