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AN EXAMINATION OF THE EFFECTS AND COSTS OF TEMPORARY POLICY

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This paper examines the implications of the two basic components of Calvo's model (1987) for the effects and costs of temporary trade liberalization policy. First, by adopting a tax loss parameter in the basic model, the situation of incomplete tax compensation associated with temporary policy is analyzed as a more general case. This analysis includes the cases in which deadweight loss or government consumption exists. Using this model, it is seen that Calvo's results can hold in a more general situation, but only with some restrictions on the parameter values. Second, the implication of the infinite planning horizon of the consumer in temporary policy experiment is investigated by analyzing an extreme case of a finite horizon economy. By studying an overlapping generations economy with the same kind of temporary policy, it is seen that the length of the planning horizon of the consumer matters critically in evaluating the effects and costs of temporary liberalization policy.

Keywords: Temporary Policy, Deadweight Loss, Planning Horizon, Trade Liberalization
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1. INTRODUCTION

One of the well-known text-book results in the 'gains from trade' literature is that 'free trade' Pareto dominates tariff barriers in a small economy. This result is, however, based on a static analysis. In fact, the 'gains from trade' literature argues that free trade is optimal if and only if free trade is going to be the policy followed in the entire future of this economy. Therefore, there is no assurance that a temporary liberalization policy would be optimal since the appropriate analytical procedure to extend the gains-from-trade theorem to a dynamic setting requires the elimination of all trade barriers on all present and future goods. This is the starting point of Calvo's (1986, 1987, 1988) studies of the costs of temporary policy, in which he develops models to dramatize the above-mentioned point.

In Calvo (1987), the effects and welfare costs of a temporary trade liberalization are presented in terms of a model with an infinitely-lived individual, under perfect capital mobility, with no static gains from trade. The costs of temporary policy are due to the distorted intertemporal substitution in consumption of the representative consumer that the temporariness of the policy generates. Using this model, Calvo (1987) shows the following results: 1) the temporary liberalization policy leads to a current-account deficit during the liberalization period, 2) the current-account deficit becomes larger, the shorter is the liberalization period, and 3) the costs of temporary policy are non-monotonic with respect to the liberalization period and the timing of their maximum costs varies widely with parameters. This basic model was extended to include durable and home goods, money, and static gains from trade. Also, a model in which the effect of storability is the central source of distortions under a temporary policy, was developed later in Calvo (1988).[1]

This paper examines the implications of two different basic components of the Calvo's(1987) model for the effects and costs of temporary trade liberalization. First, we study the case of incomplete tax compensation associated with temporary policy as a more general case, recognizing the essential role of complete tax compensation in Calvo's model for his main results. By adopting a tax loss parameter in the same basic model, we can include the case in which the government consumes something, or the case that there exist some real costs while taxes are collected from and distributed to the consumer. This model includes the Calvo's (1987) model, of course, when the tax loss parameter is set equal to 0. With positive tax loss parameter, it is seen below that some of his results are modified, and we find a range of parameters in which his results hold. Therefore, while the work below shows that Calvo's results can hold in a more general situation, it also indicates that there should be some restrictions on the range of parameters to obtain his results.

Second, we investigate the implications of a finite planning horizon of the consumer for the effects and costs of temporary policy. The issue is what happens to the main results of the model if the representative consumer has a very short planning horizon. To answer this question, we develop an overlapping generations model with the same temporary liberalization policy, as an extreme example of a finite horizon economy. Although this model can be regarded as a rather special case in the context of a temporary liberalization experiment, it would be helpful in measuring the welfare costs of temporary policy when the optimizing consumer considers only 'today' and 'tomorrow' in his consumption decision. Using this model, it will be seen below that the length of consumers' planning horizons matters critically in studying the effects and costs of temporary policies.

Section 2 presents a model of a temporary trade liberalization experiment with incomplete tax compensation. The model, in fact, would be a discrete-time version of

[1] Calvo (1986) shows that a stabilization policy based on a temporary reduction in the rate of devaluation has real effects, and the real effects tend to become bigger, as the horizon of the temporary policy is shortened.

