The Effects of Dollarization on Macroeconomic Stability

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1. **Introduction**

Recently several countries have been considering the relative merits of “dollarization,” that is, adopting the currency of an anchor country. One of the main potential costs of dollarization is that macroeconomic stability may be reduced by the loss of monetary policy autonomy.\(^1\) The optimal currency area literature emphasizes that the costs of dollarization are inversely proportional to the correlation between shocks to the “dollarizing” (or “home”) country and the foreign country whose currency serves as an anchor. Thus, the home country is worse off under dollarization to the extent that it faces idiosyncratic shocks, either domestic or foreign.

To evaluate the magnitude of these stabilization costs, we formulate a small open economy model which is derived from the dynamic optimization problems solved by households and firms. The home country has two productive sectors: nontradeable output is consumed domestically, while tradeable output is either consumed or exported. In addition, domestic residents consume imported goods that can only be produced abroad. Since we assume that foreign demand for the tradeable good is less than perfectly elastic, the home country should be viewed as an exporter of manufactured goods rather than primary commodities. We also assume that domestic households can borrow and lend freely using sovereign risk-free bonds, subject to an intertemporal solvency constraint.

The model embodies both neo-Keynesian and neoclassical assumptions: sectoral output prices are set in staggered contracts and hence only adjust gradually to shifts in sectoral real marginal costs. We assume that households and firms have rational expectations and solve dynamic optimization problems subject to these nominal and real rigidities. Under these assumptions, agents react appropriately to changes in the monetary regime in accordance with the views of Lucas (1976). Under our assumption that the authorities can make a perfectly credible commitment to a particular monetary policy regime, dollarization can be represented as a perfectly credible exchange rate peg. Since we abstract from default risk, dollarization

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\(^1\)In a complete evaluation of the relative merits of dollarization it would be necessary to consider possible benefits and other possible costs. Possible benefits include a reduction in uncertainty that would encourage domestic savings and investment and international trade. Other possible costs include a loss of seigniorage revenue and reduced scope to serve as a lender of last resort.
implies that the home interest rate is identical to that of the foreign country whose currency serves as an anchor. For purposes of comparison, we also consider two alternative monetary policy regimes, namely, strict consumer price inflation (CPI) targeting and Taylor’s (1993) rule in which the nominal interest rate responds to the output gap as well as CPI inflation.

The optimal currency literature leaves somewhat open the question of the channel through which macroeconomic stability in the home country is affected by idiosyncratic shocks under dollarization. In this analysis, we consider the effects of two standard country-specific shocks: (1) a positive total factor productivity shock to both sectors of the home country, and (2) a positive shock to foreign demand for the tradeable good. According to the literature on optimal currency areas, if the structures of the home and foreign economies are the same and the preferences of home and foreign policymakers are identical, the stabilization costs of dollarization vary inversely with the correlation of the shocks hitting the two economies with the costs being lowest when the shocks hitting the two countries are perfectly positively correlated and the highest when the shocks are perfectly negatively correlated. Country-specific shocks represent the intermediate case in which the shocks hitting the two economies are neither positively nor negatively correlated.

Under the dollarization regime, both domestic price inflation and the output gap rise in response to the domestic productivity shock as well as the foreign demand shock. The reason is that both shocks raise permanent income and hence stimulate domestic demand, which raises desired expenditure on imports as well as domestically produced goods. Provided that this “wealth effect” is sufficiently strong and that potential output in the non-tradeable sector only rises gradually, the short-run expansion of aggregate demand dominates the expansion of aggregate supply. Under dollarization, the resulting real exchange rate appreciation translates directly into higher domestic prices as well as a positive output gap. In contrast, under either strict CPI inflation targeting or Taylor’s rule, higher real interest rates serve to offset the stimulus to aggregate demand. Thus, both alternative monetary policy regimes yield more stable output and inflation than the dollarization regime.

The remainder of this paper is organized as follows: Section 2 provides further details about the specification of the model. Section 3 analyzes the effects of the domestic productivity
shock under each monetary policy regime, while Section 4 considers the effects of the foreign demand shock. Section 5 discusses our conclusions and highlights issues for further research.

2. Model Specification

The model comprises the log-linearized equations in Table 1. Rather than giving a complete description of the dynamic optimization problems solved by households and firms, we simply give a heuristic description of the assumptions used in deriving the equations of the model.

