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'Export Experience' under Borrowing Constraints*

By

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Abstract

We develop a two-period, two-country, multi-good model with endogenous investment. Borrowing is subject to quantitative restrictions. We examine the effect of promoting exports in period 1 on the level of exports in period 2. We consider a number of scenarios depending on how the initial values of the policy instruments are determined and compare the 'export-experience' effects under the different scenarios.

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1 Introduction

One of the relationships frequently encountered in the literature on export-led growth is the so-called 'export experience' effect.[1] Roughly speaking, this implies that a country's exports at one point of time have a positive relationship with its exports at future points of time. The underlying theoretical reasoning is that exporting firms, in particular those of developing countries, benefit from dynamic learning-by-doing that in turn arises from a variety of influences.[2]

Empirical tests have used data at various levels of aggregation to investigate this hypothesis. Using time series data from Pakistan, for example, Akbar [2001] found that cumulative exports have a positive and significant effect on a measure of current export competitiveness. Using firm level data from the electronics industry in Taiwan, Aw and Hwang [1995] found that, even after controlling for other important factors such as input use, exporting firms display higher levels of productivity than non-exporting firms.[3]

In opposition to the presumption of dynamic learning effects, Clerides, Lach and Tybout [1998] have argued, and provided evidence using data from Colombia, Mexico and Morocco, that the greater efficiency of exporting firms could be simply due to reverse causation: more efficient firms tend to self-select into the exporting sectors. Over time, such self-selection could provide an alternative mechanism through which a positive serial correlation in a country's export performance could arise. Furthermore, at a purely theoretical level Dixit [1989] has shown that stochastic shocks combined with fixed entry and exit costs at the firm level can generate hysteresis, and therefore

[1] On the general topic of export-led growth, see, for example, Balassa [1978]; Bhagwati [1988]; Edwards [1993]; Feder [1983]; Jung and Marshall [1985].

[2] The World Bank [1997] identifies contact with 'international best practise' as one source of such learning. Several authors have cited various forms of knowledge spillovers from foreign buyers to local exporters as another source (Grossman and Helpman [1991]; World Bank [1993]).

[3] Other empirical papers on this topic include Chen and Tang [1987]; Haddad [1993]; Tybout and Westbrook [1995].

a pattern of serial correlation, in a country's trading behaviour, again without any dynamic learning.

In this paper, we argue that learning-by-doing, self-selection and sunk costs aside, a separate explanation for the existence of an export experience effect can arise for a country that borrows from abroad and does not face a perfectly elastic supply of credit. We model this conjecture using a two-period framework in which a small and open (with respect to commodity markets) economy produces two goods each period, an importable and an exportable, using capital which is initially fixed but can be augmented through endogenous investment (which is in units of the importable) between the two periods. The amount of investment and consumption are influenced by the presence of a constraint on overseas borrowing, which results in a wedge between its domestic interest rate and the world lending rate.

Using this setup, we show that a temporary export subsidy (applied in the first period alone) can improve the country's current account in the first period. This reduces its demand for funds and lowers its domestic interest rate. The lower domestic interest rate stimulates greater investment and, on the assumption that greater investment leads to an increase in capital allocated to the export sector, the output of the exportable goes up in the second period. At the same time, the lower interest rate reduces the demand for consumption of the exportable in the second period. Through these two effects, the temporary export subsidy not only increases first period exports but also contributes to a higher export volume in the second period. While our analysis also uncovers an offsetting effect on second period exports, the important point is that if the economy was small in credit markets and faced a perfectly elastic supply of credit, investment and interest rates would be unaffected by a temporary export subsidy and the mechanism which contributes positively to persistence in export performance would be missing.

In addition to identifying these mechanisms, we study how they vary with four different scenarios regarding how the amount that can the country can borrow gets determined. The benchmark scenario looks at a case in which a borrowing constraint is exogenously imposed upon the country while the export subsidy is chosen optimally by its government. In all the other cases, we assume that the lenders are from a single foreign country and its government optimally sets the total amount of loan that they can provide. In other words, there is a game in which the lender-country government chooses how much can be lent while the borrowing country chooses its first period export subsidy. These alternatives are: (i) a Nash game in which both countries act simultaneously, (ii) a Stackelberg game in which the borrowing country acts first and chooses the subsidy before the lending country chooses its lending level and (iii) a Stackelberg game with the order of moves reversed.

