HAS THE RISE IN GLOBALIZATION REDUCED U.S. INFLATION IN THE 1990s?

EDWARD N. GAMBER and JUANN H. HUNG*

This article investigates whether increased globalization of the U.S. economy has helped hold down inflation in the 1990s. Based on several measures, we find that globalization has increased. Further, we find that import prices exert a greater impact on prices of products in industries faced with greater import penetration. High foreign excess capacity accounts for much of the recent decline in U.S. inflation. Our results suggest that the decline in inflation is explained by the interaction of increased globalization and high excess foreign capacity. Globalization by itself does not lead to less inflation, just greater sensitivity to foreign economic conditions. (*JEL* E3)

I. INTRODUCTION

Has the rise in globalization helped reduce U.S. inflation in the 1990s? Two hypotheses have been proposed for how the rise in globalization may have held down inflation. The first is the so-called competing-goods effect hypothesis, which contends that greater competition from foreign producers has limited the ability of domestic producers to raise prices. The second hypothesis maintains that excess capacity abroad has helped U.S. manufactures meet the robust domestic demand in the United States without straining domestic resources and pushing up inflationary pressures.

This article first lays out a general framework that integrates these two hypotheses and then investigates each of them empirically. We find evidence in support of both hypotheses. To examine the competing-goods effect hypothesis, we estimate panel data regressions to find whether import prices have indeed exerted a greater impact on product prices in industries that are faced with greater import penetration. The results are affirmative.

We study the second, more general hypothesis by making two inquiries. First, has the rise in globalization coincided with the breakdown of the traditional Phillips curve's ability to predict inflation that began in the early 1990s? That is, has the United States become considerably more open in the 1990s than in previous years, when the Phillips curve tracked inflation with reasonable accuracy? Second, has foreign capacity utilization played an important role, along with traditional explanatory variables, in predicting inflation?

Our empirical evidence suggests that the answers to both inquires are also positive. Most striking is the finding that, by including foreign capacity utilization in the estimation

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Gamber: Associate Professor, Department of Economics and Business, Lafayette College, Easton, PA 18042. Phone 1-610-330-5310, Fax 1-610-330-5715, E-mail gambere@lafayette.edu

Hung: Principal Analyst, Macroeconomic Analysis Division, Congressional Budget Office, 2nd and D streets, SW, Washington, DC 20515. Phone 1-202-226-2759, Fax 1-202-226-0332, E-mail juannh@cbo.gov

ABBREVIATIONS

BLS: Bureau of Labor Statistics
CBO: Congressional Budget Office
CPI: Consumer Price Index
IPR: Import Penetration
MC: Marginal Cost
OLS: Ordinary Least Squares
PCE: Personal Consumption Expenditure
SIC: Standard Industrial Classification

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of a Phillips curve equation, almost all of the missing inflation—the difference between actual inflation and predicted inflation based on the traditional Phillips curve—since 1994 disappears.

Our findings suggest that the interaction of slack foreign economic conditions and greater openness to trade may have helped tame the U.S. inflation in the 1990s, but globalization alone has not permanently reduced the threat of recession or inflation. Indeed, greater globalization may even help increase inflation when the U.S. and foreign economic expansions are synchronized.

No single researcher has looked at all of the questions posed in this article, but each question has been investigated separately before. Krugman (1994, 1995) and Irwin (1996) have looked at whether the United States has become more globalized over the past decade. They find that trade with the rest of the world is not a significant or rapidly growing influence on the U.S. economy. The question of whether prices of foreign goods influence domestic prices through the competing-goods effect has been investigated by Swagel (1997). He finds a statistically significant but small impact in 10 of the 19 industries in his sample. Similarly, Slaughter and Swagel (1997) find that increased globalization has had only a modest impact on wages in industrialized economies. Finally, Orr (1994) and Tootel (1998) find very little or no impact of foreign capacity utilization on domestic inflation.

The rest of the article is organized as follows. Section II discusses how globalization may affect U.S. inflation through capital and trade-flow effects. Section III looks at whether the United States has become more globalized in terms of the volume and diversity of trade as well as the volume of capital flows in the 1990s. Section IV investigates whether the rise in the U.S. integration with the rest of the world has led to an increase in import prices' influence on manufacturing prices through the competing-goods effect. Section V examines whether and to what extent U.S. inflation is influenced by foreign capacity utilization. Section VI concludes.

II. HOW DOES GLOBALIZATION AFFECT INFLATION?

The impact of globalization on U.S. inflation will depend on the economic conditions in the United States relative to those abroad. For example, if a U.S. expansion is accompanied by deflationary pressures abroad, globalization is likely to dampen inflation (relative to autarky). On the other hand, if the U.S. expansion is synchronized with foreign expansions, then the impact of increased globalization on U.S. inflation will depend on the relative strength of the two economies. Globalization will increase U.S. inflation if foreign growth is relatively stronger, but dampen U.S. inflation if foreign growth is relatively weaker.

This section will focus on the cases when the United States is in the expansion phase of a business cycle. The cases where the U.S. is in recession can be inferred by symmetric reasoning.

Foreign influences on the U.S. inflation rate could operate though trade-flow and capital-flow channels. To illustrate how these channels operate we consider a world with two economies: domestic (the United States) and foreign. We further assume that the exchange rate floats freely to clear currency markets.

The U.S. consumer price index (p) can be thought of as a weighted average of three components—the dollar price of imported goods (p^m), the price of import-competing goods (p^c) and the price of other goods and services in the consumption basket (p^o):

$$p = \alpha p^m + \beta p^c + \gamma p^o, \tag{1}$$

where α, β, γ represent, respectively, the shares of imported, import-competing, and other goods and services in the consumption basket. All shares are positive and sum to one.

We assume that the price of other goods is a positive function of the cost of capital (i), the unit labor cost (ω), and the price of imports (p^m):

$$p^o = p^o[i, p^m, \omega, z],\ p^o_1 > 0,\ p^o_2 > 0,\ p^o_3 > 0. \tag{2}$$

The vector z represents *other* factors that could influence p^o.

We further assume that the price of import-competing goods is a positive function of the cost of capital (i), the unit labor

cost (ω), the price of imports (p^m), and the profit margin (λ):

$$(3)\quad p^c = p^c[i, p^m, \omega(p^m), \lambda(p^m), x]$$
$$\omega' \geq 0, \lambda' > 0, p^c_1 > 0, p^c_2 > 0,$$
$$p^c_3 > 0, p^c_4 > 0.$$

The vector x represents other variables that affect p^c.

Equations (2) and (3) embody the assumption that prices are determined by a mark-up over the long-run marginal cost. The long-run marginal cost is a function of the cost of capital, unit labor costs, and the cost of imported inputs. An increase in the cost of capital (i) will raise p^c and p^o by increasing the long-run marginal cost. An increase in either ω or p^m will raise p^c and p^o by raising the variable cost of output.