Equations (Y1) through (Y6) describe production and price setting. As stated above, the economy has two production sectors: one sector produces tradeable goods that can be either exported or consumed domestically, while the other sector produces non-tradeable goods. In each sector, monopolistically competitive firms produce differentiated goods, so that each firm faces a downward-sloping demand curve for its output. Because firms have production functions with constant returns to scale in capital and labor, every firm within a given sector has the same marginal cost. However, because the aggregate capital stock in each sector is assumed to be fixed, marginal costs may diverge across sectors.

Our model embodies the neo-Keynesian assumption that goods prices in each sector are specified using staggered nominal contracts, and actual output of each good is determined by demand. When an individual firm negotiates a new price contract, it chooses a relative price for its output (compared with the prices of other firms in the sector) based on its current and future real marginal costs (deflated by the sectoral average price level). Thus, the sectoral price inflation rate increases with current and expected future deviations (in percentage terms) of sectoral unit labor costs from their baseline value.

Equations (L1) through (L4) describe employment and wage setting. Labor markets have

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2In a more general formulation of our model, we have allowed for endogenous capital accumulation. Capital is quasi-fixed at the sectoral level, and can be moved across sectors subject to adjustment costs. We also intend to incorporate the use of raw materials into the production function. But for simplicity, we have focused on a version of the model that abstracts from these features.

3Equivalently, given the equality between sectoral real marginal cost and sectoral unit labor cost, the sectoral price inflation rate increases with deviations (in percentage terms) of sectoral real marginal costs from their baseline value.
# Table 1: The Log-Linearized Model

## Output and Price-Setting

\( j = d, n \)

\[
y_{dt} = \frac{\lambda_d}{\lambda_d + \lambda_m} c_{dt} + \frac{\lambda_m}{\lambda_d + \lambda_m} x_t \quad \text{(domestic traded output) \ (Y1)}
\]

\[
y_{nt} = c_{nt} \quad \text{(domestic non-traded output) \ (Y2)}
\]

\[
\ell_{jt} = \frac{1}{1-\alpha} (y_{jt} - a_{jt}) \quad \text{(sectoral employment) \ (Y3)}
\]

\[
mp_{jt} = a_{jt} - \alpha \ell_{jt} \quad \text{(marginal product of labor) \ (Y4)}
\]

\[
\pi_{jt} = \beta \pi_{jt+1} + \phi_j (\zeta_{jt} - mp_{jt}) \quad \text{(price setting) \ (Y5)}
\]

\[
\zeta_{jt} = \zeta_{jt-1} + \omega_t - \pi_{jt} \quad \text{(change in sectoral real wage) \ (Y6)}
\]

## Employment and Nominal Wages

\[
\ell_t = (\lambda_d + \lambda_m) \ell_{dt} + (1 - \lambda_d - \lambda_m) \ell_{nt} \quad \text{(aggregate employment) \ (L1)}
\]

\[
mrst_t = \sigma c_t + \chi \lambda_t \ell_t \quad \text{(marginal rate of substitution) \ (L2)}
\]

\[
\omega_t = \beta \omega_{t-1} + \phi_w (mrst_t - \zeta_{ct}) \quad \text{(nominal wage inflation) \ (L3)}
\]

\[
\zeta_{ct} = \zeta_{ct-1} + \omega_t - \pi_{ct} \quad \text{(change in CPI-adjusted real wage) \ (L4)}
\]

## Domestic and Foreign Demand

\[
c_t = c_{t+1} - \frac{1}{\sigma} (i_t - \pi_{ct+1}) \quad \text{(consumption Euler equation) \ (D1)}
\]

\[
c_{dt} = c_t - \theta_d (rer_t - tot_t) \quad \text{(domestically-produced traded goods) \ (D2)}
\]

\[
c_{mt} = c_t - \theta_m rer_t \quad \text{(imported goods) \ (D3)}
\]

\[
c_{nt} = \frac{1}{1 - \lambda_d - \lambda_m} (c_t - \lambda_d c_{dt} - \lambda_m c_{mt}) \quad \text{(non-traded goods) \ (D4)}
\]

\[
x_t = c_t + \theta_x tot_t \quad \text{(export demand) \ (D5)}
\]

\[
b_t = (1 + r)b_{t-1} + x_t - tot_t - c_{nt} \quad \text{(external asset position) \ (D6)}
\]
Table 1 (contd.)

