Expert Advice and Career Concerns

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1 Introduction

In this paper, I investigate effects of experts (like bureaucrats) adivice to politicians' decisions.

Because the bureaucrat does not take pressure by the election from citizens and engaged in a policy making for a long term, they have information about the policy than politicians. On the other hand, the politician will comparatively do choice like the citizen because they are judged in election by citizens. However, it seems that the knowledge about the policy is not blessed as a bureaucrat. For the citizen, the bureaucrat-led politics are expected more correct judgment by the expertise, and the criterion might become estranged with the citizen. On the other hand, as for the politician-led politics, it is very likely that they make a wrong decision from lack of the knowledge even if the criterion is near to citizens.

Aghion and Tirole (1997) shows a role of the authority of the system. In this paper, I builds the model that a politician has policy decisive power and a bureaucrat takes a central role about the drafting. In this case it is thought that

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bureaucratic ability to perform real policy making affects policy result. In the model, the politician receives advice whether or not carried out a policy from a bureaucrat. As for the bureaucrat, the bureaucrat who is career concern may have bias in policy making in order that own ability is shown through the policy result. As a bureaucrat with high ability has the larger bias for the policy practice since the profit to show own ability is larger.

Like this paper, the following studies consider a bureaucrat as an adviser of the politicians. Boadway and Sato (2008) analyse distortion of bureaucratic advice and how influences the decision of the politician. They show a bureaucrat who holds information about the cost of the policy project, advice is wrong when benefit from the practice of the project of a bureaucrat is different from a politician. In addition, they compare a case to receive advice from plural bureaucrats from an independent bureaucrat and show that it is not better to receive advice from plural bureaucrats.

Ludema and Olofsgård (2008) treat a problem whether a politician entrusts a bureaucrat with decision of the company regulation or a politician decides by the advice of a bureaucrat. They compare a bureaucrat as the policy decider with a bureaucrat as the adviser.

2 The Model

An incumbent politician (she) and a bureaucrat (he) are players of the model. They are risk neutral. Citizens and an opposite politician are dummy players. The incumbent politician must decide whether to undertake a project. The bureaucrat plans detail of the project and advices the politician. I assume that citizen's project benefit depend on the ability of the bureaucrat θ. This abiltiy parameter θ is private information of the bureaucrat and uniformly distributed on $[0, \bar{\theta}]$. $G(\theta)$ is this uniform distribution and it is public information for all. The cost of project c is a randum variable, but it is realized before the date 1

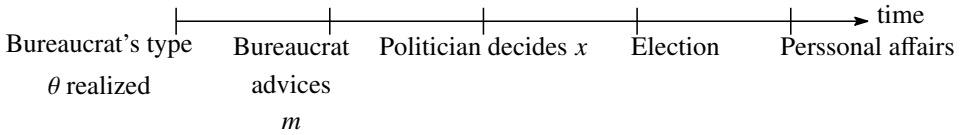

Figure 1: Timeline of events

and is already known to all. The project cost is only burden on citizens as poll tax.

The politician considers the bureaucrat's advice m and decides whether to accept based on expectations about the bureaucrat's ability θ. The advice m is public information. If the bureaucrat recommends the project be undertaken, he sends $m = 1$ to her and $m = 0$ if it is not. The politician decides $x = 1$ if the project is undertaken and $x = 0$ if it is not. If the project is undertaken, citizens' welfare is $\theta - c$, and zero if it is not.

After the project implementation or rejection, the election takes place. The outcome of the election depends on the welfare of citizens. If the project's welfare is high (low), the probability of reelection is high (low). If the incumbunt polititian is not reelected, she incur defeated costs, if he is reelected, he does not incur any costs (or profits). I assume that the defeated cost is nomalized to 1. The following figure 1 is the timeline of the model.

2.1 The Politician

Here, the politician's payoff is defined. She grabs ego rent, if the project is undertaken. The rent is greater wtih the project benefit is larger. I assume that the politicians ego rent is propotinal to the benefit: $\beta_P\theta$, because the benefit is θ in the model. The β_P is a parameter which means the politician's preference for ego rent.

The politician incurs an opportunity cost if she is defeated at the election.