Calvo's (1987) basic model, considering the case of incomplete tax compensation. Using the model, the analysis is extended to a larger parameter set, and the simulation results are extended to include various values of the tax loss parameter. Section 3 presents an overlapping generations model with temporary policy to study an extreme case of the finite horizon economy. Section 4 has conclusions.

2. THE BASIC MODEL WITH TAX LOSS

There are two types of homogeneous goods: importables and exportables. The economy is composed of a representative infinitely-lived consumer whose utility function at time 0 is given by

$$\sum_{t=0}^{\infty} \beta^t u(c_t), \quad 0 < \beta < 1 \tag{1}$$

where c_t is consumption of importables at period t, and β is the constant discount factor; it is assumed that $u' > 0$ and $u'' < 0$ for all $c > 0$. The consumer maximizes his lifetime utility (1) subject to the following budget constraint:

$$k_{t+1} = R(k_t + y + g_t - p_t c_t) \tag{2}$$

$$k_0 \text{ is given, } \lim_{t\to\infty} k_t / R^t = 0 \tag{3}$$

where exportables are the 'numeraire', k_t is the stock of bonds held by the consumer, y (positive, constant and exogenous) is the flow of endowments in the form of exportables, p_t is the (domestic) importables/exportables relative price, g_t is government lump-sum transfers, and $R = 1 + r$ is the constant interest factor. For convenience in the analysis below, it is assumed that the real interest rate is equal to the subjective discount rate, so $\beta R = 1$. By solving the budget constraint (2) forward given the condition (3), we obtain the following life-time budget constraint:

$$k_0 + \sum_{t=0}^{\infty} (R^{-t})(y + g_t - p_t c_t) = 0\,. \tag{4}$$

The consumer maximizes his life-time utility subject to the budget constraint (4), and implicitly perfect foresight is assumed.

It is assumed that the international importables/exportables relative price is unity. Therefore, $(p_t - 1)$ is the ad-valorem tax on imports, and the proceeds of the import tax are given back to the consumer in the form of lump-sum subsidies, but not necessarily all of the proceeds, i.e.,

$$g_t = \tau(p_t - 1)c_t, \quad 0 \le \tau \le 1. \tag{5}$$

Here $(1-\tau)(p_t - 1)c_t$ is interpreted as the real cost that is incurred in the process of tax collection and redistribution,[2] or as government consumption that does not affect the consumer's utility. The deadweight loss is incurred as a result of imposition of ad-valorem tax on imports. Hence, $1-\tau$ would be the parameter for tax loss; the basic model of Calvo (1987) assumes $\tau = 1$. Although we are not interested in the effects of government spending, it will be seen below that the main results of Calvo (1987) depend on the assumption $\tau = 1$. Thus we analyze the case of incomplete tax compensation to obtain more general results.

Now, a temporary trade liberalization policy is introduced as follows;

$$p_t = 1 \qquad \text{for} \quad 0 \le t \le T-1 \tag{6}$$

$$p_t = \pi > 1 \qquad \text{for} \quad T \le t .$$

Under the temporary policy, the tariff barrier is removed only for the first T periods. So the policy (6) depicts a situation where there is free trade from period 0 to period $T-1$, and a constant ad-valorem tariff $\pi - 1$ afterwards. Accordingly, the government transfers are 0 for the liberalization period, and $\tau(\pi-1)c_t$ from the period T on.