In each scenario, we find that, starting from the equilibrium level of the temporary export subsidy that is appropriate for the game under consideration, a small increase in this subsidy contributes to creating an export experience effect through the mechanisms discussed above, but the effectiveness of the subsidy is greater in the case of exogenous borrowing (or when the lender is a leader) than in the other two cases. The reason for this is that in the two other cases, the lender partially offsets the impact of the subsidy by tightening the borrowing constraint in response.

The paper is organised as follows. The benchmark model is outlined in Section 2. Section 3 looks at the export experience effect under an exogenous borrowing constraint. Section 4 examines the three cases of an endogenous constraint. Section 5 concludes.

2 The benchmark model

We consider an open economy which lasts two periods, labelled as $t = 1$ and $t = 2$ respectively. It produces two goods per period and is small in the world market for each good, so the international prices of the two goods are exogenous. Goods labelled

1 and 2 are produced during $t = 1$ while goods labelled 3 and 4 are produced during $t = 2$. Goods 1 and 3 are importables while goods 2 and 4 are exportables. P_i is the price of good i. Prices are normalised such that $P_1 = 1$.

The economy starts at $t = 1$ with K units of capital. At $t = 1$, it can add to this through investment, I, which becomes available at $t = 2$.[4] The economy faces a binding borrowing constraint on overseas credit, $\bar{b}$, which applies to both investment and consumption. All the markets are assumed to be competitive.

The government has one policy instrument which affects decisions made at $t = 1$ and this is a temporary specific export subsidy, denoted by s_1.[5]

The economy is described by the following equations:

$$\begin{aligned} E\left(1, P_2 + s_1, \frac{P_3}{1+r}, \frac{P_4}{1+r}, u\right) &+ I = \\ +R^1(1, P_2 + s_1, K) &+ \frac{R^2(P_3, P_4, K+I)}{1+r} - T, \quad (1) \\ (1+r)\bar{b} &= R^2 - P_3E_3 - P_4E_4, \quad (2) \\ R^2_3 &= 1+r, \quad (3) \\ T &= s_1\left[R^1_2 - E_2.\right] \quad (4) \end{aligned}$$

Equation (1) represents the economy's intertemporal budget constraint. It states that the total discounted present value of consumption and investment expenditure is equal to the discounted present value of income minus a lump-sum tax. Equation (2) describes borrowing: total repayment (principal plus interest) in period 2 equals income minus expenditure in that period. The investment choice is described in (3), and is obtained by setting $(\partial u/\partial I) = 0$ from (1) at a given level of the interest rate r. The amount of lump-sum taxation, T, needed to pay the subsidy is defined by

[4] Investment is in units of the numeraire good 1.

[5] It is to be noted that this benchmark model is similar in many ways to the one in Edwards and Wijnbergen (1986). The main difference in terms of the model structure is that whereas they assume the borrowing constraint to fall entirely on investment expenditure, we assume that it applies to both investment and consumption. The objectives of the two papers are also quite different.

(4). Together the equations determine u, the indirect utility; r, the domestic interest rate and I, the level of investment, and T, the subsidy payment.

In the above equations, $E(\cdot)$ is the expenditure function, R^1 is the revenue function at $t = 1$, R^2 is revenue at $t = 2$, $R^2 - E_3 - P_2 E_4$ is the current account surplus at $t = 2$, and $R^1_2 - E_2$ is the level of exports of good 2 at $t = 1$.[6]

We assume that all goods are substitutes — both intra- and inter-temporally, and that all the goods are normal. Formally,

$$E_{ij} > 0, \quad i \neq j = 1, 2, 3, 4, \quad \text{and} \quad E_{i5} > 0, \quad i = 1, 2, 3, 4.$$

This completes the description of our benchmark model. We now turn to its analysis.

3 Export experience

In this section, we examine how a temporary subsidy for exports, s_1 in period 1 affects the level of exports in period 2.