Exchange Rates and Relative Prices

\[ e_t = e_{t+1} + i^*_t - i_t \]  \hspace{1cm} (uncovered interest parity) \hspace{1cm} (R1)

\[ \pi_{mt} = \pi^*_m + e_t - e_{t-1} \]  \hspace{1cm} (import price inflation) \hspace{1cm} (R2)

\[ \pi_{ct} = \lambda_d \pi_{dt} + \lambda_m \pi_{mt} + (1 - \lambda_d - \lambda_m) \pi_{nt} \]  \hspace{1cm} (consumer price inflation) \hspace{1cm} (R3)

\[ rer_t = rer_{t-1} + \pi_{mt} - \pi_{ct} \]  \hspace{1cm} (real exchange rate) \hspace{1cm} (R4)

\[ tot_t = tot_{t-1} + \pi_{mt} - \pi_{dt} \]  \hspace{1cm} (terms of trade) \hspace{1cm} (R5)

Alternative Monetary Policy Rules

\[ e_t = \bar{e} \]  \hspace{1cm} (Fixed Exchange Rate) \hspace{1cm} (M1)

\[ \pi_{ct} = \bar{\pi} \]  \hspace{1cm} (Strict CPI Inflation Target) \hspace{1cm} (M2)

\[ i_t = 1.5 \pi_{ct} + 0.5 gap_t \]  \hspace{1cm} (Taylor’s Rule) \hspace{1cm} (M3)

Notes:  (1) The asset position \( b_t \) is expressed in real terms (namely, in units of the foreign traded good).  (2) The nominal exchange rate \( e_t \) is expressed as units of local currency per unit of foreign currency.  (3) Equation (R1) can also be expressed as \( q_t = q_{t+1} + r^*_t - (i_t - \pi_{ct+1}) \), where \( r^*_t \) is the foreign real interest rate.  (4) If \( \psi_d = \psi_f \), then equation (D2) can also be expressed as \( c_{dt} = c_{ft} + \psi_f tot_t \).  (5) The coefficients \( \phi_j = \xi_j^{-1} (1 - \xi_j \beta) (1 - \xi_j) \) and \( \phi_w = \xi_w^{-1} (1 - \xi_w \beta) (1 - \xi_w) \left( 1 + \chi \lambda_t \left( \frac{1 + \psi_f}{\psi_f} \right) \right)^{-1} \).
neo-Keynesian features similar to those of goods markets. In particular, households provide differentiated labor services to the production sector, and each household faces a downward-sloping demand schedule for its labor. Nominal wage rates are specified using staggered nominal wage contracts, with actual employment determined by labor demand. When an individual household negotiates a new wage contract, it chooses a CPI-adjusted real wage rate that depends on expected future CPI-adjusted real wage rates and current and expected future marginal rates of substitution (that is, the marginal utility cost of an extra hour of work expressed in terms of real consumption expenditures). This result implies that aggregate wage inflation rises with the difference between the deviations (in percentage terms) of the marginal rate of substitution and the CPI-adjusted real wage rate from their baseline values.

Equations (D1) through (D6) describe home and foreign goods demands. Each household is infinitely-lived, and smooths its consumption path subject to its present discounted stream of income and the expected path of short-term real interest rates. In particular, the standard consumption Euler equation implies that the expected growth rate of aggregate consumption is proportional to the short-term CPI-adjusted real interest rate.

Each domestic household consumes three types of goods: non-tradeable goods; domestically-produced tradeable goods; and imported goods. The aggregate consumer price index is defined as a weighted average of the three price deflators, with weights corresponding to household expenditure shares in the initial steady state of the economy. The three types of goods are imperfect substitutes; thus, the demand for each type of good is proportional to aggregate consumption and is negatively related to the ratio between its price deflator and the aggregate CPI.