At time 0, the consumer maximizes his utility (1) subject to the budget constraint (4), given the initial bond holdings, k_0, and the future paths of p and g under the temporary policy (6). Describing the optimal behavior of the consumer, we obtain the following first-order condition for the optimization problem - max (1) subject to (4);

$$u'(c) = \beta R u'(c_{t+1}) = u'(c_{t+1}) \qquad \text{for} \quad t \ne T-1 \tag{7}$$

$$u'(c_t) = \pi^{-1}\beta R u'(c_{t+1}) = \pi^{-1} u'(c_{t+1}) \qquad \text{for} \quad t = T-1 .$$

To interpret (7), suppose that c_t is reduced by one unit for saving, reducing utility by $u'(c_t)$. Then the one unit increase in saving can be used to increase c_{t+1} by R units in the liberalization period, and by $\pi^{-1}R$ units in the later period. These increases in

[2] For instance, in the tax smoothing literature (e.g. Barro (1979)), the production of government revenue involves the using up of some resources in the sense of cost, that are often referred to as deadweight losses or excess burdens.

consumption raise utility by $Ru'(c_{t+1})$ and by $\pi^{-1}Ru'(c_{t+1})$ respectively, and they are discounted by the factor β. At the optimum, both sides should be equal.

By the first-order condition (7), and using the assumption $\beta R = 1$, optimal consumption should be

$$c_t = x \qquad \text{for} \quad 0 \le t \le T-1 \tag{8}$$

$$c_t = z \qquad \text{for} \quad T \le t$$

where x and z are constants. Since $u'' < 0$ and $\pi > 1$, $x > z$.

By combining the budget constraint (4) with (5) considering (6) and (8), we obtain the following overall budget constraint relationship between x and z;

$$z = \tau'^{-1}(y + rk_0 / R - x)R^T + \tau'^{-1}x \tag{9}$$

where $\tau' = (1-\tau)\pi + \tau$ and $1 \le \tau' \le \pi$. Here $y + rk_0 / R$ is GNP and consumption larger than GNP means a current-account deficit.

By solving Equation (9) and the following first-order condition obtained above, simultaneously,

$$u'(z) = u'(x)\pi \tag{10}$$

we can obtain the equilibrium consumption x and z if the functional form of u is known. Since we want to analyze the effects and welfare costs of temporary policy, we need to know the magnitude of x and z, and the relationship among x, z and T. So, from now on, we adopt a specific utility index from the class of iso-elastic utility indexes;

$$u(c) = c^{1-\alpha} / (1-\alpha) \qquad \alpha > 0. \tag{11}$$

Using this utility index, the optimal consumption is expressed as follows;

$$c_t = x \qquad \text{for} \quad 0 \le t \le T-1 \tag{12}$$

$$c_t = qx \qquad \text{for} \quad T \le t$$

where $q = \pi^{-(1/\alpha)} < 1$.

Using the overall budget relationship (9) and the first-order condition (12), the equilibrium optimal consumption x is

$$x = (y + rk_0 / R)/\{1-(1-\tau' q)R^{-T}\} . \tag{13}$$

Using the exact solution for x in (13), we can examine the first two main results of Calvo (1987) in a more general situation. Since $1-\tau' q$ can be positive or negative, the denominator in (13) can be less than or greater than 1. So the current-account deficit in the temporary liberalization period can be positive or negative depending on the value of parameters. As the tax loss goes to 0 ($\tau \to 1$: Calvo's case), τ' goes to 1 and the current-account deficit result is obtained. Furthermore, since the sign of $1-\tau' q$ is indeterminate, as T is shortened, x can be increased or decreased. So the second result should also be modified.[3]

From the above discussion, one can argue that the results (1) and (2) mentioned in the introduction are rather special cases that hold only in a situation of complete tax compensation. On the other hand, however, the above discussion shows that we can have a larger set for the tax loss parameter that leads to Calvo's results: any value of τ that satisfies $\tau' q < 1$. For instance, if $\alpha < 1$, then for any value of τ and π, the first two results hold.[4] So we have shown that Calvo's results can hold in a more general setting including the case of incomplete tax compensation, but only with some restrictions on the parameter values. Another interesting result that follows from our model is that there can be a current-account deficit in the liberalization period in spite of some tax loss (lower value of life-time income) for some ranges of parameters. This fact comes from the temporary nature of the policy.