We assume that, given the marginal cost schedule, producers have the pricing power to adjust the mark-up (or profit margin) to maximize profits and that the pricing behavior of producers in the import-competing industries is affected by the competitive pressure coming from imports so that λ is a positive function of p^m. This assumption is consistent with the standard pricing theory in monopolistic competition models where an increase (decrease) in the perceived price elasticity will induce firms to lower (raise) the profit margin(λ).[1] An increase in p^m thus will increase the profit margin by lowering the perceived price elasticity for import-competing goods.

We also assume that falling import prices could result in lowering the unit labor cost of domestic firms by forcing them to enhance productivity, so that ω is a non-negative function of p^m. This assumption makes sense because the inevitable pressure on wage inflation in a tightening labor market, which is a normal by-product of a continuing expansion, will give domestic firms a strong incentive to improve their productivity to prevent profit margins from being completely eroded.

Now we can proceed to discuss how foreign conditions affect U.S. inflation.

1. To see that firms' strategic mark-up is an inverse function of price elasticity, recall that a monopolistic firm will aim to maximize profits by producing and selling a target quantity Q^*. At Q^*, unit price (p) is equal to marginal cost (MC) plus the profit margin (λ), and λ is equal to $-P/\eta$, where η is the price elasticity of demand.

The United States and Foreign Countries Are Asynchronized

Suppose the U.S. economy is expanding while the foreign economy is in a recession. That is, the United States has stronger final demand, higher interest rates, higher inflation, higher capacity utilization, and stronger currency than the foreign economy does. In this case, the increasing trade and capital flows between the foreign and the U.S. economies will unambiguously help lower U.S. inflation relative to autarky through several effects.

Capital-Flow Channel. Through capital flows, foreign economic conditions could influence U.S. inflation through (a) the cost-of-capital effect, and (b) the wage-setting effect:

a. *The cost-of-capital effect:* Foreign capital will flow into the United States in search of higher rates of return. This inflow of capital will help hold down the long-term interest rate and push up equity prices, thereby lowering the cost of capital. This decrease in the cost of capital will help spur business investment. The increase in business investment will expand productive capacity, helping lower the long-run marginal cost of production. This will help dampen the pressures on p^c and p^o to rise in the midst of continuing strength in demand.

b. *The wage-setting effect:* U.S. firms will have better bargaining power (than in autarky) in wage negotiation, because they can choose to move their production abroad to take advantage of lower wages there. Consequently, wage pressures on inflation will be more mild than in an autarky. Holding productivity unchanged, this will lower the unit labor cost relative to what it might have been in autarky. This in turn will help mitigate the inflationary pressure coming from rising labor costs.

Trade-Flow Channel. Through trade flows, foreign conditions could influence U.S. inflation through (a) the net-export effect, and (b) the import-price effect.

a. *The net-export effect:* The dollar will strengthen as higher U.S. interest rates increase the demand for dollar-denominated assets. A stronger dollar will lower U.S. import prices while raising export prices. U.S.

goods will become less competitive internationally, thereby mitigating U.S. growth by reducing the U.S. trade surplus or by widening the deficit. Meanwhile, a weak foreign economy will also reduce foreign demand for U.S. exports through the income effect. The cooling effect of the net-export drag on the domestic economy, by itself, will help dampen inflation relative to the case in autarky.

b. *The import-price effect:* The lower prices of imports will help hold down domestic prices directly and indirectly. It is clear from equations (1) through (3) that

$$(4)\quad dp/dp^m = \alpha + \beta(dp^c/dp^m) + \beta(dp^c/d\omega)(d\omega/dp^m) + \beta(dp^c/d\lambda)(d\lambda/dp^m) + \gamma(dp^o/dp^m) > 0.$$

As import prices fall, U.S. consumer prices will fall *directly* in proportion to α (the share of imports in the consumption basket) plus $\beta(dp^c/dp^m)$ and $\gamma(dp^o/dp^m)$. In addition, falling import prices can also lower U.S. prices *indirectly* through the competing-goods effect. As imports become more price-competitive, U.S. firms in import-competing industries will have to either enhance their productivity or lower their profit margins or both to stay competitive. Either way, the total magnitude of the competing-goods effect is captured by the sum of the second and third terms of equation (4), that is, $\beta(dp^c/d\omega)(d\omega/dp^m) + \beta(dp^c/d\lambda)(d\lambda/dp^m)$. Since $\beta > 0, (dp^c/d\omega) > 0, d\omega/dp^m \geq 0, (dp^c/d\lambda) > 0$, and $d\lambda/dp^m > 0$, the competing-goods effect is always positive theoretically.

Moreover, as both $\beta(dp^c/dp^m)$ and $\gamma(dp^o/dp^m)$ are positive, the direct effect of changes in import prices on U.S. inflation is unambiguously greater than α. This point is worth emphasizing because it clearly refutes the view held by many economists that import prices' impact on U.S. inflation is limited to α, which is modest in size.[2] Even if the indirect, or competing-goods, effect is negligible, the direct effect alone is already greater than α. Changes in import prices will directly affect consumer price inflation not only because imports are a component of the consumption basket, but also because imports are used as inputs to produce the rest of the consumption basket.[3]

Through the combination of these direct and indirect effects, a decrease in import prices will unambiguously dampen the inflationary pressure relative to the case in autarky, thereby helping prolong the domestic expansion by deterring the Federal Reserve from tightening.

The United States and Foreign Countries Are Synchronized

Suppose both the domestic and foreign economies are expanding. Both the U.S. and foreign economies have strong final demand, high interest rates, high inflation, and high capacity utilization. In this case, the link with the foreign economy may help decrease or increase U.S. inflation relative to autarky, depending on the relative strengths of the two economies and their positions relative to capacity. If the foreign economy has less capacity utilization than the United States, then we have a mitigated case of the complete asynchronized situation discussed above. In this case, globalization may still help lower U.S. inflation, though to a lesser extent than in a complete asynchronized scenario, relative to autarky. If the foreign economy has higher capacity utilization than the United States, however, globalization will increase rather than decrease U.S. inflation through the capital-flow and trade-flow channels.

Capital-Flow Channel. Through capital flows, foreign economic conditions could influence U.S. inflation through (a) the cost-of-capital effect, and (b) the wage-setting effect.

a. *The cost-of-capital effect:* U.S. capital will flow out in search of higher rates of return. The outflow of capital will help push up the long-term interest rate and lower equity

2. It is not easy to obtain a precise measurement of α. The imports/GDP ratio is sometimes used as a rough proxy for α. But because imports as a share of consumption final demand is much lager than imports as a share of GDP, that ratio tends to underestimate α. The imports/GDP ratio was around 13% in 1997.

3. Campa and Goldberg (1997) find that U.S. manufacturing industries have steadily increased their use of imported inputs in production, on average from about 4% in 1975 to more than 8% in 1995.

prices, thereby increasing the cost of capital. A rise in the cost of capital will squeeze business investment and increase the long-run marginal cost of domestic output. If demand for consumption goods continues to be strong, this could then lead to higher inflation than in autarky.

b. *The wage-setting effect:* Higher foreign wages will undermine U.S. firms' bargaining power (relative to autarky) in wage negotiation, as foreign firms choose to invest in the United States to take advantage of the relatively lower wages here and push up wage inflation even further. Consequently, the wage pressure on inflation could be greater than in autarky.