We assume that households can borrow and lend freely in international markets at an exogenously-given risk-free real interest rate (expressed in terms of the foreign good). 4 At the aggregate level, the country’s external asset position is obtained by cumulating its current account surpluses and deficits. Because sovereign default is not permitted, aggregating the intertemporal budget constraints of all households implies equality between the present

4This assumption is convenient in considering the behavior of a small open economy; however, our analysis can readily be extended to a multi-country framework in which relative size varies across countries.
discounted value of aggregate exports and imports.

Exchange rates and relative prices must satisfy equations (R1) through (R5). The nominal exchange rate is expressed in terms of foreign currency per unit of domestic currency, so that an increase in the exchange rate corresponds to an appreciation of the local currency. Given our assumption of uncovered interest parity, the expected rate of nominal exchange rate depreciation equals the differential between domestic and foreign nominal interest rates. Since we assume that the law of one price holds, the home-currency price of each tradeable good is equal to the exogenously-given foreign currency price divided by the nominal exchange rate; similarly, the home-currency price of imported goods equals the foreign price divided by the nominal exchange rate. Export demand is determined by the level of foreign consumption and by the relative price of the tradable good in terms of foreign goods.

The model is completed by specifying one of the three monetary policy rules given in equations (M1) through (M3). For simplicity, we assume that the authorities can make a permanent commitment to any one of the three regimes, and that this commitment is completely transparent and credible to all private agents.\(^5\) Under this assumption, dollarization is equivalent to a permanently fixed nominal exchange rate. Under each of the alternative policy regimes, we make the simplifying assumption that the monetary authorities have complete information about the current state of the economy. Thus, under strict inflation targeting, the policymaker is able to completely stabilize CPI inflation at its target level, while under Taylor’s rule, the authorities always know the true value of the output gap (namely, the deviation of real GDP from its flexible-price level). In future work, it will be interesting to extend our analysis to consider the performance of each policy rule when the authorities have incomplete information about the current state of the economy. At this point, however, it should be noted that the assumption of complete information will tend to enhance the relative performance of these two policy rules compared with the dollarization regime.

\(^5\)We have performed some analysis of closed-economy models in which a shift in monetary policy (namely, a reduction in the inflation target) is subject to imperfect credibility; in subsequent work it will be useful to extend this analysis to the open-economy setting.
3. Domestic Productivity Shock

In this section, we analyze the impact of a domestic productivity shock on consumer prices, the output gap, and other key variables. Figures 1a-1c plots impulse response functions for an innovation in the growth rate of productivity that occurs in both the tradeable and nontradeable sector in the home country. The shock consists of a rise in the growth rate of productivity of about 1-1/2 percentage points (a.r.) in the first year of the shock. The shock to the productivity growth rate gradually dies away, implying a cumulative rise in the level of productivity of 10 percent.

A. Dollarization

The upper panels of Figure 1a show the basic results we seek to explain. First, a favorable shock to productivity in the home country under an exchange rate peg can induce both consumer prices to rise (upper left panel), and the output gap to expand (upper right panel). Second, it is clear that simple alternative monetary policy rules can dominate the performance of an exchange rate peg for this type of shock. For instance, it is evident that a consumer price inflation target can stabilize consumer prices, while also reducing the variability of the output gap.

Roughly speaking, a productivity shock can be inflationary under a peg if the increase in aggregate demand associated with the shock significantly outstrips the rise in “near-term” potential output. This reflects that producers will only raise prices if they expect that their real marginal costs will be relatively high (relative to baseline) over the expected duration of the price contracts, e.g., over the next few quarters. Thus, one prerequisite for (output) prices to rise is that potential output must increase only gradually in response to the shock. This motivates our consideration of a “phased-in” shock to the level of productivity in the figures, but it would seem to have a fairly strong empirical rationale (given that new technologies take time to utilize; moreover, the phased-in shock can be regarded as proxying to some extent for gradual capital accumulation).

The “aggregate demand” channel for the shock occurs via a wealth effect. The magnitude of the wealth effect is determined by the increase in the average level imports that a country can
finance due to its higher level of productivity (i.e., holding factors of production in the export sector constant). Given the condition that the present discounted sum of imports must equal the present discounted sum of export revenues (expressed in terms of the import good), the magnitude of the wealth effect depends crucially on the elasticity of foreign demand for the export good. With a high demand elasticity (much greater than unity), the terms of trade would not deteriorate by much as exports expanded, implying a sizeable wealth effect relative to the magnitude of the productivity shock. On the other hand, the wealth effect would be quite small if the elasticity of demand were close to unity (and zero if the income elasticity were unity, since the higher supply of exports would be exactly offset by a price decline).