Now, we examine Calvo's third result on the nature of welfare costs of temporary policy. Once again, we start with the basic arguments in Calvo (1987). First of all, we have to check the optimality property of the outcomes under the temporary liberalization policy. We are interested in the following question: what would be the first-best solution of a central planner who faces the problem of maximizing (1) subject to (4)? The central planner would set $p \equiv 1$ and $g \equiv 0$, and $c = y + rk_0 / R$ (from the perspective of time 0) for the first-best solution. Hence, the temporary experiment always reduces utility.[5]

To calculate the welfare costs of temporary policy in terms of output, we follow Calvo's method described below. We denote by $W(T,\theta)$ the equilibrium level of

[3] In fact, this analysis can be done without using a specific utility index, by using the diagram introduced in Calvo (1987). The expression (13), however, provides a neat way to deal with the problem.

[4] If $\alpha \to \infty$, we are moving towards the case where it is optimal to choose a constant consumption path independently of relative prices $(q \to 1)$. In this case, $1-\tau' q < 0$ and a current-account surplus result is obtained in the presence of deadweight losses in the later periods.

[5] This is true as long as we do not consider static gains from trade. This was relaxed in the appendix of Calvo (1987).

welfare - measured by (1) at $t=0$ - when the temporary policy lasts T periods, and the consumer is charged a lump-sum tax equal to $\theta(y+rk_0/R)$ at each period, where $0\le\theta\le1$. Then the cost of a temporary liberalization of length T is defined as the value of θ that solves the following condition;

$$W(\infty,\theta)=W(T,0)\,. \tag{14}$$

As discussed above, $W(\infty,\theta)$ is the utility associated with a situation in which $c_t=(1-\theta)(y+rk_0/R)$, $t\ge0$. Thus, the cost of temporary liberalization is equal to the proportion of permanent consumption that would have to be subtracted from the first-best consumption in order to attain the level of welfare associated with the temporary liberalization policy.

Using the scheme (14), we obtain the following welfare cost function of the temporary policy in our model for $\alpha\ne1$;[6]

$$(1-\theta)^{1-\alpha}=\{1-(1-q^{1-\alpha})R^{-T}\}/\{1-(1-\tau'q)R^{-T}\}^{1-\alpha}\,. \tag{15}$$

By taking the derivative of the RHS of (15) with respect to R^{-T} and setting it equal to 0, we see that the value of T that maximizes $\theta(T_*)$ satisfies[7]

$$R^{-T_*}=\{1-q^{1-\alpha}-(1-\alpha)(1-\tau'q)\}/\{\alpha(1-q^{1-\alpha})(1-\tau'q)\}\,. \tag{16}$$

Taking the derivate of the RHS of (16) with respect to τ', we can check that T_* decreases with a fall in τ (an increase of τ'). In other words, as the tax loss increases, the timing of the worst temporary liberalization comes earlier. Also, it can be easily checked that higher costs are associated with lower values of τ for given T. Hence, the expression (16) implies that the welfare cost function can monotonically decrease with respect to T, for some low value of τ - a modification of Calvo's third result.

Intuitively, we can explain the resulting shape of the welfare cost function as follows. In our model, there are two sources of distortions - the temporariness of the policy and the tax loss. As the length of the liberalization period increases, the distortionary effect

[6] The formula for the case $\alpha=1$ is as follows:

$$\log(1-\theta)=(\log q)R^{-T}-\log\{1-\tau(1-q)R^{-T}\}$$

[7] The second-order condition for maximum is satisfied if $1-\tau'q>0$ (generalized Calvo's case). If $1-\tau'q<0$, the welfare cost function is monotonically decreasing with respect to T, and the expression (16) is irrelevant. See discussions about the shape of the welfare cost function in the following paragraphs.

of the latter source decreases - the proportion of the periods that have tax losses decrease and the weight on the effect of the former source (temporariness) can outweigh the other effect in some range of T for some parameter values, in the form of higher values of θ associated with bigger T. As a result, increasing T can make things worse even in the presence of tax loss in the later periods. But, as τ decreases, the effect of the tax loss becomes tremendous, and the cost function starts falling at smaller values of T. For a sufficiently small value for τ,[8] the cost function becomes monotonically decreasing.