Trade-Flow Channel. Through trade flows, foreign conditions could influence U.S. inflation through (a) the net-export effect, and (b) the import-price effect.

a. *The net-export effect:* Capital outflows will weaken the dollar, making U.S. goods more competitive. A weaker dollar and a stronger foreign economy will result in increases in net exports. As the United States is already operating near full capacity, however, the increase in net export demand will only add to the domestic inflationary pressure.

b. *The import-price effect:* A weaker dollar will also increase the dollar price of imports. Higher import prices will contribute to inflationary pressure in the United States both directly and indirectly as discussed above.

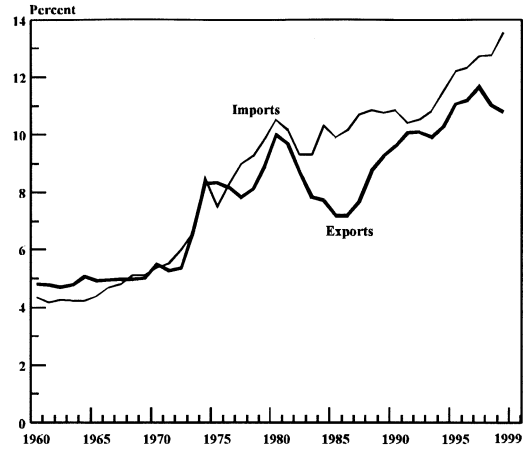
III. HAS THE UNITED STATES BECOME MORE GLOBALIZED IN THE 1990s?

The preceding discussion suggests that the impact of foreign economic conditions on the U.S. economy depends on the degree of openness or "globalization" of the U.S. economy. Recently, the view that the U.S. economy has become much more globalized in the 1990s has received much attention by the popular press. Some economists, however, argue that the U.S. economy is still "effectively insulated" from foreign competition, because imports and exports, respectively, only represent slightly over 10% of U.S. GDP.[4] Who is right?

4. For example see Krugman (1994, 1995).

FIGURE 1

Imports and Exports as a Share of GDP



Source: Survey of Current Business of the Bureau of Economic Analysis.

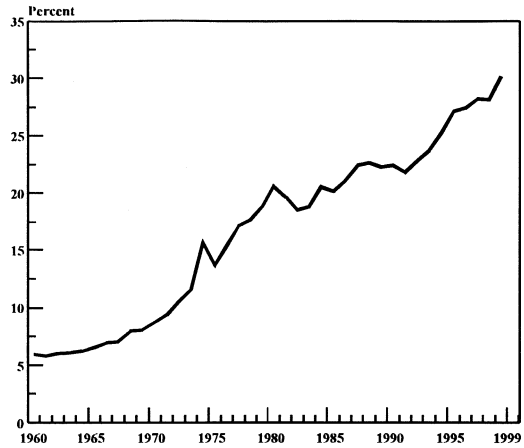
The answer will, to a significant degree, depend on the yardstick by which one measures globalization. It is true that, despite the sharp rise in imports and exports in recent years, the imports/GDP ratio still stood at less than 15% and exports/GDP ratio less than 12% by the end of 1998 (see Figure 1). Measured by the sum of these two ratios, however, the picture looks considerably different. The (imports + exports)/GDP ratio, which was still less than 10% during the 1960s, has more than doubled to nearly 25% by late 1999.

More important, it is misleading to rely *exclusively* on trade flows as a share of GDP to gauge the degree to which the United States is globalized (or integrated with the rest of world). These conventional measures tend to mask increased depth and diversity of trade that have taken place since the mid-1970s for at least two reasons.

First, the increase in services—a mostly nontradeable sector—as a component of GDP means that the imports/GDP ratio underestimates the depth of U.S. reliance on imports. Indeed, goods imports as a share of total goods purchased (by firms and households) shows a much sharper increase than the imports/GDP ratio. Goods imports, which constituted less than 10% of U.S. goods purchased before the mid-1970s, now represent over 30% of total goods purchased (see

FIGURE 2

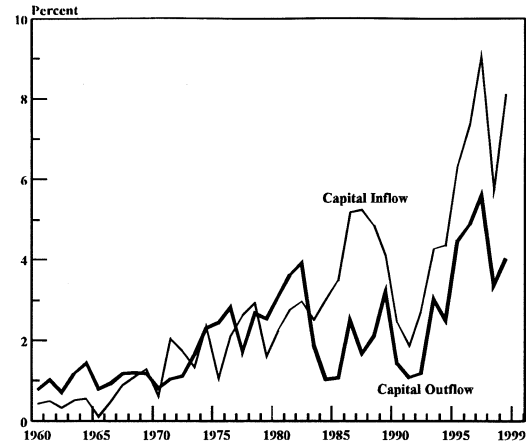
Goods Imports Relative to Final Demand for Goods



Source: Survey of Current Business of the Bureau of Economic Analysis.

FIGURE 3

Capital Flows as a Share of GDP



Source: Survey of Current Business of the Bureau of Economic Analysis.

Note: Capital flows include portfolio and direct investment flows but exclude unilateral transfers.

Figure 2). The dramatic rise in goods imports relative to final goods purchased suggests that imports have indeed become an increasingly important component of final demand for goods by domestic households and firms.

Second, the U.S. trade with the rest of the world has increased in breadth, or diversity, in terms of the number of industries that are faced with greater import competition. In 1970, over 84% of 431 manufacturing industries (at the four-digit Standard Industrial Classification [SIC] level) were faced with import penetration less than or equal to 10%, and only 7% of them were faced with import penetration greater than 20%. By 1996, the share of industries faced with import penetration less than or equal to 10% halved to 42%, whereas those faced with import penetration greater than 20% sextupled to 42% (Table 1).[5]

The increase in both the depth and breadth of U.S. trade has important implications for the inflation and unemployment trade-offs. As explained in the previous section, changes in import prices have not only a *direct* effect on U.S. consumer prices but also *indirect* effects by changing competitive pressures on domestic producers. The rise in the *depth* of U.S. globalization implies that import prices will have a greater *direct* impact on U.S. prices, whereas the rise in the breadth implies that import prices will have a greater *indirect* impact on U.S. prices as more industries will adjust their prices in response to changes in import prices.

In addition to broader and deeper exposures to trade with foreign countries, the United States has also become more globalized in terms of capital flows across its borders. The removal of barriers to capital flows in many industrial as well as emerging countries has contributed greatly to the increase in both inflows and outflows of capital across the U.S. border. Both outward and inward capital flows have soared relative to GDP since 1992 (Figure 3). U.S. private capital outflows, which averaged about 2% of GDP ($80 billion) per year during the 1980s, surged to nearly 6% of GDP ($500 billion) by 1997. The surge in private capital inflows is even more pronounced. After averaging roughly 3% of GDP ($140 billion) per year during the 1980s, private capital inflows increased to over 9% of GDP ($700 billion) in 1997. Even though both inward and outward capital flows as a share of GDP dropped

5. The ratio in 1970 is based on 431 industries from Feenstra (www.nber.org/~feenstra/), and the ratio in 1996 was based on 398 industries from the Census Bureau. The two sets of data are comparable despite the difference in the total number of manufacturing industries. See Table 1 for detailed documentation and comparison of these two sets of data.