For a small open economy producing tradeable goods that are fairly close substitutes with the tradeable goods of other countries, it seems reasonable to assume a relatively high elasticity of export demand. Accordingly, under an exchange rate peg (lower right panel of Figure 1a), export revenues (in foreign currency) would rise substantially in present discounted value terms (upper left panel of Figure 1b), allowing an immediate expansion of imports (upper right panel of Figure 1b). The fall in export revenues in the near-term reflects a rise in domestic demand for the tradeable good that constricts exports, thus exacerbating the effects of the import rise on the trade deficit.

The rise in imports \( m_t \) acts as a shock to the demand curve for both nontradeable \( c_{nt} \) and tradeable goods \( c_{dt} \):

\[
c_{it} = m_t - \phi (P_{it} - P_{ft}) \quad i = n, d
\]  
(1)

Equation (1) says that demand for both the nontradeable and tradeable good would immediately rise in proportion to the rise in imports if the relative price of each type of good (in terms of the foreign good) remained constant. For the case considered here, with a 10 percent rise in the level of productivity leading to about a 7-1/2 percent immediate rise in imports, this would mean non-tradeable output and output of the domestically-produced tradeable would rise 7-1/2 percent in the absence of relative price adjustment. In a flexible price model, such an increase in demand would not materialize, however, as relative prices would simply rise to keep output at
potential.

In general, satisfaction of the household demand equations following a rise in imports (i.e., a wealth shock) requires movement of (sectoral) output gaps, or of (sectoral) relative prices. An exchange rate peg constrains relative price adjustment to occur only through changes in the nominal sectoral output prices ($P_{nt}$ and $P_{dt}$), since it effectively fixes the price of foreign goods ($P_{ft}$). Given sluggish price adjustment, this means that most of the adjustment to the higher imports will occur through a rise in the output gap. Thus, the lower panels of Figure 1b indicate that output gaps rise substantially in each sector under the peg. Nominal sectoral output prices may rise or fall, even with a substantial rise in the output gap in the current period. This is because sectoral output prices depend on both current and discounted future real marginal costs. Prices rise only if the wealth shock is large relative to the expansion of potential output in the near-term, i.e., if imports rise considerably in percentage terms relative to the rise in potential over the period in which prices are sticky. Because the wealth effect is relatively large in the case considered, the price of (domestically-consumed) tradeable goods rises in the near-term, equivalent to an improvement in the terms of trade (the upper left panel of Figure 1c). Moreover, the price of non-tradeable goods also rises. Taken together, these effects imply the rise in the real exchange rate shown in the upper right panel of Figure 1c.\footnote{In the long-run, the terms of trade depreciates, as an increased supply can only be absorbed by a fall in the relative price (given foreign demand is constant). Moreover, with the fall in the relative price of tradeable goods, imports rise by less than output in the nontradeable sector in the long-run, putting downward pressure on the relative price of nontradeable goods. This implies a depreciation of the real exchange rate in the long-run.}

To recapitulate, supply shocks may drive the aggregate output gap and price inflation in the same direction under an exchange rate peg. This outcome is likely to occur if the wealth effect arising from the shock is large, while potential output expands only gradually. Given the magnitude of the wealth effect arising from a productivity shock depends on the price elasticity of export demand, we might expect that a supply shock would exert larger effects on prices and the output gap under a peg in the case of a country with a highly elastic export demand function.

The fact that an exchange rate peg is consistent with prices and output gaps moving in the same direction even in response to supply shocks suggests that a more aggressive monetary policy stance would improve welfare (at least if standard demand shocks also induce positive
comovement between prices and the output gap, as we verify below). As shown in the lower left panel of Figure 1c, an exchange rate peg is consistent with a fall in the short-term real interest rate (as prices are expected to rise for some time), and very small rise in the long-term interest rate (an average of the short-term rates shown in the figure). This policy is clearly expansionary relative to the flexible price equilibrium, which would require the real interest rate to rise.