Before turning to this question, we analyse how s_1 affects a number of other variables. Differentiating (1)-(4), we get:

$$\alpha\, du = -\frac{H}{(1+r)^2} dr - \beta ds_1, \tag{5}$$

$$\Delta\, dr = -(1+r)d\bar{b} - \left[P_3 E_{32} + P_4 E_{42} - \frac{\beta\gamma}{\alpha} \right] ds_1, \tag{6}$$

$$R^2_{33}\, dI = dr, \tag{7}$$

[6]The expenditure function represents the minimum level of expenditure that can possibly attain a given level of utility. A revenue function is the maximum value of total output that can be achieved for given commodity prices, technology and endowments. The partial derivative of an expenditure (revenue) function with respect to the price of a good gives the Hicksian demand (supply) for that good. Moreover, the matrix of second order partial derivatives with respect to the prices of an expenditure (revenue) function is negative (positive) semi-definite. For this and other properties of expenditure and revenue function see, for example, Dixit and Norman (1980). Since the endowments of factors other than capital do not vary in our analysis, they are omitted from the arguments of the revenue functions.

where

$$\begin{aligned}
\alpha &= E_5 - s_1 E_{25} > 0, \\
\beta &= s_1 \left[R^1_{22} - E_{22}\right], \\
G &= s_1(P_3 E_{23} + P_4 E_{24}), \\
H &= (1+r)\bar{b} + G, \\
\Delta &= \bar{b} - \frac{P_3 E_{33} + 2P_4 E_{34} + P_4 E_{44}}{1+r} - \frac{(1+r)}{R^2_{33}} - \frac{\gamma H}{\alpha(1+r)^2} > 0, \\
\gamma &= P_3 E_{35} + P_4 E_{45} > 0.
\end{aligned}$$

$\alpha > 0$ is known as the Hatta normality condition. It can be shown that if good 1 is normal, then α is indeed positive. Walrasian stability in the credit market ensures that $\Delta > 0$.

Equation (5) shows that an increase in r lowers welfare. This is for two reasons. First, since the country is a borrower, it suffers from an intertemporal terms-of-trade loss. The second effect is via changes in subsidy payments. An increase in r makes period 2 consumption relatively cheaper and this reduces period 1 consumption and therefore increases period 1 exports as well as the tax revenue needed to finance the export subsidy (at given s_1).

An increase in s_1 (at given r) increases subsidy payments, both directly, at given level of exports, and indirectly, by increasing the domestic price of the exportable in period 1 and therefore the overall level of exports. This is welfare reducing. Note that welfare is not directly affected by changes in I as it is optimally chosen (the envelope property). An increase in $\bar{b}$ increases the supply of loan and thus reduces the interest rate as can be seen from (6). An increase in s_1 has two opposing effects on the demand for loans and thus on r. First, it makes period 2 goods relatively cheaper, reducing the excess of income over consumption in period 2 and thus the demand for loans. This tends to reduce the interest rate. But an increase in s_1 also increases subsidy payments, for reasons mentioned above, and thus reduces period 1 disposable income.

This increases the demand for loan and thus the interest rate. These two effects are reflected by the coefficient of ds_1 in (6). Equation (7) simply states that an increase in r reduces investments by reducing the present value of its returns.

Having explained the basic equations, we now turn to the issue of export experience. Denoting by X the level of exports in period 2, where $X = R_2^2 - E_4$, a positive value of dX/ds_1 would imply that a temporary export subsidy can encourage exports into the future, reflecting an 'export experience' effect.

Differentiating X we get:

$$dX = R_{23}^2 dI + \left[\frac{P_4 E_{44} + P_3 E_{43}}{(1+r)^2}\right] dr - E_{45} du - E_{42} ds_1 \tag{8}$$

We shall now consider four scenarios. In the first, we assume that s_1 is optimally set by the borrower country, but $\bar{b}$ is exogenously given. In the second scenario, we consider a Nash equilibrium in which a single lending country optimally decides $\bar{b}$, while the borrowing country optimally sets s_1, each country taking the value at which the other country's instrument is set as given. In the third scenario, the borrowing country is assumed to move first in setting s_1, with the lending country setting $\bar{b}$ in response; in the fourth scenario, the order of play is reversed. The last three scenarios will be taken up in section 4.

3.1 Exogenous credit constraint

The first order condition for s_1 is given by:

$$\beta\Delta = \frac{H}{(1+r)^2} \cdot \left[P_3 E_{23} + P_4 E_{24} - \frac{\beta\gamma}{\alpha}\right]. \tag{9}$$

We denote the optimal value of s_1 by s_1^o.

When $\bar{b}$ is exogenously given and the initial value of s_1 is optimally set, from

(8) we get:

$$\frac{dX}{ds_1} = R^2_{23}\frac{dI}{ds_1} + \left[\frac{P_4E_{44} + P_3E_{43}}{(1+r)^2}\right]\frac{dr}{ds_1} - E_{42}. \tag{10}$$

The terms dr/ds_1 and dI/ds_1 can be eliminated by using the comparative static results derived previously.