TABLE 1
The Distribution of Industries by Import Competition over Time

Import Penetration (IP) (percent)	1958	1970	1980	1990		1994		1996
				Old	New	Old	New	New
$0 \leq IP \leq 10$	92	84	70	44	46	40	43	42
$10 < IP \leq 20$	4	10	17	28	22	26	20	18
$20 < IP \leq 30$	2	4	6	13	13	14	14	15
$30 < IP \leq 40$	0	1	3	6	6	7	8	9
$40 < IP \leq 50$	0	1	2	4	5	6	6	6
$50 < IP \leq 60$	0	1	1	3	3	3	4	3
$60 < IP \leq 70$	0	0	0	2	2	2	2	3
$70 < IP \leq 80$	0	0	0	0	1	1	2	2
$80 < IP \leq 90$	0	0	0	1	1	1	1	2
$90 < IP \leq 100$	0	0	0	0	1	1	1	2
Total number of industries	431	431	431	431	346	431	398	398

Notes: $IPi = Mi/(Si - Xi + Mi)$, where Mi is imports, Si is shipments, Xi is exports, in industry i. Import and export data for 1958, 1970, and 1980 are from Robert C. Feenstra (www.nber.org/~feenstra/), presumably unrevised. Import and export data for 1990, 1994, and 1996 are revised data from the Census Bureau. Revised data are not available prior to 1989. Shipments data are from the Annual Survey of Manufacturers, published by the Census Bureau. Two shares are reported for 1990 and 1994—the two years when both new (revised) and old (unrevised) data are available. The new and old shares indicate that the distribution of industries across the range of import penetration is not significantly affected by the revision of the data.

significantly in 1998 due to the Asian financial crisis, their quick rebound in 1999 indicated that the trend to greater capital flows is unlikely to be interrupted for long. As argued in section II, the increase in international capital mobility implies that foreign economic conditions will have a greater influence on U.S. inflation through capital- flow channels.

IV. TESTING THE COMPETING-GOODS EFFECT

The preceding section indicates that the United States has become increasingly more globalized since the early 1980s, particularly during the 1990s. As discussed in section II, the increasing link with foreign economies means that asymmetric shocks originating abroad could be transmitted to influence U.S. inflation more quickly, broadly, and deeply through several channels. One channel is through trade flows. Through trade, changes in import prices not only will affect U.S. price inflation directly through the U.S. consumption of imports, but also could influence U.S. inflation indirectly through the competing-goods effect.

In this section we test the hypothesis that import prices affect prices of domestic goods through the competing-goods effect. The competing-goods hypothesis posits that falling import prices will induce domestic firms in import-competing industries to lower the price of their output to stay competitive. Domestic firms can do so either by enhancing their productivity or by lowering their profit margins. Conversely, an increase in import prices will induce profit-maximizing producers in the import-competing industries to raise the strategic mark-up over marginal cost to exploit the decrease in the price elasticity of demand for their goods. That is, rising import prices, by lowering competitive pressures on import-competing goods, will lead to an increase in the prices of domestic goods.

To test this hypothesis, we examine the impact of changes in import prices on domestic prices for a panel of three-digit SIC code industries. We do so in three stages. We begin by investigating whether domestic price changes are positively related to import price changes by estimating the following simple equation:

$$\pi_{it} = \alpha + \beta \pi_{it}^{mp} \tag{5}$$

where

π_{it} is the percent change in the relative price of output in industry i at time t; or, the percent change in p_{it}/p_t, where p_{it} is the price of industry i's output at time t, and p_t is the producer price index at time t.[6]

π_{it}^{mp} is the percent change in the import price in industry i at time t.

According to the competing-goods hypothesis, the greater the foreign competition faced by a particular industry, the greater the positive impact of import price changes on domestic price changes in that industry. Therefore, we should expect that the greater import penetration—one measure of globalization—in an industry, the greater the impact of import prices on that industry's price. This is because in a monopolistically competitive framework, a firm can increase its competitive edge by increasing its reach to those consumers that prefer the uniqueness of its differentiated product. In a world that is still not completely globalized and still encumbered by transaction costs, one uniqueness offered by domestic firms is, of course, their geographical dominance over foreign firms. From this perspective, products of foreign firms that have not yet entered a distribution network to reach American consumers will not constitute as much of a competitive threat to domestic firms as those that have.[7]

To test this hypothesis, we reestimate equation (5) by replacing β with a function of import penetration (IPR). That is, we substitute $\beta_{it} = \delta + \gamma \mathrm{IPR}_{it}$, so that (5) becomes:

$$(6) \qquad \pi_{it} = \alpha + \delta\,\pi_{it}^{mp} + (\gamma \mathrm{IPR}_{it})\pi_{it}^{mp}$$

where, both δ and γ should be positive, and IPR_{it} is the import penetration ratio for industry i (defined as $M/[M + S - X]$, where M is imports, S is shipments, and X is exports) at time t.[8]

In equation (6), the impact of import price inflation (π_{it}^{mp}) on industry i's price inflation (π_{it}) for a given level of import penetration (IPR_{it}) is equal to $\delta + \gamma \mathrm{IPR}_{it}$, while the impact of import penetration on π_{it} for a given level of π_{it}^{mp} is captured by $\gamma\pi_{it}^{mp}$. The estimation of the equation thus not only tests the competing-goods hypothesis, but also enables us to assess the extent of the competing-goods effect in each of the 3-digit SIC industries listed in Table 2.

Finally, to find out whether changes in the level of import penetration has any additional impact on π_{it} above and beyond what is captured by $\gamma\pi_{it}^{mp}$, we also estimate an additional specification in which the import penetration ratio is entered independently of its interaction with π_{it}^{mp}:

$$(7) \qquad \pi_{it} = \alpha + \delta\pi_{it}^{mp} + (\gamma \mathrm{IPR}_{it})\pi_{it}^{mp} + \phi IPR_{it}.$$

The Data

We use three-digit SIC industry-level data for domestic producer prices, import prices, and import penetration ratios in the estimation. Two overlapping samples are used. The first sample is of 44 industries, spanning from 1987–1992 (see Table 2 for a list of industries), giving rise to a total of 264 ($= 44 \times 6$ years) cross-sectional time series observations. The second sample is of 42 industries, spanning from 1989 through 1996, giving rise to 336 ($= 42 \times 8$ years) cross-sectional time series observations.[9]

We do not combine the two samples because the Census Bureau revised import and export values—two of the three series we use to construct the import penetration

6. This specification for the dependent variable assumes that the nominal price of domestic goods responds to the overall price level and import prices. By dividing the domestic price by the overall price index, we implicitly constrain the response to the overall price index to be one-for-one.