I assume that the cost is 1, the expected cost is the probability of defeated Pr(defeated|x), where $x = 1$ if the project is undertaken and $x = 0$ if it is not. This means the probability of defeated depends on whether the project is undertaken or not. Consequently, the politician's expected payoff is

$$x[\beta_P\theta - \Pr(\text{defeated}|x = 1)] - (1 - x)\Pr(\text{defeated}|x = 0). \quad (1)$$

2.2 The Bureaucrat

The bureaucrat's reward is his future career in the public or private sector. I assume that his payoff is simply propotional to his expected ability known to others, $\beta_B E(\theta)$, where β_B means a preference for the future career. If the project is undertaken, his expected payoff is $\beta_B\theta$ because the outcome of the project $\theta - c$ and the cost of the project c are observed by all. If it is not undertaken, his expected payoff is $\beta_B E(\theta|m)$, because his ability is predicted by his advice m.

After the election, the bureaucrat should be dismissed by the elected politician if his predicted ability is relatively low. I assume the cost of dismissal is unity, the loss is the probability of dismissal Pr(dismissed|x, m). Cosecently, the total expected payoff of the bureaucrat is

$$x[\beta_B\theta - \Pr(\text{dismissed}|x, m)] + (1 - x)[\beta_B E(\theta|m) - \Pr(\text{dismissed}|x, m)]. \quad (2)$$

3 Analysis

In this section, we analyze the model with backward, induce equilibrium conditions.

3.1 The Bureaucrat's Dismissal

First, consider the dismissal of the bureaucrat decided by the elected politician at the last stage in the model.

The politican decides to dismiss the bureaucrat if his ability θ is lower than a threshold $\theta_0 - \varepsilon_i$ $(i = P, C)$, where ε_i (≥ 0) is a ramdon variable which expresses a bias to support incumbent bureaucrats and is according to a uniform distribution $F_i(\varepsilon_i)$ over intervals $[0, \bar{\varepsilon}_i]$. Therefore, it is needed to consider the probability of the incumbent politician's defeated at the election, because the probability of dismisal depends on the incumbent politician's bias. The probability of dismisal is

$$\begin{aligned}
&\Pr(\text{dismissed}|x = 1, m) \\
&\quad = (1 - \Pr(\text{defeated}|x = 1))F_P(\theta_0 - \theta) + \Pr(\text{defeated}|x = 1)F_C(\theta_0 - \theta) \\
&\quad = (1 - \Pr(\text{defeated}|x = 1))\frac{\theta_0 - \theta}{\bar{\varepsilon}_P} + \Pr(\text{defeated}|x = 1)\frac{\theta_0 - \theta}{\bar{\varepsilon}_C} \qquad (3)
\end{aligned}$$

,where the probability does not depend on his advise m if the project is undertaken, because his ability is clear for all if it is done. If the project is not undertaken, the bureaucrat's ability is guessed from his advice m. The expected ability is $E(\theta|m)$. The probability of dismisal is

$$\begin{aligned}
&\Pr(\text{dismissed}|x = 0, m) \\
&\quad = (1 - \Pr(\text{defeated}|x = 0))F_P(\theta_0 - E(\theta|m)) + \Pr(\text{defeated}|x = 1)F_C(\theta_0 - E(\theta|m)) \\
&\quad = (1 - \Pr(\text{defeated}|x = 0))\frac{\theta_0 - E(\theta|m)}{\bar{\varepsilon}_P} + \Pr(\text{defeated}|x = 1)\frac{\theta_0 - E(\theta|m)}{\bar{\varepsilon}_C}. \qquad (4)
\end{aligned}$$

3.2 The Election

I consider a retrospective voting, in which the citizens as voters vote according the outcome of the project. The citizens vote for the incumbent politician

if the outcome of the project $\theta - c$ is larger than a threshold W. I assume $W \equiv y_0 - \varepsilon_V$, where y means citizens' expectations for the opposite candidate, and ε_V is their bias toward incumbent politician. The ε_V is draw from a uniform distribution $F_V(\varepsilon_V)$ on $[0, 1]$. If the project is undertaken ($x = 1$), the probability of which the incumbent politician is defeated, is

$$\Pr(\text{defeated}|x = 1) = \Pr(\theta - c < W) = F_V(y_0 + c - \theta) = y_0 + c - \theta. \quad (5)$$