B. Strict CPI Inflation Targeting

Under strict CPI inflation targeting variability of both price inflation and the output gap are less than under dollarization. Given the upward pressure on the real exchange rate due to the factors outlined above, stabilizing consumer prices requires an appreciation of the nominal exchange rate (as seen in the lower right panel of Figure 1a). Nominal exchange rate appreciation allows the relative price of nontradeable goods relative to foreign goods to rise substantially even with sticky domestic prices (since the price of foreign goods falls with the appreciation). For a given-sized wealth shock – or rise in imports – this increase in the relative price reduces demand for both the non-tradeable good, and for the domestically-consumed tradeable (referring to equation 2). Thus, nominal exchange rate appreciation serves not only to restrain consumer prices from rising, but also keeps output closer to potential. The bottom panels of Figure 1b show how sectoral output gaps become smaller under inflation targeting, while the upper panels of Figure 1c show the correspondingly greater appreciation of both the terms of trade and real exchange rate. Although the short-term real interest rate falls a bit more than under an exchange rate peg (the lower left panel of Figure 1c), agents recognize that short-term real rates will rise substantially more in the future; hence, the current long-term real interest rate (a weighted average of future short-term interest rates) actually increases further under inflation targeting than under the pegged exchange rate.

It is interesting that since the home currency appreciates under strict CPI inflation targeting, this policy may have considerably different effects across sectors. In our specification, exports fall markedly under inflation-targeting relative to an exchange rate peg. Moreover, the narrowing of the output gap in the tradeable sector is more pronounced than in the non-tradeable sector.
C. Taylor’s Rule

Compared with the strict inflation targeting regime, Taylor’s rule implies less output gap variability and greater CPI inflation variability (upper left panel of Figure 1a). In particular, with sluggish wage adjustment, keeping output closer to potential than under inflation-targeting puts downward pressure on prices. Moreover, since greater nominal exchange rate appreciation is required to stabilize the output gap, the Taylor Rule implies very divergent behavior of the output gaps across sectors (with the output gap in the tradeable sector becoming negative, and exports falling considerably in the near-term).

More generally, rules that vary the relative weights on inflation and the output gap in a monetary policy reaction function including both variables at least give rise to a “tradeoff” between the variability of inflation due to the productivity shock and that of the output gap. Thus, at least under the assumptions of our model, a policymaker can reduce the variation of the output gap in response to the productivity shock by accepting somewhat greater variability of price inflation.

4. Foreign Demand Shock

We now consider the response to a permanent rise in export demand of 10 percent. The rise in export demand can be regarded as the result of a preference shock that simply raises foreign demand for the small country’s exports by 10 percent, but does not affect foreign nominal interest rates or the foreign aggregate price level. The upper panels of Figure 2a indicate that this foreign demand shock raises both prices and the output gap under an exchange rate peg. Moreover, both prices and the output gap are considerably more volatile under a peg than under either inflation-targeting, or under a Taylor Rule.

Under an exchange rate peg, the rise in export demand increases export revenue (the upper left panel of Figure 2b), allowing imports to rise (upper right panel of Figure 2b). As in the analysis of a productivity shock, this stimulates domestic demand for both the non-tradeable good, and the tradeable good (thus, the demand for the tradeable good is affected directly by the rise in foreign demand, and indirectly through the rise in domestic demand associated with the wealth effect). Because prices of both nontradeable and tradeable goods are
slow to adjust upward, the shock induces positive output gaps in both sectors (the lower panels of Figure 2b). Figure 3a depicts the gradual rise in the terms of trade as tradeable goods prices are gradually adjusted, while Figure 3b shows the path of the real exchange rate. The model’s implication of a real exchange rate appreciation and expansion of sectoral output gaps would not seem sensitive to specific structural features of the economy in the case of this shock.

Just as in the case of the productivity shock, it is clear that a policymaker concerned solely with minimizing the variability of the output gap and price inflation can improve on the outcome under dollarization. In this case, the direct impact of the shock is on the tradeable sector, but its effects are transmitted to the non-tradeable sector through higher permanent income (the “wealth effect”) and hence the shock tends to increase spending on all goods. To offset this aggregate demand stimulus, the policymaker needs to adopt a “tighter” monetary policy stance. As is clear from Figure 2a, nominal appreciation allows the economy to approach the flexible-price equilibrium more quickly. Under a Taylor Rule, sectoral output gaps are negligible even in the period of the shock, the relative price variables jump nearly to their long-term values, and the short-term real interest rate remains close to its flexible price value. In contrast to the case of the productivity shock, the tighter monetary policy stance has a nearly symmetric effect on the tradeable and non-tradeable sectors, as seen in the lower panels of Figures 2b.