However, instead of deriving the complete reduced-form effect, it is more illuminating to consider each term in the above expression separately, since they correspond to various channels through which future exports are affected by a current subsidy.

Substituting (9) into (6), we get:

$$\begin{aligned}\left.\frac{\partial r}{\partial s_1}\right|_{s_1=s_1^o} &= -\left[P_3E_{32} + P_4E_{42} - \frac{\beta\gamma}{\alpha}\right] \\ &= -\frac{(1+r^*)^2\beta\Delta}{H} < 0, \end{aligned} \tag{11}$$

and therefore from (7) it follows that dI/ds_1 is positive. This means that an export subsidy leads to greater investment and a higher level of imports of the capital good. A positive value of R^2_{23} means that a larger capital stock in period 2 — coming about by investments in period 1 — will lead to a higher output of the export good at $t = 2$. This will contribute a positive effect to higher exports at $t = 2$. This would be true, for example, in export promotion involves modernising the export sector.

We also know that dr/ds_1 is negative. Since the coefficient associated with it is also negative, the second term also contributes a positive effect on exports at $t = 2$. Unlike the first term, however, this is a consumption-based effect. By lowering the domestic interest rate, the subsidy increases the relative price of consumption at $t = 2$ with respect to the current period. This tends to lower consumption of the exportable at $t = 2$ which in turn stimulates exports.

The third term captures the substitution effect between good 2 and good 4. Since the subsidy raises the cost to domestic consumers of the exportable at $t = 1$, it may induce substitution towards other goods; in particular to the export good at $t = 2$. This tends to raise consumption of the exportable at $t = 2$ and to discourage exports, offsetting the effects coming from the first term.

To summarise, an export experience effect can arise (i) if extra investment leads to greater production in the exports sector, and/or (ii) if the interest-rate effect on domestic consumption of the export good at $t = 2$ dominates the direct substitution effects. Note that if the country could borrow freely at an exogenous interest rate with no distortions, an export subsidy would neither change the interest rate nor induce additional investment in capital goods. It is in this context that the borrowing constraint plays a role in creating channels through which temporary export promotion generates future export growth.

4 Endogenous borrowing constraints

In the preceding section, we assumed that the amount that can be borrowed was determined exogenously. In this section, we introduce a foreign country which determines the amount of borrowing, $\bar{b}$, on the basis of its own optimisation problem. In this framework, each country has one instrument at its disposal: an export subsidy, s_1, for the home country and an optimal level of lending, $\bar{b}$, for the foreign country.

The model describing the foreign country is given by:

$$\begin{aligned} E^*\left(1, P_2, \frac{P_3}{1+r^*}, \frac{P_4}{1+r^*}, u^*\right) \quad + \quad & I^* = \\ +R^{1*}(1, P_2, K^*) \quad + \quad & \frac{R^{2*}(P_3, P_4, K^* + I^*)}{1+r^*} + \frac{(r - r^*)\bar{b}}{1+r^*} \end{aligned} \tag{12}$$

$$(1+r)\bar{b} = P_3 E_3^* + P_4 E_4^* - R^{2*} \tag{13}$$

$$R_3^{2*} = (1+r^*) \tag{14}$$

The above equations are anlogous to (1)-(3) for the home country. We only need to explain the last term on the right hand side of (12). As just mentioned, we assume that the foreign country imposes a quota on the amount of loan that can be given to the home country. This leads to an excess demand for loans in the home country and drives a wedge between the interest rates in the two countries. Following the treatment of quotas in the international trade theory literature, we assume that the foreign country government applies competitive loan licensing and thereby collects a quota fee (or, rent) amounting to $(r - r^*)\bar{b}$. A reader will immediate realise that our treatment of borrowing constraint is akin to the treatment of voluntary export restraints (VER) in the international trade theory literature. There is an important difference, however, between the standard treatment of VER in the literature and the way we deal with the borrowing constraint here, and this arises because of the dynamic nature of borrowing. In particular, one needs to make some assumption about the time period when the quota rent is collected by the government. Since the possible rent from lending arises only in period 2 when the loan is repaid, we assume that the foreign government collects the licence fee also in period 2, and this quota rent is returned to its households in a lump-sum fashion.

Differentiating (12)-(14), we obtain:

$$E_5^* \, du^* = (r - r^*)d\bar{b} + \frac{\bar{b}}{1 + r^*} \, dr, \tag{15}$$

where dr is as in (6).