If the project is not undertaken, citizens' welfare is zero. Therefore, the probability is

$$\Pr(\text{defeated}|x = 0) = \Pr(0 < W) = F_V(y_0) = y_0. \quad (6)$$

3.3 Decision of Politician

I consider the politician's decision to undertake the project or not. The politician does not know the bureaucrat's ability θ, when she decides. Therefore, she asks for bureaucrat's advice on the decision and infers his ability from his advice. Let the expectation on his ability from his advise m is $E(\theta|m)$, the condition that she undertakes the project is as follows.

$$\beta_P E(\theta|m) \geq \Pr(\text{defeated}|x = 1) - \Pr(\text{defeated}|x = 0). \quad (7)$$

From the above condition, the politician undertakes if her rents of the project is larger than the amount of expected defeated costs increase.

3.4 The bureaucrat's advice and equilibrium

Let's now consider the equilibrium of the model. First, I consider the politician's beliefs about the bureaucrat's ability. Obviously, a babling equilibrium exists because the model is a cheap talk game. I analyse an informative equilibrium in this paper.

Let $\hat{\theta}$ denotes the belief about the ability of the bureaucrat. The politician believes the bureaucrat's ability is higher than the threshold ($\theta \geq \hat{\theta}$) if the bureaucrat advises her to undertake the project ($m = 1$). On the contrary, she believes his ability is lower than the threshold ($\theta < \hat{\theta}$) if he advises her to stop the project ($m = 0$). Using the belief, the expected value of θ is

$$E(\theta|m = 1) = \frac{\int_{\hat{\theta}} \theta dG(\theta)}{1 - G(\hat{\theta})} = \frac{\hat{\theta} + \bar{\theta}}{2} \tag{8}$$

$$E(\theta|m = 0) = \frac{\int^{\hat{\theta}} \theta dG(\theta)}{G(\hat{\theta})} = \frac{\hat{\theta}}{2}. \tag{9}$$

Rearrange the condition to undertake the project by the above expected value of θ, I get

$$E(\theta|m) \geq \frac{F_V(y_0 + c - E(\theta|m)) - F_V(y_0)}{\beta_P}. \tag{10}$$

Therefore, the politician always takes $x = 1$ for any m if

$$E(\theta|1) > E(\theta|0) \geq \frac{F_V(y_0 + c - E(\theta|0)) - F_V(y_0)}{\beta_P}.$$

She always takes $x = 0$ for any m if

$$\frac{F_V(y_0 + c - E(\theta|0)) - F_V(y_0)}{\beta_P} > E(\theta|1) > E(\theta|0).$$

The bureaucrat's advice is accepted if

$$E(\theta|1) > \frac{F_V(y_0 + c - E(\theta|1)) - F_V(y_0)}{\beta_P} > \frac{F_V(y_0 + c - E(\theta|0)) - F_V(y_0)}{\beta_P} \geq E(\theta|0).$$

I use uniform distribution in the model. The condition that $x = 1$ is taken for any m is

$$\frac{\hat{\theta}}{2} > \frac{c}{1 + \beta_P}. \tag{11}$$

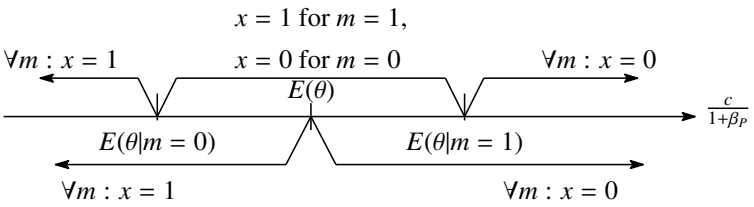

Figure 2: Politician's best response

The condition that $x = 0$ is taken for any m is

$$\frac{\hat{\theta} + \bar{\theta}}{2} < \frac{c}{1 + \beta_P}. \tag{12}$$

The condition that $x = 1$ is taken for $m = 1$ and $x = 0$ is taken for $m = 0$ is

$$\frac{\hat{\theta}}{2} \leq \frac{c}{1 + \beta_P} \leq \frac{\hat{\theta} + \bar{\theta}}{2}. \tag{13}$$

The bureaucrat expects that his adivice is accepted if the condition (13) holds. He advices the politician to undertake the project ($m = 1$).