We believe that the shape of the welfare cost function would be important in the policy making process, when the policy maker has to decide whether the liberalization should last T periods or $T+1$ periods. Our model can be used in this choice situation in the presence of the real costs of tax collection or government consumption, given the tax loss parameter.

Table 1. Effects of Temporary Liberalization

$\pi = 1.25$

$\theta \times 100$

	$T=1$			$T=3$		
α \ τ	1	.95	.5	1	.95	.5
.064	7.13	7.63	11.91	8.06	8.28	10.26
.018	2.63	3.55	11.08	4.72	5.32	10.37
.504	0.22	1.38	10.73	0.57	1.60	10.0
.9	0.11	1.29	10.73	0.29	1.36	10.0
4.7	0.02	1.20	10.73	0.05	1.14	10.0
10.1	0.01	1.20	10.73	0.02	1.12	10.0

$\pi = 1.5$

$\theta \times 100$

.064	17.89	17.98	18.76	13.22	13.24	13.53
.108	13.83	14.61	21.11	14.80	15.14	18.04
.504	0.87	3.10	19.37	2.14	4.02	18.14
.9	0.39	2.68	19.36	1.02	3.05	18.13
4.7	0.06	2.40	19.37	0.16	2.31	18.17
10.1	0.03	2.37	19.38	0.07	2.24	18.18

Note: $R = 1.04$

[8] A sufficient condition is $1-\tau' q < 0$.

Table 2. Effects of Temporary Liberalization

$\pi = 1.25$

Current Account Deficit / GNP (%)

	$T = 1$			$T = 3$		
α \ τ	1	.95	.5	1	.95	.5
.064	1373	1365	1297	624	622	606
.108	524	518	470	347	344	321
.504	52	51	36	47	45	33
.9	27	25	13	24	23	12
4.7	5	3	-7	4	3	-6
10.1	2	1	-9	2	1	-8
			$\pi = 1.5$			
.064	2388	2385	2362	788	788	785
.108	1540	1525	1402	659	656	630
.504	113	109	74	97	93	64
.9	54	50	24	48	45	22
4.7	9	6	-12	8	6	-12
10.1	4	1	-16	4	1	-15

Notes: R = 1.04. Current Account Deficit at period 0.

Table 3. The Worst Temporary Liberalization

T_*

	$\pi = 1.25$			$\pi = 1.5$		
α \ τ	1	.95	.5	1	.95	.5
.064	2-3	2-3	1	1	1	1
.108	6-7	5-6	1	2-3	1-2	1
.504	15-16	9-10	1	13-14	10-11	1
.9	16-17	7-8	1	15-16	9-10	1
4.7	18-19	1	1	18-19	1	1
10.1	18-19	1	1	19-20	1	1

Note: T_* = Length of period of temporary policy at which welfare is minimized.

In Table 1 and 2, the simulation results in Calvo (1987) are extended to include the cases with various values of the tax loss parameter. Table 1 and Table 2 report the magnitudes of the cost and current-account deficit when the tax loss parameter is 0, 0.05, and 0.5. Table 3 reports the timing of the worst temporary liberalization given the same tax loss parameter. All the results argued in the text can be checked numerically, using the simulation results.