The second term on the right hand side of (15) gives the terms-of-trade effect. Since the foreign country is the lender it benefits when the interest rate rises. The first term gives the change in the quota rent for given levels of interest rates.

We shall now consider three scenarios. In the first scenario, we assume that the two countries play a Nash game, *i.e.* the home country maximises its welfare by optimally choosing s_1 taking the level of $\bar{b}$ as given, and at the same time the foreign country maximises its own welfare by optimally choosing $\bar{b}$ taking s_1 as given. In the second scenario, we shall assume that the borrower country has a first-mover advantage. In particular, we consider a two stage game. In order to obtain a sub-game perfect equilibrium, the game is solved via backward induction. In stage 2 of the game, the lender country decides on an optimal value of $\bar{b}$ contingent upon a given value for s_1. In stage 1, the borrower country decides on the level of s_1 by maximising its welfare taking into account the reaction function from the second stage of the game. In the final scenario, the order of the game is reversed in the sense that the lender country is a follower and the borrower country is the leader. The three scenarios are considered in turn in the following three subsections.

In each scenario, we examine how, starting from each equilibrium, a unilateral increase in s_1 by the government of the borrowing country affects second period exports, X. We also compare the magnitude of this effect in the different equilibria.

4.1 The Nash game

In this sub-section, we consider a Nash game in s_1 and $\bar{b}$. ¿From (5), (6) and (15), by setting $\partial u/\partial s_1 = 0$ and $\partial u^*/\partial d\bar{b} = 0$, we obtain the following two first order conditions, which are solved simultaneously to derive the Nash equilibrium values $(s_1^N,\ \bar{b}^N)$:

$$s_1 \ : \ \beta\Delta = \frac{H}{(1+r)^2} \cdot \left[P_3 E_{23} + P_4 E_{24} - \frac{\beta\gamma}{\alpha} \right] \tag{16}$$

$$\bar{b} \ : \ \epsilon = \frac{r - r^*}{1+r}, \tag{17}$$

where

$$\epsilon = -\frac{d(1+r)}{d\bar{b}} \cdot \frac{\bar{b}}{1+r} (> 0)$$

describes the elasticity of the borrowing country's interest factor with respect to the amount borrowed.

From the foc for $\bar{b}$ ((17))we get:[7]

$$(\epsilon + \epsilon^*)\ \frac{d\bar{b}}{ds_1} = \frac{\partial r}{\partial s_1} \cdot \frac{\bar{b}}{1+r}, \tag{18}$$

where

$$\epsilon^* = \frac{d(1+r^*)}{d\bar{b}} \cdot \frac{\bar{b}}{1+r^*} > 0.$$

From (11) and (18) we get:

$$\left.\frac{d\bar{b}}{ds_1}\right|_{s_1=s_1^N} < 0. \tag{19}$$

Using (5), (6), (18), (11) and (10), we get:

$$\begin{aligned}\left.\frac{dX}{ds_1}\right|_{\bar{b}=\bar{b}^N} &= \left.\frac{dX}{ds_1}\right|_{\bar{b}=\text{const.}} - \left[\frac{E_{23}^2}{R_{33}^2} + \frac{P_4 E_{44} + P_3 E_{43}}{(1+r)^2}\right] \cdot \frac{1+r}{\Delta} \cdot \frac{d\bar{b}}{ds_1} \\ &\quad - \frac{E_{45} H}{(1+r)\alpha\Delta} \cdot \frac{d\bar{b}}{ds_1}.\end{aligned} \tag{20}$$

Since $d\bar{b}/ds_1 < 0$ (19), from (20) it follows that:[8]

$$\left.\frac{dX}{ds_1}\right|_{\bar{b}=\bar{b}^N} < \left.\frac{dX}{ds_1}\right|_{\bar{b}=\text{const.}} \qquad \text{if} \quad E_{45} \simeq 0.$$

The above results can be explained intuitively as follows. Compared to the case where $\bar{b}$ is exogenous, under the Nash game, two additional terms arise because the Nash equilibrium value of $\bar{b}$ adjusts as s_1 is changed. We know from (19) that $d\bar{b}^N/ds_1 < 0$ and from (5) that $dr/d\bar{b} < 0$. Therefore, the additional term involves an increase in r. This in turn has two effects. First, the direct effect of an increase in r is that it reduces exports in period 2 as explained before. Second, it reduces income and therefore reduces consumption and increases exports in period 2. If the income effect does not fall on the consumption of good 2 in period 2, then this effect is insignificant and the direct effect dominates.