First, consider the case that the politician decides $x = 1$ for any m hence the condition (11) holds. The bureaucrat's profit is independent on his advice because his ability becomes widely known if the project is undertaken. Therefore any advices are candidates of the equilibrium. I analyse the significant case that the bureaucrat of $\theta \geq \hat{\theta}$ advices $m = 1$, the others $\theta < \hat{\theta}$ advice $m = 0$.

Next, consider the case that the politician decides $x = 0$ for any m. The condition (12) holds in the case. The bureaucrat's dimissal probability is varied by his advice because the bureaucrat's ability is not revealed when the

project is not undertaken. His profit satisfies the following inequalities.

$$\begin{aligned}
&E(\theta|1) - \Pr(\text{dismissed}|x=0, m=1) \\
&\quad = E(\theta|1) - (1 - F_V(y_0))F_P(\theta_0 - E(\theta|1)) - F_V(y_0)F_C(\theta_0 - E(\theta|1)) \\
&\quad > E(\theta|0) - (1 - F_V(y_0))F_P(\theta_0 - E(\theta|0)) - F_V(y_0)F_C(\theta_0 - E(\theta|0)) \\
&\quad = E(\theta|0) - \Pr(\text{dismissed}|x=0, m=0).
\end{aligned}$$

As a result, all bureaucrats send $m = 1$, irrespective of their ability. This is not consistent the belief of the politician hence the informative equilibrium does not exist in the case.

At last, I analyse the case that the politician follows the advice. In the case, a condition that the bureaucrat send $m = 1$ is

$$\beta_B\theta - \Pr(\text{dismissed}|1,1) \geq \beta_B E(\theta|0) - \Pr(\text{dismissed}|0,0). \tag{14}$$

Therefore, if

$$\begin{aligned}
&\beta_B\theta - (1 - F_V(y_0 + c - \theta))F_P(\theta_0 - \theta) - F_V(y_0 + c - \theta)F_C(\theta_0 - \theta) \\
&\quad \geq \beta_B E(\theta|0) - (1 - F_V(y_0))F_P(\theta_0 - E(\theta|0)) - F_V(y_0)F_C(\theta_0 - E(\theta|0)),
\end{aligned} \tag{15}$$

the bureaucrat advices to undertake the project ($m = 1$). Let $\hat{\theta}$ equate the above inequality. Subtract the right hand side of the equation (15) from the left hand side and substitute $\theta = \hat{\theta}$ and differentiate it by $\hat{\theta}$, I have

$$\frac{\partial(\text{LHS} - \text{RHS})}{\partial\hat{\theta}} > 0. \tag{16}$$

$\hat{\theta}$ is uniquely determined because this monotonous increases in $\hat{\theta}$. The high ability bureaucrat ($\theta \geq \hat{\theta}$) advices to undertake the project ($m = 1$). The low ability bureaucrat advices to stop ($m = 0$).

Considering the above analysisses, conditions of the informative equilibrium is stated in the following lemma.

Lemma 1. *The perfect Baysian equilibrium that detemined by the following three conditions exsists, where $\hat{\theta}$ is defined the next equation.*

$$\beta_B\hat{\theta} - \frac{\theta_0 - \hat{\theta}}{\bar{\varepsilon}_P} + (y_0 + c - \hat{\theta})\left[\frac{\theta_0 - \hat{\theta}}{\bar{\varepsilon}_P} - \frac{\theta_0 - \hat{\theta}}{\bar{\varepsilon}_C}\right] = \beta_B\frac{\hat{\theta}}{2} - \frac{\theta_0 - \frac{\hat{\theta}}{2}}{\bar{\varepsilon}_P} + y_0\left[\frac{\theta_0 - \frac{\hat{\theta}}{2}}{\bar{\varepsilon}_P} - \frac{\theta_0 - \frac{\hat{\theta}}{2}}{\bar{\varepsilon}_C}\right]. \quad (17)$$

1. *The bureaucrat's advice is cosistent with the belief.*

$$\begin{cases} m = 1 \quad \textit{if} \quad \theta \geq \hat{\theta}, \\ m = 0 \quad \textit{otherwise}. \end{cases} \quad (18)$$

2. *The belief satisfies Baysian rules.*

$$E(\theta|m = 1) = \frac{\hat{\theta} + \bar{\theta}}{2}, \quad (19)$$

$$E(\theta|m = 0) = \frac{\hat{\theta}}{2}. \quad (20)$$

3. *The politician decides to undertake or stop the project by the following conditions.*

$$\begin{cases} x = 1 \quad \textit{if} \quad E(\theta|m) \geq \frac{c}{1 + \beta_P}, \\ x = 0 \quad \textit{otherwise}. \end{cases} \quad (21)$$

4 Bureaucrat's ability and advice

In this section, I consider a comparative statics analysis of the informative equilibrium of the model and show the relation between the bureaucrat's ability and advice.