7. Mann's (1997) finding that a loss of market share to imports is associated with gains to productivity growth in the United States also gives support to this view.

8. In addition to these specifications, we also estimated these regressions including annual data for capacity utilization for each industry. The coefficient on capacity utilization was insignificantly different from zero in all cases, and the coefficients on the other variables of interest remained unchanged from those reported in Tables 3 and 4.

9. The industries represented in the two samples are identical except that the second sample, which spans the period 1989 through 1996, does not include industries 231, "Mens' and boys' suits and coats" and industry 238 "Miscellaneous apparel and Accessories." Data for all three variables used in the regressions were not available for these two particular industries for the 1989 through 1996 time period.

TABLE 2
Average Shipment Share, Import Penetration, and Price Response to Changes in Import Prices by Industries Included in Testing the Competing-Goods Effect (%)

SIC #	Industry	Share of Shipments 1987–96	Import Penetration 1987–92	Response to Import Price Changes 1987–92(β)	Import Penetration 1989–96	Response to Import Price Changes 1989–96(β)
201	Meat products	5.9	3.9	0.11	4.8	0.17
202	Dairy products	4.4	1.6	0.08	1.8	0.13
203	Preserved fruits and vegetables	3.4	5.7	0.12	7.0	0.19
206	Sugar and confectionery products	0.5	8.2	0.15	34.8	0.49
207	Fats and oils	1.9	5.3	0.12	6.6	0.18
208	Beverages	5.1	6.9	0.14	7.1	0.19
209	Miscellaneous food and kindred products	2.0	6.0	0.13	8.9	0.21
221	Broad woven fabric mills, cotton	0.5	15.4	0.22	21.0	0.34
222	Broad woven fabric mills, manmade fiber and silk	0.8	10.5	0.17	16.0	0.28
229	Miscellaneous textile goods	0.8	12.8	0.20	12.0	0.24
231	Mens' and boys' suits coats	0.2	24.9	0.32		
232	Mens' and boys' furnishings	0.8	28.1	0.35	59.4	0.75
238	Miscellaneous apparel and accessories	0.1	50.3	0.58		
242	Sawmills and planing mills	2.2	16.1	0.23	16.9	0.30
243	Millwork, plywood and structural members	2.3	7.6	0.14	5.6	0.17
259	Miscellaneous furniture and fixtures	0.4	11.6	0.18	74.4	0.91
261	Pulp mills	0.6	51.3	0.59	44.2	0.59
262	Paper mills	3.1	18.9	0.26	20.8	0.34
281	Industrial inorganic chemicals	2.0	18.4	0.25	23.7	0.37
289	Miscellaneous chemical products	1.8	5.4	0.12	6.5	0.18
301	Tires and inner tubes	1.1	20.3	0.27	20.1	0.33
314	Footwear, except rubber	0.3	65.1	0.73	69.8	0.86
317	Handbags and personal leather goods	0.1	58.2	0.66	63.7	0.80
326	Pottery and related products	0.3	43.5	0.51	42.3	0.57
331	Blast furnace and basic steel products	4.9	16.1	0.23	18.9	0.32
333	Primary nonferrous metals	1.3	35.5	0.43	56.4	0.72
335	Nonferrous rolling and drawing	3.5	9.3	0.16	12.4	0.25
345	Screw machine products, bolts, etc.	0.5	13.3	0.20	23.9	0.37
353	Construction and related machinery	2.7	20.1	0.27	23.6	0.37
355	Special industry machinery	1.9	25.0	0.32	32.1	0.46
362	Electrical industrial apparatus	1.1	18.3	0.25	33.4	0.47
363	Household appliances	1.7	15.4	0.22	22.0	0.35
364	Electric lighting and wiring equipment	1.4	14.0	0.21	30.5	0.44
365	Household audio and video equipment	0.9	67.2	0.75	77.4	0.94
366	Communications equipment	1.8	11.5	0.18	50.6	0.66
367	Components and accessories	7.2	31.6	0.39	36.5	0.51
369	Miscellaneous electrical equipment and supplies	1.6	24.8	0.32	44.5	0.59
371	Motor vehicles and equipment	23.2	28.6	0.36	28.8	0.42
382	Measuring and controlling devices	2.2	18.2	0.25	31.0	0.45
386	Photographic equipment and supplies	1.7	21.4	0.28	32.3	0.46
387	Watches, clocks, watch cases and parts	0.1	59.3	0.67	76.4	0.93
391	Jewelry, silverware and plated Ware	0.5	61.8	0.69	78.2	0.95
394	Toys and sporting goods	1.0	46.1	0.53	51.7	0.67
396	Costume jewelry and notions	0.1	33.6	0.41	40.4	0.55

Source: Import and export data for the first sample (1987–92) are from Robert C. Feenstra (www.nber.org/~feenstra/); those for the second sample (1986–96) are from the Census Bureau. Shipments data are from the Annual Survey of Manufacturers, published by the Census Bureau.

Note: Shipment share is shipment of an individual industry relative to total shipments of all 44 listed industries.

ratio—only back to 1989. In roughly half the industries in our sample, the revisions were too large to allow us to merge the two samples. Thus, we use the unrevised series on imports and exports to construct the import penetration ratio for the 1987–92 sample, and the revised series for the 1989–96 sample. The unrevised data on import and export values for the 1987–92 sample were obtained from Robert Feenstra *(www.nber.org/~feenstra/)*, the revised data for the 1989–96 sample were obtained from the Census Bureau.

The annual data for import prices and the domestic price index by industries were obtained from the Bureau of Labor Statistics (BLS).

Estimation Results

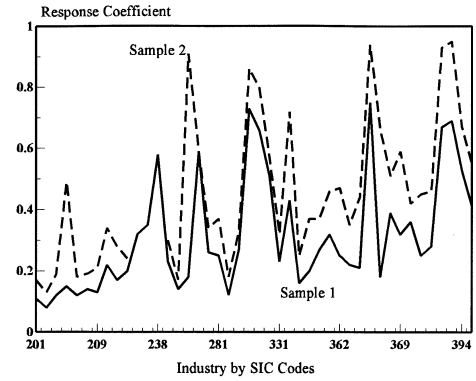
The estimation results of equations (5), (6), and (7) are reported in Table 3 (for the 1987–92 sample) and Table 4 (for the 1989–96 sample).[10] Each equation was estimated twice. First it was estimated using ordinary least squares (OLS). Then it was estimated with appropriate correction for serial correlation and with industry and time period dummies to correct for industry- and time period–fixed effects. The results of the OLS regressions are reported on the top panels, and the results of the corrected regressions in the bottom panels of Tables 3 and 4.

The results from estimating equation (5) show a positive and statistically significant relationship between domestic and import price inflation in both samples. The point estimate is larger in the second sample. The results from equation (6) show that the impact of import prices alone is roughly half the size of the equation (5) estimates. Again, the point estimate on π^{mp} in the second sample (comparing the corrected regressions) is about one-third larger. Because we enter IPR in percentage terms (for example IPR = 24.9% is entered into the regression as IPR = 24.9), the coefficients on the interaction term, IPR $\times$ π^{mp}_{it}, though statistically significant, appear to be small. Recall, however, that equation (6) can be regrouped into $\pi_{it} = \alpha + (\delta + \gamma\ \mathrm{IPR}_{it})\pi^{mp}_{it}$. Thus, the responsiveness of domestic price inflation to a change in import prices, measured by $\delta + \gamma\ \mathrm{IPR}_{it}$, is much bigger than indicated by either δ or γ alone.

