# EXCHANGE RATE EFFECTS ON AGRICULTURAL TRADE AND TRADE RELATIONS

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## INTRODUCTION

The United States abandoned the Bretton Woods agreement on relative fixity of exchange rates in 1971 to engineer a modest devaluation of the dollar. That was followed shortly thereafter by floating the dollar against other major currencies. These actions undertaken by the United States launched a new era of international capital mobility and significantly altered the rules of the game for macroeconomic interdependence among nations. Looking back, it is doubtful that the economic turmoil which followed throughout the 1970s and 1980s was anticipated. That turmoil included, for the United States, movements in the real exchange rate in excess of 40 percent sustained over periods of several years or longer. Forty percent is a significant realignment in relative prices and several years is long enough to force economic adjustments. While real exchange rate movements of this magnitude or duration could be found previously for some developing countries (often under conditions of unsustainable macroeconomic mismanagement), it was a phenomena the world's major developed economies had not experienced in the post-World War Two era.

Within agriculture, the "new macroeconomics" of the world economy had substantial implications. Nominal agricultural prices skyrocketed along with other primary commodity prices early in the 1970s, with inflationary monetary policies and dollar flexibility at least partly responsible. International capital flows expanded after two decades of slow growth – the U.S. trade deficit turned increasingly negative but agricultural exports, in particular exports through commercial channels not foreign aid, rose strongly through the 1970s.

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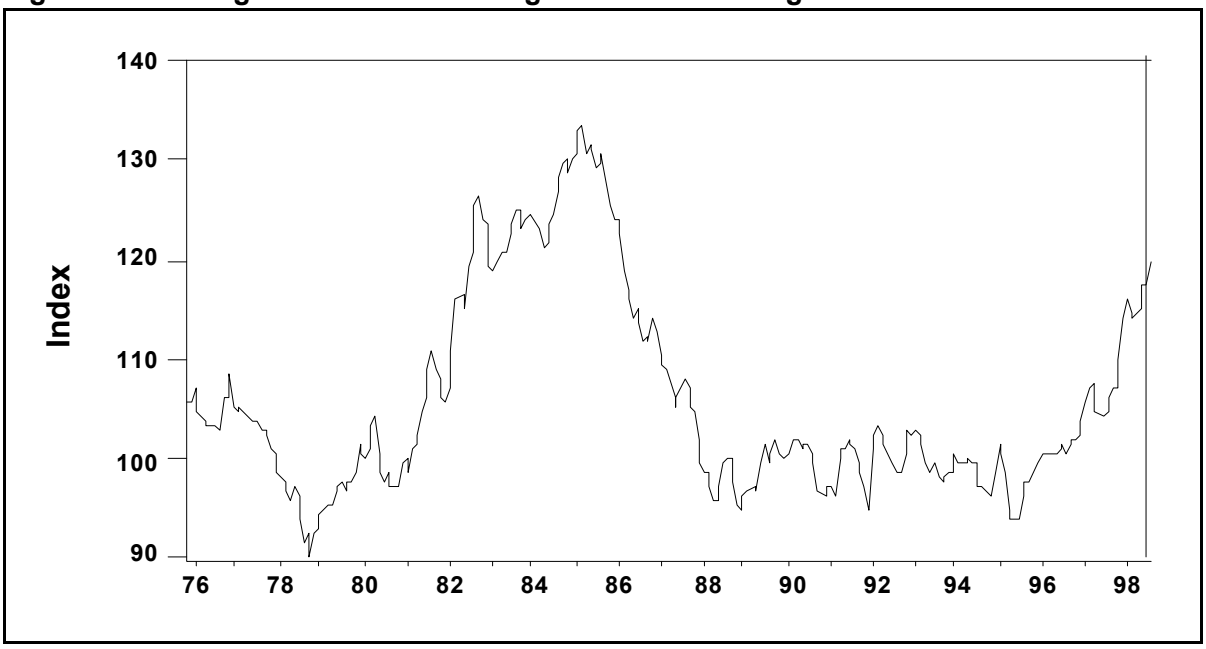
By the late 1970s, agricultural exports were up but prices were down and farmers were less content with the situation than export processors or USDA officials. Things got worse when the dollar began a sustained appreciation beginning in 1980. Exports fell by nearly one-third in value, and with high interest rates, land prices could not be sustained. A farm financial crisis ensued – sometimes described as the most severe since the Great Depression – and supply control interventions and farm program fiscal costs were driven to record levels. It was a gut wrenching time for farmers and policy makers alike.

How was agriculture extricated from this morass? In a period of turbulence the view came to be expressed that macroeconomic policy effects could swamp those of sectoral policy. Agricultural stability was only restored when this view prevailed in Washington DC, and when the dollar depreciated (essentially to its pre-1980 level) after 1985 then remained more stable. Farm exports began to increase again, farm income strengthened, and the portion of that income coming from government transfers declined. The attention of the farm business community and policy establishment turned to other concerns, among them the GATT negotiations and regional integration under NAFTA.