Lemma 2. *When the incumbent politician have a toward the bureaucrat ($\bar{\varepsilon}_P > \bar{\varepsilon}_C$), bureaucrats who advice to stop the project, increase with the project cost c in the informative equilibrium.*

$$\frac{\partial \hat{\theta}}{\partial c} \in [0, 1) \quad \textit{if } \Delta \equiv \bar{\varepsilon}_P - \bar{\varepsilon}_C \geq 0. \tag{22}$$

If the bureaucrats' preference to private rent β increase, the bureaucrats who advice to undertake the project increase ($\frac{\partial \hat{\theta}}{\partial \beta_B} < 0$). The preference to private rent of the incumbent politician does not influence the bureaucrat's advice ($\frac{\partial \hat{\theta}}{\partial \beta_P} = 0$). If citizens' expectations for the opposite politician y_0 increase, the bureaucrats who advice to undertake the project increase ($\frac{\partial \hat{\theta}}{\partial y_0} < 0$).

Proof. See appendix. □

I have the following proposition about bureaucratic advice.

Proposition 1. *If the incumbent politican has bias to the bureaucrats ($\bar{\varepsilon}_P > \bar{\varepsilon}_C$), all the bureaucrats advice to undertake the project excessively by the citizens' points of view. Moreover, the higher ability bureaucrats, they advice to undertake the more excessive.*

Proof. I show that the citizens' preferable threshold to undertake the project is lower than the threshold of bureaucrats' advice to undertake the project. Moreover, I show that the higher ability bureaucrat, the threshold is the larger.

The figure 3 and 4 shows the ideal threshold for the citizens $\theta = c$ and the bureaucrat's advice $\theta = \hat{\theta}$ on θ-c space. From (17), $\hat{\theta} = 0$ if $c = 0$. Since the slope of $\hat{\theta}$ is $\frac{\partial \hat{\theta}}{\partial c} \in [0, 1)$, the larger θ, the larger difference of $c - \hat{\theta}$. □

The project is not carried out however the practice of the project is desirable for citizens in the domain I (Type I error) of the figures and the project is carried out however the practice of the project is undesirable in the domain II (Type II error) .

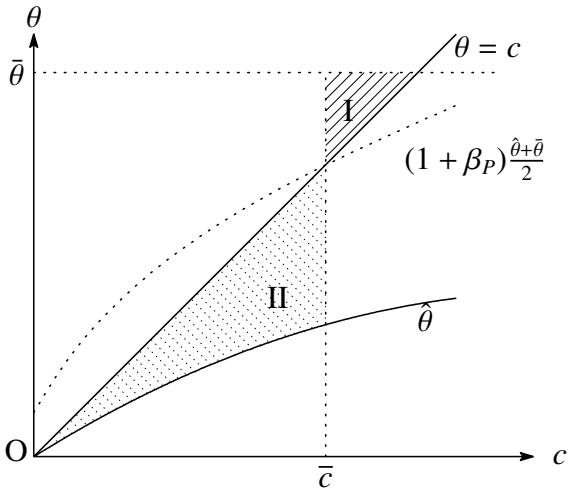

Figure 3: Bureaucrat's advice and politician's decision (low β_P)