10. The SHAZAM (1993) statistical software was used to estimate the regressions.

FIGURE 4

Domestic Price Responses to Import Price Changes across Industries



Note: The domestic price response coefficients (β) are computed from the equation $\beta_{it} = \delta + \gamma IPR_{it}$. The *IPR* in this equation was replaced by the average import penetration ratio for each industry over the sample period. Sample 1 covers the period 1987 through 1992. Sample 2 covers the period 1989 through 1996. The estimated δ and γ used for the first sample are from Table 3, fixed effects results, equation (4.2). The estimated δ and γ used for the second sample is from Table 4, fixed effects results, equation (4.2). Selected SIC codes are listed on the horizontal axis. The industries are arranged in the same order as shown in Table 2.

Figure 4 shows the estimated impact of changes in import prices on domestic price inflation, measured by $\delta + \gamma\ \mathrm{IRP}_{it}$, where IRP_{it} is replaced by the average import penetration ratio over the entire sample period for each industry. In both samples, the smallest estimated response was for "dairy products," industry number 202. The average import penetration ratio for dairy products was 1.6% for the 1987–1992 period and 1.8% for the 1989–96 period. These import penetration ratios imply estimated price response coefficients of .08 and .13 for the two samples, respectively.[11]

The highest response for the first sample was for "household audio and video

11. These responses are computed by multiplying the average import penetration ratio over the sample period by the coefficient on $\pi^{mp} \times$ IPR reported in Tables 3 and 4, in the rows labeled equation (6), then adding the coefficient on π^{mp} from that same row. The numbers reported in the text were computed using more significant digits than are reported in the tables. The estimated responses may therefore differ slightly from those computed using the numbers reported in Tables 3 and 4.

TABLE 3
Estimations of Competing-Goods Effects (Sample: 1987–92, 44 industries)

Equation	Coefficient Estimates On			
	π^{mp}	$\pi^{mp} \times IPR$	*IPR*	R^2
1. OLS results				
(5)	0.36**			0.30
	(0.03)			
(6)	0.16**	0.01**		0.40
	(0.05)	(0.002)		
(7)	0.015**	0.01**	−0.03	0.40
	(0.05)	(0.002)	(0.03)	
2. Fixed effects results corrected for serial correlation				
(5)	0.23**			0.44
	(0.02)			
(6)	0.07*	0.01**		0.58
	(0.03)	(0.001)		
(7)	0.05†	0.01**	−0.03**	0.60
	(0.03)	(0.001)	(0.01)	

Notes: Dependent variable: inflation in individual industry's price relative to the producer price index. Explanatory variable: π^{mp} is inflation in the import price, *IPR* is the import penetration ratio. Standard errors are in parentheses below the parameter estimates.

† Indicates significant at the 0.10 level.

* Indicates significant at the 0.05 level.

** Indicates significant at the 0.01 level.

TABLE 4
Estimations of Competing-Goods Effects

Equation	Coefficient Estimates On			
	π^{mp}	$\pi^{mp} \times IPR$	*IPR*	R^2
1. OLS results				
(5)	0.57**			0.54
	(0.03)			
(6)	0.14**	0.02**		0.67
	(0.05)	(0.001)		
(7)	0.014**	0.02**	0.002	0.67
	(0.05)	(0.001)	(0.05)	
2. Fixed effects results corrected for serial correlation				
(5)	0.38			0.67
	(0.03)			
(6)	0.11**	0.011**		0.69
	(0.04)	(0.001)		
(7)	0.11**	0.011**	0.01	0.69
	(0.04)	(0.001)	(0.03)	

Notes: Sample: 1989–96, 42 industries. Dependent variable: inflation in individual industry's price relative to the producer price index. Explanatory variable: π^{mp} is inflation in the import price, *IPR* is the import penetration ratio. Standard errors are in parentheses below the parameter estimates.

† Indicates significant at the 0.10 level.

* Indicates significant at the 0.05 level.

** Indicates significant at the 0.01 level.

equipment," industry number 365. The average import penetration ratio for this industry was 67%, which implies a price response coefficient of .75. The highest response for the second sample was for "jewelry, silverware and plated ware," industry number 391. The average import penetration ratio for this industry was 78.2%, which implies a price response coefficient of .95. The (simple) average import penetration ratio across all industries and time periods using the first sample is 24.3%, which yields a β coefficient of 0.31. At 0.31 a 1% increase (decrease) in average import price inflation leads to a 0.31% increase (decrease) in domestic price inflation. The (simple) average import penetration ratio across all industries and time periods using the second sample rose to 32.6%, which yields a β coefficient of 0.47. At 0.47 a 1% increase (decrease) in average import price inflation leads to a 0.47% increase (decrease) in domestic price inflation.

The results from equation (7) show that the import penetration ratio has an independent negative influence on domestic price inflation in the first sample but is insignificant in the second sample.

In summary, these results support the competing goods hypothesis. Import prices appear to influence domestic prices, and the degree of influence is positively related to the amount of foreign competition as measured by the import penetration ratio.

V. FOREIGN CAPACITY UTILIZATION AND THE MISSING INFLATION

Robert Gordon (1982) claimed that the Phillips curve had been "prematurely buried." He showed that by adding measures of aggregate supply shocks, exchange rates, and dummy variables for wage and price controls he could explain the combination of high unemployment and high inflation in the 1970s. He concluded that earlier Phillips curves were misspecified, not fundamentally flawed as had been argued by Lucas and Sargent (1978).

Since 1995, Gordon's "correctly specified" Phillips curve has been overpredicting inflation by a substantial amount. According to standard Phillips curve estimates, falling unemployment should be accompanied by rising inflation. The fact that inflation has actually fallen since late 1996 despite the continuing drop in unemployment therefore presents a "missing inflation" puzzle. Lown and Rich (1997) find that the puzzle is accounted for by the slowdown in compensation, which acted as a supply shock to lower inflation temporarily, but they do not explain satisfactorily why this slowdown in compensation growth took place. A report by the Congressional Budget Office (CBO) (1997) attributes the missing inflation—the overprediction of inflation by a standard Phillips curve equation—to three special, temporary factors: low medical care inflation, rapid deflation in computer prices, and declining import prices. Although the CBO finds that import prices play a role in explaining the missing inflation puzzle, Tootel (1998) finds that foreign capacity utilization, which he uses in lieu of import prices in his Phillips curve estimation, cannot account for the missing inflation.