[7] In order to avoid third order derivatives, we assume that ϵ is constant.

[8] A sufficient condition for $E_{45} \simeq 0$ is that income effects fall entirely on consumption in period 1 and on consumption of good 1 in period 2.

4.2 The borrower country has a first-mover advantage

In this subsection we consider a two-stage game in which the borrower country acts as the leader. In this case, the first order condition for s_1 is

$$\frac{\partial u}{\partial s_1} + \frac{\partial u}{\partial \bar{b}} \cdot \frac{d\bar{b}}{ds_1} = 0.$$

The first order condition for $\bar{b}$ remains (17). The equilibrium here is denoted by $(\hat{s}_1, \hat{\bar{b}})$.

Here, using (5), (6), (10), (11) and (18), we get:

$$\left.\frac{dX}{ds_1}\right|_{\bar{b}=\hat{\bar{b}}} = \left.\frac{dX}{ds_1}\right|_{\bar{b}=\text{const.}} - \left[\frac{E_{23}^2}{R_{33}^2} + \frac{P_4 E_{44} + P_3 E_{43}}{(1+r)^2}\right] \cdot \frac{1+r}{\Delta} \cdot \frac{d\bar{b}}{ds_1}. \tag{21}$$

We have proved elsewhere that $s_1^N > \hat{s}_1$.[9] From (6), it can be shown that r is a U-shaped function of s_1. Furthermore, from (11) it follows that at $s_1 = s_1^N$, r is a decreasing function of s_1. Since the optimal value of $\hat{s}_1 < s_1^N$, it follows that $dr/ds_1 < 0$ at $s_1 = \hat{s}_1$. From (21) it then follows that without any restrictions on income effects, we have:

$$\left.\frac{dX}{ds_1}\right|_{\bar{b}=\hat{\bar{b}}} < \left.\frac{dX}{ds_1}\right|_{\bar{b}=\text{const.}}.$$

The intuition is similar to the one given for the previous case except that the income effect on exports is absent in this case as the effect of changes in welfare via induced changes in $\bar{b}$ is taken into account in determining the optimal value of s_1.

4.3 The lender country has a first-mover advantage

In this section we consider a two-stage game in which the lender country is the leader. In the second stage of the game, the borrower decides on the level of s_1 by maximising its welfare for a given value of $\bar{b}$. That is, the reaction function of the borrower is

[9] See Jafarey and Lahiri (2002)

obtained from (16). The lender then maximises its welfare subject to this reaction function. The first order condition for the lender's objective function is given by:

$$\frac{du^*}{d\bar{b}} = \frac{\partial du^*}{\partial \bar{b}} + \frac{\partial u^*}{\partial s_1} \cdot \frac{ds_1}{d\bar{b}} = 0. \tag{22}$$

We denote the equilibrium levels of the instruments by $(\tilde{s}_1, \tilde{\bar{b}})$. We now consider the effect of an increase in s_1 on the level of period 2 exports, X. Interestingly, in this case a change in s_1 will leave the level of $\tilde{\bar{b}}$ unchanged, and therefore qualitatively the effect of a change in s_1 on X in this case is exactly the same as it was in the case where $\bar{b}$ was exogenous. In fact, if the exogenous level of $\bar{b}$ is the same as $\tilde{\bar{b}}$, the magnitude of the effect will also be the same.

5 Conclusion

Export promotion is an extremely widespread phenomenon; most countries in the world have been trying to increase their share of the world market. There are many reasons why they do so. One of the arguments is that a current increase in exports is likely to have a permanent effect on exports, making export promotion activities very efficient. This is the so-called export-experience effect. In the literature, people have put forward many theoretical reasons why there may be a persistence effect in exports, and many others have attempted to test whether there indeed is a learning-from-exporting effect.

In this paper we have identified a possible new channel via which a temporary promotion of exports can have long-lasting effects. In particular, we have shown that the presence of credit market imperfections can be a source for such persistence. We have also shown that the nature of the initial equilibrium determines the size of the export-experience effect.

To be more specific, we developed a two-period two-country multi-good model with endogenous investment. The two countries are only related by the credit market, and the borrower home country is only allowed to borrow a specified amount by the lender country. In this framework we examine effect of period 1 export subsidy in the home country on the level of its exports in period 2. We consider a number of equilibria depending on how the initial level of export subsidy and the amount of credits are determined. We find that a temporary export subsidy, by affecting the interest rates and therefore the level of investment, consumption and production in period 2, can affect the level of exports in period 2.

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