5. Conclusion

In this paper, we have formulated a two-sector open economy model in which households and firms have rational expectations and solve dynamic optimization problems subject to short-run neo-Keynesian rigidities. We have considered the behavior of this economy in response to an increase in domestic total factor productivity and in response to an exogenous rise in foreign demand. Under the dollarization regime, each shock raises permanent income (the “wealth effect”) and hence pushes up CPI inflation as well as the output gap. In particular, each shock allows the home country to finance a higher level of imports, thereby raising desired expenditure on both non-tradeable goods and domestically-produced tradeable goods. In contrast, under either strict CPI inflation targeting or Taylor’s rule, higher real interest rates serve to dampen the
aggregate demand stimulus and thus result in lower variability of both price inflation and the output gap.

When the nominal exchange rate is permanently fixed, as in the dollarization regime, it may not be particularly surprising that the foreign demand shock pushes up both domestic inflation and the output gap. Perhaps the more interesting result is that this pattern also emerges in response to an increase in domestic total factor productivity. In this case, the key point is that the wealth effect has a substantial impact on import demand while potential output in the non-tradeable sector only expands gradually. In the near term, the increase in aggregate demand dominates the rise in aggregate supply. As a result, output rises above potential, while real exchange rate appreciation directly pushes up domestic prices under the fixed exchange rate regime. This characterization seems reasonably appropriate for a small open economy that faces a relatively elastic demand curve for its exports: higher supply of the tradeable good has only a modestly depressing effect on the export price and hence generates a substantial wealth effect that raises demand for non-tradeable goods, while potential output only expands gradually in the non-tradeable sector.

These two shocks can be viewed as reasonably representative of a broader class of shocks that are likely to affect small open economies. Thus, under a dollarization regime, these countries are likely to experience higher domestic inflation when the output gap expands, even in response to shocks that push up aggregate supply as well as aggregate demand. Assuming that the policymaker’s loss function consists in minimizing (a weighted average of) output gap and inflation variability, the dollarization regime lies well inside the monetary policy frontier. Furthermore, dollarization performs especially poorly if the share of imported goods in the consumption bundle is low, as shocks to relative prices translate almost directly into changes in the general price level.

The result that strict CPI inflation targeting dominates dollarization in our model is important because both are very simple rules. Many countries are attracted to dollarization because of its high degree of transparency. For these countries, the relevant comparison is between dollarization and other highly transparent monetary policy strategies. For example, strict CPI inflation targeting does not involve responding to the output gap (which is only
measured imperfectly), and hence the public can easily make inferences about central bank behavior under this regime.

It remains for future research to determine the degree of robustness of our finding that strict CPI inflation targeting is superior to dollarization. It would be interesting to consider some other simple rules (e.g., targeting an average of CPI inflation and wage inflation), and to relax the assumption that the central bank has complete current information about CPI inflation and the output gap. It is also important to assess how the desirability of alternative rules is affected by various structural features of the economy, such as the relative inertia of prices and wages.
Figure 1B: Country-Specific TFP Shock

Nominal Exports (in f.c.)

Nominal Imports (in f.c.)

Output Gap of Non-Tradeables Sector

Output Gap of Tradeables Sector

- Fixed Exchange Rate
- Taylor's Rule
- Strict CPI Inflation Target
Figure 2B: Foreign Demand Shock

Nominal Exports (in f.c.)

Nominal Imports (in f.c.)

Output Gap of Non-Tradeables Sector

Output Gap of Tradeables Sector

- Fixed Exchange Rate
- Taylor’s Rule
- Strict CPI Inflation Target
Figure 2C: Foreign Demand Shock

- **Terms of Trade**
- **CPI–Adjusted Real Exchange Rate**
- **CPI–Adjusted Real Interest Rate**
- **External Assets (in f.c.)**

Lines represent different economic policies:
- **Fixed Exchange Rate**
- **Strict CPI Inflation Target**
- **Taylor’s Rule**