The preceding discussion in this article suggests that the standard Phillips curve could become increasingly misspecified as the United States becomes more globalized. When the United States becomes sufficiently globalized, pressures on U.S. inflation will reflect not only the degree of excess domestic demand (relative to supply) but also excess foreign demand. Consequently, foreign capacity utilization should play a role in explaining and forecasting U.S. inflation. Because foreign economic conditions could affect U.S. inflation not only through the import-price effect but also through the net-export effect and capital- flow channels, such as the cost-of-capital effect and the wage-setting effect, foreign capacity utilization should be included in U.S. inflation equations along with import prices and other conventional domestic variables.

To test this hypothesis, we estimate a standard Phillips curve that is roughly the specification estimated by Gordon (1982) and an alternative Phillips curve that includes a measure of foreign capacity utilization.[12] The specifications are as follows.

12. The standard specification is described in more detail in Congressional Budget Office (1994). The CBO specification is based on the specification in Gordon (1982).

a. Alternative Phillips curve:

$$(8)\quad \pi_t = \alpha + \sum_{i=0}^{3}\beta_i u_{t-i} + \sum_{i=0}^{4} f_i F_{t-i} + \sum_{i=1}^{4}\phi_i \pi^{mp}_{t-i} + \delta\pi^{fe}_{t-1} + \theta\lambda_t + \sum_{i=1}^{20}\varphi_i \pi_{t-i} + \varepsilon_t$$

b. Standard Phillips curve:

$$(9)\quad \pi_t = \alpha + \sum_{i=0}^{3}\beta_i u_{t-i} + \sum_{i=1}^{4}\phi_i \pi^{mp}_{t-i} + \delta\pi^{fe}_{t-1} + \theta\lambda_t + \sum_{i=1}^{20}\varphi_i \pi_{t-i} + \varepsilon_t$$

where

π is the inflation rate measured by either the growth of the GDP price index or the core consumer price index (CPI),

u is the unemployment rate for married males,

F is foreign capacity utilization,

π^{mp} is the growth rate of (P^m/P), where P^m is nonoil import prices from the national income and product accounts and P is the GDP deflator,

π^{fe} is the growth rate of $(P^{f\&e}/P^{ex})$ where $P^{f\&e}$ is the price for food and energy and P^{ex} is the price excluding food and energy products, both from the national income and product accounts,

λ is the deviation of labor productivity growth from its trend, which is measured by a 32-quarter moving average of past growth in labor productivity,

ε is the residual.

In both the alternative and standard Phillips curve specifications, U.S. price inflation is a function of the unemployment rate, lagged inflation rates, the growth rate of relative price of food and energy products, the deviation of labor productivity growth from its trend, and the growth rate of the relative import price. [13] The unemployment rate proxies for the demand pressure on prices, while lagged inflation rates control for expectations of inflation. The other two domestic variables—π^{fe} and λ—are intended to control for supply shocks. The only difference between the alternative and the standard Phillips curves is that the alternative specification includes foreign capacity utilization as an explanatory variable, and the standard one does not.

For both equations, we use data from 1971:Q1 through 1999:Q1.[14] The coefficients on the lagged inflation rate are constrained to sum to one and lie along a third-degree polynomial with a zero end point restriction.[15] The lag length on foreign capacity utilization is eight and was chosen based on the Akaike-Information Criteria. Shorter lag lengths yielded almost identical results.

The Data

All domestic data and import prices are either directly from or constructed from data published by the Bureau of Economic Analysis or the BLS. $P^{f\&e}$ is the personal consumption expenditure (PCE) index for food and energy. P^{ex} is the PCE index excluding food and energy. The core CPI is CPI less food and energy prices. To measure the state of foreign capacity utilization we constructed a trade-weighted average capacity utilization for the 35 major U.S. trading partners. This measure includes many of the Asian countries involved in the recent financial crisis, including Thailand, the Philippines, and Indonesia. The 35 countries and their weights used in the construction of our measure are exactly the same as those included in the construction of the broad index of the dollar exchange rate published by the Board of Governor of the Federal Reserve System.[16] The weight assigned to each country is a function of three factors: (1) a country's share

13. For both the standard and alternative specifications, the growth rate of relative price of food and energy is included only in the equations of GDP deflator inflation, not in the equations of the core CPI inflation.

14. Because of the lag length used in the regression, the degree of freedom is smaller than that suggested by the sample period of 1971:Q1–1999:Q1.

15. Our goal is to present estimates for the standard Phillips curve used by professional and government forecasters. Forecasters typically constrain the sum of the lagged inflation coefficients to equal one to ensure inflation stability at the natural rate of unemployment. Our results without this constraint are almost identical and are available from us on request.

16. Namely, these countries are: the ten Euro-area countries, Canada, Japan, Mexico, China, the United Kingdom, Taiwan, South Korea, Singapore, Hong Kong,

FIGURE 5
Inflation Forecasts (Year-over-Year, Quarterly GDP Deflator)

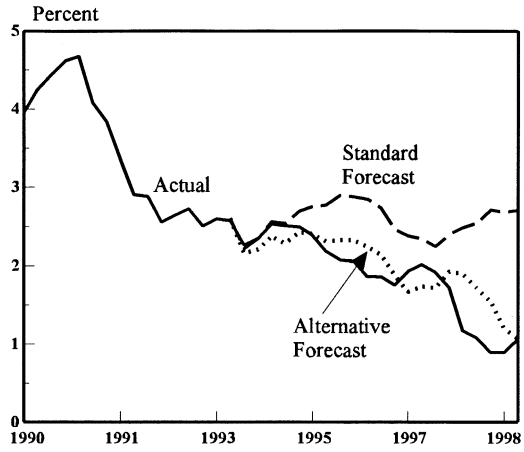
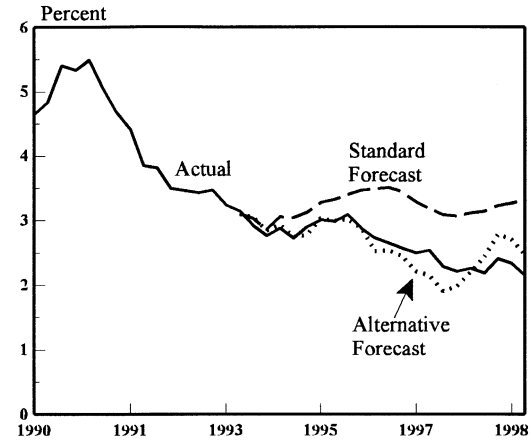


FIGURE 6
Inflation Forecasts (Year-over-Year, Quarterly Core CPI)



of U.S. imports, (2) a country's share in U.S. exports, and (3) a country's share of exports that go to third-country markets that are also destinations for U.S. exports. These trade weights are better for our purpose than import weights or GDP weights because the inclusion of export weights helps capture the change in foreign demand on U.S. exports, which affects aggregate demand pressure on U.S. prices.

Estimation Results

Table 5 reports the coefficient estimates of equations (8) and (9). Standard errors are presented in parentheses below the parameter estimates. Inflation forecasts based on the alternative versus those based on the standard Phillips curve are presented in Figures 5 and 6. In both figures, forecasted paths of inflation rates are compared to their actual values since the beginning of 1994. We compute the forecasts by first estimating equations (8) and (9) over the entire sample period, then applying the coefficient estimates to forecast inflation from 1994:Q1 through 1999:Q1 using the actual values for all right-hand-side variables, except for the lagged inflation rates, which were replaced by the forecasted values.