3. AN OVERLAPPING GENERATIONS MODEL WITH TEMPORARY POLICY

In this section, we want to investigate the implication of an infinite vs. a finite planning horizon in the model of temporary liberalization policy. How are the results of the former section changed if the representative consumer has, in fact, a very short planning horizon in his decision making and, if social welfare depends on the consumer's utility over the planning horizon? To answer this question, we study an extreme case of a finite horizon economy: an overlapping generations economy with the same kind of temporary liberalization policy as analyzed in Section 2.[9]

The economy is composed of an infinite number of overlapping generations who live for two periods. In each generation, there is only one consumer who is solving the following constrained maximization problem;[10]

$$\text{Max} \quad u(c_1^{\,t}) + \beta u(c_2^{\,t}) \tag{17}$$

$$\text{s. t.} \quad p_t c_1^{\,t} + p_{t+1} c_2^{\,t} / R = y + g_{t,1} + (y + g_{t+1,2}) / R$$

where $c_1^{\,t}$ is consumption of generation t when young, $c_2^{\,t}$ is consumption of generation t when old, and in equilibrium the government transfers $g_{t,1}$, $g_{t+1,2}$, satisfying;

$$g_{t,1} = \tau(p_t - 1)c_1^{\,t}, \quad g_{g+1,2} = \tau(p_{t+1} - 1)c_2^{\,t}\,. \tag{18}$$

Other notations are as defined in Section 2. Also, the same temporary liberalization policy in (6) is introduced.

[9] We view this OLG model as a general 'myopic' model in which the decisions of the consumers are made in finite and short intervals.

[10] We assume that the initial capital stock is 0. As an analogue of perfect capital mobility in Section 2, it is assumed that the consumer can use international lending or borrowing at the given interest rate r. Note that the exportables are the numeraire.

The first-order conditions of the optimization (17) are[11]

$$u'(c_1^{\ t}) = \beta R u'(c_2^{\ t}) = u'(c_2^{\ t}) \qquad \text{for} \quad t \neq T-1 . \tag{19}$$

$$u'(c_1^{\ t}) = \pi^{-1}\beta R u'(c_2^{\ t}) = \pi^{-1}u'(c_2^{\ t}) \qquad \text{for} \quad t = T-1 .$$

The same interpretations as in (7) apply for the first-order condition (19). From this first-order condition, we can obtain the following optimal consumptions for each generation using the utility index (11);

$$c_1^{\ t} = c_2^{\ t} = y \qquad \text{for} \quad t = 0,1,\ldots,T-2 \tag{20}$$

$$c_1^{\ t} = (R+1)y/(R+\tau' q)\ , \quad c_2^{\ t} = q(R+1)y/(R+\tau' q)\ , \qquad \text{for} \quad t = T-1$$

$$c_1^{\ t} = c_2^{\ t} = y/\tau' \qquad \text{for} \quad t > T-1 .$$

Now, we want to examine Calvo's main results in terms of this model. First, the current-account deficit result in the liberalization period is obtained only for the period $T-1$ - the last period of the liberalization - if $\tau' q < 1$. Second, the length of the liberalization period does not affect consumptions. Thus, the link between the temporary liberalization and the current-account deficit in the period becomes much weaker in our finite horizon economy.

To study the nature of the welfare costs associated with temporary liberalization policy, we have to define a social welfare function defined as a weighted sum of the consumer's utility as an analogue of the utility index in (1), as follows:[12]

$$W = \sum_{t=0}^{\infty} \delta^t \{u(c_1^{\ t}) + \beta u(c_2^{\ t})\}\ , \qquad 0 < \delta < 1 \tag{21}$$

where δ is the time discount factor of the central planner. When we use the social welfare function defined in (21) to measure the welfare costs of the temporary policy, using the same method stated in Section 2, what would be the shape of the cost function in this economy? In fact, we have an easy answer for this question. The crucial fact is

[11] $\beta R = 1$ is assumed, uncharacteristically, in overlapping generations models. For a discussion of this matter, see Buiter (1981).

[12] We are following Samuelson (1967, 1968) in using the criterion function (21). Since we do not have to consider the problem of dynamic consistency in our framework, we do not have to include the utility of the old of generation -1 (This was pointed out in Calvo and Obstfeld (1988)).

that the distortion caused by the temporary policy occurs 'only once and only to the generation $T-1$'. As T increases, the loss of welfare is weighted less (δ^{T-1}) by the welfare function (21), and the proportion of periods that have tax losses becomes smaller. Hence, the welfare cost function of the temporary policy in an overlapping generation economy decreases monotonically with respect to T. We have another change of the main results.