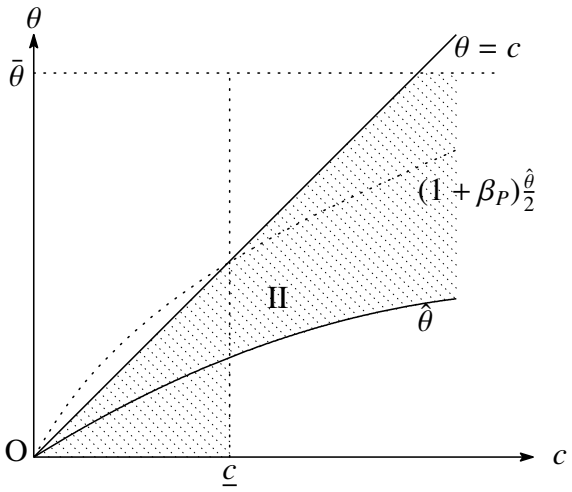

Figure 4: Bureaucrat's advice and politician's decision (high β_P)

5 Conclusion

In the model of this paper, it was shown that the cost of citizens is reflected to bureaucratic advice through the election of the politician who has rights of personnel management. However, the governance by the election becomes difficult as the higher bureaucrat's ability who advises excessive project execution to a politician. This loss could be larger than the effect of bureaucratic ability which the public welfare increase, thus the higher ability bureaucrat decreaces citizens' welfare.

Appendix

The following equations derived from (17).

$$\frac{\partial \hat{\theta}}{\partial c} = \frac{2\Delta(\theta_0 - \hat{\theta})}{2\Delta(\theta_0 - \hat{\theta}) + \Delta(y_0 + 2c - 2\hat{\theta}) + \bar{\varepsilon}_C(\beta_B \bar{\varepsilon}_P + 1)}, \tag{23}$$

where assuming interior solutions, $0 < \frac{\partial \hat{\theta}}{\partial c} < 1$ if $\Delta \equiv \bar{\varepsilon}_P - \bar{\varepsilon}_C > 0$ since $\theta_0 - \hat{\theta} > 0$, $\theta_0 + y_0 + c - 2\hat{\theta} > 0$. And for the second order differential, I show

$$\frac{\partial^2 \hat{\theta}}{\partial c^2} = \frac{-2\Delta \frac{\partial \hat{\theta}}{\partial c} D - 4\Delta^2 \left(1 - 2\frac{\partial \hat{\theta}}{\partial c}\right)(\theta_0 - \hat{\theta})}{D^2} < 0, \tag{24}$$

where $D \equiv 2\Delta(\theta_0 - \hat{\theta}) + \Delta(y_0 + 2c - 2\hat{\theta}) + \bar{\varepsilon}_C(\beta_B \bar{\varepsilon}_P + 1)$ is the denominator of (23). I show that the second derivative is negative as follows. If $D \to 2\Delta(\theta_0 - \hat{\theta})$, I have $\frac{\partial \hat{\theta}}{\partial c} \to 1$ and $\frac{\partial^2 \hat{\theta}}{\partial c^2} \to 0$. If $D > 2\Delta(\theta_0 - \hat{\theta})$, $\frac{\partial^2 \hat{\theta}}{\partial c^2}$ decreaces since $\frac{\partial \hat{\theta}}{\partial c}$ decreaces as D increaces. Thus $\frac{\partial^2 \hat{\theta}}{\partial c^2} < 0$.

Let $\tilde{c}$ is c such that $\frac{\partial \hat{\theta}}{\partial c} = 0.5$. It holds that

$$\tilde{c} = \theta_0 - \frac{1}{2}\left(y_0 + \beta_B \bar{\varepsilon}_C + \frac{\bar{\varepsilon}_c^2 + \bar{\varepsilon}_C}{\Delta}\right). \tag{25}$$

Then, $\hat{c}$ is c such that $0.5c = \hat{\theta}$. It holds that

$$\hat{c} = \frac{\Delta(2\theta_0 - y_0 - \beta_B \bar{\varepsilon}_C) - \beta_B \bar{\varepsilon}_C^2 - \bar{\varepsilon}_C}{\Delta}. \tag{26}$$

It is obvious that $\partial\hat{\theta}/\partial\beta_P = 0$. About y_0, it holds that

$$\frac{\partial\hat{\theta}}{\partial y_0} = \frac{-\Delta\hat{\theta}}{2\Delta(\theta_0 - \hat{\theta}) + \Delta(y_0 + 2c - 2\hat{\theta}) + \bar{\varepsilon}_C(\beta_B\bar{\varepsilon}_P + 1)}, \tag{27}$$

where $\frac{\partial\hat{\theta}}{\partial y_0} < 0$ since the denominator is positive from the previous assumption.

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