Figures 5 and 6 show the missing inflation—the gap between the actual inflation and the forecast based on the standard Phillips curve. Both the core CPI and GDP-deflator inflation rates fell despite the decline in the married male unemployment rate since 1995. By 1999:Q1 the actual GDP-deflator inflation rate (1.1%) was roughly 1.6% below the forecasted value of the standard Phillips curve, and the actual core CPI inflation rate (2.1%) was 1.2% below the standard forecast. Because the standard Phillips curve replicated here does control for changes in productivity, food and energy prices, and import prices, the missing inflation cannot be attributed to these supply-side shocks. This puzzling decline in the inflation rate occurring over a period of apparent mounting demand-side stimulus is the mystery we hope to solve by bringing in foreign capacity utilization as an additional explanatory variable.

Columns 1 and 3 in Table 5 report the estimation results of the standard Phillips curve equations, whereas columns 2 and 4 report those of the alternative Phillips curve. In both the standard and alternative specifications, and for both the GDP-deflator inflation and the core CPI inflation equations, import prices are statistically significant. This should

Malaysia, Brazil, Switzerland, Thailand, Australia, Indonesia, the Philippines, Russia, India, Sweden, Saudi Arabia, Israel, Argentina, Venezuela, Chile, and Colombia. These countries are selected because they either had a share of U.S. nonoil imports or nonagricultural exports of at least 0.5% in 1997. See Leahy (1998) for details.

TABLE 5
Estimations of Price Phillips Curves: Standard versus Alternative

	Inflation in GDP Price Index		Inflation in Core CPI	
Sums of Coefficients On	**Standard**	**Alternative**	**Standard**	**Alternative**
u	−0.34*	−0.31**	−0.25**	−0.20*
	(0.12)	(0.16)	(0.12)	(0.16)
π^{mp}	0.11**	0.12**	0.07**	0.11**
	(0.03)	(0.03)	(0.03)	(0.05)
π^{fe}	0.03	0.02		
	(0.02)	(0.03)		
λ	0.01	−0.01	−0.02	0.002
	(0.03)	(0.04)	(0.04)	(0.04)
Foreign capacity utilization		0.43*		0.63**
		(0.21)		(0.17)
Adjusted R^2	0.90	0.92	0.80	0.85

Notes: u is the unemployment rate for married males, π^{mp} is the growth rate of (P^m/P), where P^m is nonoil import prices and P is the core consumer price index, π^{fe} is the growth rate of $(P^{f\&e}/P^{ex})$ where $P^{f\&e}$ is the consumer price for good and energy and P^{ex} is the consumer price excluding food and energy products, λ is the deviation of labor productivity growth from its trend. The sum of lagged inflation is not presented because it is constrained to equal 1. Standard errors are in parentheses below the parameter estimates.

* Indicates significant at the 0.05 level.

** Indicates significant at the 0.01 level.

come as no surprise in view of our discussion in sections II and III and our empirical evidence in support of the competing goods effect presented in section IV. However, because the standard Phillips curve equations replicated here already include lagged import price inflation, their overpredictions of inflation suggest that the decline in the U.S. inflation since 1994 is only partly attributable to the decline in import prices.

Can foreign capacity utilization help close the inflation gap as we predicted? The second and fourth columns of Table 5 show that the sum of the coefficients on the lagged measure of foreign capacity utilization is positive and significant in both the GDP and CPI inflation regressions. Moreover, as indicated by the alternative Phillips curve forecasts in Figures 5 and 6, when we repeat the forecasting exercise described above, the missing inflation all but disappears. These results clearly support our view that the current excess capacity in foreign countries has helped lower U.S. inflation through other channels—such as capital-flow channels—besides import prices.

Some analysts may argue that these results are at odds with a common finding that the standard wage Phillips curve has been doing a much better job in predicting wage inflation than the standard price Phillips curve in predicting price inflation in recent years.[17] That is, if the standard price Phillips curve is misspecified when omitting foreign capacity utilization, why is it that the standard wage Phillips curve appears to holding up just fine? We believe that the fact that the standard wage Phillips curve is tracking wage inflation well *supports*, not *weakens*, our hypothesis, as it suggests that the added competitive pressure due to increased globalization has indeed affected firms' price mark-up behaviors, as we argued in section IV.

The results reported in Table 5 and Figures 5 and 6 support the hypothesis that foreign capacity utilization helps explain the missing inflation in the later half of the 1990s. In addition to the results presented here, we estimated several other specifications. Namely, we constructed a six-country foreign capacity utilization index based on import weights using the G7 countries minus the

17. We also estimated a wage Phillips curve by using inflation in average hourly compensation in the nonfarm business sector as the dependent variable and the same set of right-hand side variables in our price Phillips curve estimation as the explanatory variables. We find that the standard wage Phillips curve tracks actual wage inflation much better than the standard price Phillips curve tracks actual price inflation. In addition, foreign capacity utilization does not have as much added power in forecasting wage inflation as in price inflation.

United States. We also constructed an 18-country index using import weights for the following list of countries: France, Germany, Japan, the United Kingdom, Italy, Canada, Australia, Belgium, China, Taiwan, Brazil, South Korea, Hong Kong, Mexico, the Netherlands, Singapore, Switzerland, and Sweden. Using these alternative measures of foreign capacity utilization we found results almost identical to those reported in Table 5. In addition, we estimated our alternative and standard Phillips curves without import prices. We found the coefficient estimate on foreign capacity utilization to be almost identical to those reported in Table 5.[18]

VI. CONCLUSION

This paper shows that the United States has become substantially more integrated with the rest of the world since the late 1980s. We find that the sharp rise in globalization of the United States makes foreign conditions an important variable to be included in explaining the behavior of U.S. inflation.

Our results suggest that increased globalization has helped prolong the current U.S. expansion by holding down inflation, thereby allowing the Fed to let the economy continue growing. We plan to investigate further whether there is a relationship between business cycle synchronization and the length of those cycles.

However, our findings caution against the view that globalization per se has ushered in a new age in which the United States will never again be plagued by inflation. Globalization makes it possible for excess foreign capacity to help dampen U.S. inflationary pressure in the midst of a strong recovery. But if foreign conditions were different, globalization alone is unlikely to have done the job of holding down U.S. inflation in this recovery. In fact, if the current U.S. expansion were synchronized with a boom in foreign economies, globalization alone could have even boosted, not calmed, U.S. inflation.

18. Our finding that foreign capacity utilization explains the missing inflation differs from that of Tootel (1998). Tootel's work differs from ours in several aspects, including sample period, specification, and the method used to estimate and aggregate foreign capacity utilization. Any combination of those factors could be responsible for the difference in his and our results. However, our efforts to find out what causes the difference in the results suggest that the difference is likely to stem from the difference in the measures of foreign capacity utilization.

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