A numerical example is provided to illustrate the above point for the shape of the welfare cost function.

EXAMPLE

We assume $u(c)=\log c$, and $\tau=1$.

Using the solution in (20),

$$c_1^{\,t}=c_2^{\,t}=y \qquad \text{for } t\neq T-1,$$

$$c_1^{\,t}=\pi(1+R)y/(\pi R+1),\ \ c_2^{\,t}=(1+R)y/(\pi R+1), \text{ for } t=T-1$$

Using the welfare function (21) and the method in (14),

$$\log(1-\theta)=\{\delta^{T-1}(1-\delta)/(1+\beta)\}\ [\log\{((1+\beta)/(\pi+\beta))^{1+\beta}\pi\}]$$

Let $A=\{(1+\beta)/(\pi+\beta)\}^{1+\beta}\pi$, then we can show that $A<1$.[13]

Let $B=\log A$, then $B<0$

When $T=1$, $\log(1-\theta)=B(1-\delta)/(1+\beta)<0 \rightarrow 0<\theta<1$.

As $T\rightarrow\infty$, $\log(1-\theta)\rightarrow 0$, implying $\theta\rightarrow 0$.

By differentiating θ with respect to T (though it is an integer), we obtain

$$\partial\theta/\partial T=(1-\theta)(-B)(1-\delta)(\log\delta)\delta^{T-1}/(1+\beta)<0$$

Hence, θ is monotonically decreasing with respect to T.

[13] We can show that $A(\pi)$ satisfies the following: $A(1)=1$ and $A'(\pi)<0$ for all π. Since $\pi>1$, $A(\pi)<1$.

4. CONCLUSION

The main results on the effects and costs of a temporary trade liberalization in Calvo (1987) have been re-examined in a more general situation including incomplete tax compensation, and in a different situation - a finite horizon economy. Developing a discrete-time version of Calvo's basic model with a tax loss parameter, it has been shown that the main results in Calvo can hold in a more general situation, but only with some restrictions on the parameter values. Studying an extreme example of a finite horizon economy, it has been shown that the length of the planning horizon is critical in evaluating the nature of the effects and welfare costs of temporary policy.

The models contained in Calvo (1986, 1987, 1988) have been developed to shed light on some of the puzzling effects of temporary stabilization in the Southern Cone of Latin America. Although the models are simple, they have strong policy implications for temporary liberalization/stabilization. The results in this paper indicate that the policy implications need some modifications in a possibly more realistic situation. Also, this paper provides another example of a micro-based economic model in which different lengths of the planning horizon can lead to different results.

REFERENCES

Barro, R.J. (1979), "On the Determination of the Public Debt," *Journal of Political Economy*, 87, 940-971.

Buiter, W.H. (1981), "Time Preference and International Lending and Borrowing in the Overlapping-generations Model," *Journal of Political Economy*, 89, 769-797.

Calvo, G.A. (1986), "Temporary Stabilization: Predetermined Exchange Rates," *Journal of Political Economy*, 94, 1319-1329.

_____ (1987), "On the Costs of Temporary Policy," *Journal of Development Economics*, 27, 245-261.

_____ (1988), "Costly Trade Liberalizations: Durable Goods and Capital Mobility," *International Monetary Fund Staff Papers*, 35, 461-473.

Calvo, G.A., and M. Obstfeld (1988), "Optimal Time-consistent Fiscal Policy with Finite Lifetimes," *Econometrica*, 56, 411-432.

Samuelson, P.A. (1967), "A Turnpike Refutation of the Golden Rule in a Welfare-maximizing Many-year Plan," in *Essays on the Theory of Optimal Economic Growth*, ed. by K. Shell, Cambridge, Massachusetts: The MIT Press, 269-280.

_____ (1968), "The Two Part Golden Rule Deduced as the Asymptotic Turnpike of Catenary Motions," *Western Economic Journal*, 6, 85-89.

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