A decade later in the late 1990s, the international economy is feeling some tremors reminiscent of the shaky ground of past experience. As shown in Figure 1, from 1995 to late 1998, the U.S. dollar experienced its largest appreciation since the first half of the 1980s. The Asian financial crisis, and recent devaluation and floating of the Brazilian currency, have given pause to stakeholders at home and abroad who question whether the remarkable expansion of the U.S. economy during the 1990s can be sustained – will the United States continue to be an engine of world growth or will its economy be stalled by stagnation elsewhere? If past events are a useful guide, agriculture has a significant stake in the outcome.

This paper revisits the question of exchange rate impacts on agriculture. It begins with three thrusts: reviewing the relevant conceptual arguments, summarizing the evidence agricultural economists have marshaled from the 1970s and 1980s, and presenting several preliminary updated empirical measures of exchange rate influences. This leads to the question of macroeconomic effects on farm policy, then to brief remarks about whether recent exchange rate movements are harbingers of the kind of turmoil witnessed a decade ago and, finally to consideration of detrimental effects that a sustained appreciation of the dollar could have on farm policies worldwide, and thus on agricultural trade relations.

**Figure 1: U.S. Agricultural Trade Weighted Real Exchange Rate**




Source: ERS/USDA.

## EXCHANGE RATES AND TRADE

The classic modern article on exchange rate impacts on agriculture in the United States was published by G. Edward Schuh (1974). Schuh made the fundamental argument that the exchange rate was an omitted variable in economic analysis of the U.S. farm sector, and he drew sweeping implications. Throughout the 1950s, the "farm problem" had been described as one of technical change that induced a shift in production toward land-augmenting intermediate and capital inputs, lowered the real prices at which agricultural products could be procured, and put severe adjustment pressure on the farm sector, particularly farm labor. Agricultural policy interventions of the time (high support prices and land retirements) were perceived to overvalue agricultural resources relative to free markets, leading to welfare costs and the paradox of a country with an advanced agriculture being dependent on export subsidization instead of its competitiveness in world markets.

Schuh argued for a new interpretation of these developments: the U.S. dollar had become overvalued in the early 1950s and overvaluation had depressed agricultural prices and exports. This had led to a socially inefficient *under-valuation* of agricultural resources; it had induced even more technical change, thus aggravating what would have been in any case a serious problem of structural adjustment; and it had resulted in a larger share of the benefits of technical change going to consumers rather than producers. In this interpretation, farm policies had served to offset negative exchange rate impacts on the farm production sector. When those farm policies started to shift in the 1960s toward letting prices fall and compensating farmers with direct cash payments instead of high price supports, prices fell toward

the disequilibrium levels associated with exchange rate overvaluation. Devaluations in the 1970s restored the dollar to a more nearly equilibrium value, and as a consequence agriculture was experiencing a macroeconomic-led boom. As Schuh put it: "If this interpretation is correct, an important share of the rise in agricultural prices in mid-1973 is a result of monetary phenomena which induced an export boom in an economy that was already responding to expansive monetary policies, and in the case of agriculture, increased the foreign demand for U.S. output at the same time that this demand was already rising from temporary bad weather conditions in other countries and a temporary decline in the Peruvian fishmeal industry" (Schuh, 1974, p. 12).

Schuh's initial exposition of the effects of an exchange rate overvaluation on markets was based on a simple partial equilibrium framework. For a small exporting country facing fixed world prices, an overvalued exchange rate lowers the world price in domestic currency proportionately; the resulting increases in domestic demand and reductions of domestic supply depend on own-price elasticities; and export quantity and value fall. In the large-country case, foreign and domestic prices diverge again by the extent of the overvaluation, with elasticities of supply and demand of both trading partners affecting the extent to which the domestic price falls or the foreign price rises. In this framework, and focusing on the long run, Schuh made rather modest claims for the sustained price effects from devaluation. In a reply to a comment on his article he argued that if a devaluation of 13 percent constituted an equilibrium, the relative price of agricultural products might rise around 10 percent "after adjustments have worked themselves out" (Schuh, 1975, p. 699).

We now utilize a much richer microeconomic framework to assess exchange rates and market equilibrium. Drawing on trade theory, the real exchange rate is viewed as the relative price of traded to nontraded goods. Real exchange rate movements accommodate changes in technology, income levels, or borrowing from abroad that require either higher or lower relative price of nontraded goods (appreciation or depreciation, respectively) to clear those markets. This is different from affecting a country's terms of trade: real exchange rate movements affect imports and exports in a symmetric way, and many individual prices change (and may need to be accounted for) when the real exchange rate is considered.

The linkage of real exchange rates to international capital flows (with these flows then driving goods and services trade more than the other way around) is also well understood, as is the interdependence this creates between countries' macroeconomic polices. There remain disagreements about the effectiveness of monetary and fiscal policies, and about how to manage domestic and international constraints, but fewer and fewer countries seem tempted to flaunt the evident linkages. Europe is now going so far as to harmonize monetary and fiscal policies enough to sustain one currency – a rather large step back toward a Bretton Woods type of arrangement, and one that probably would have been unthinkable without the relative stability in exchange markets since about 1987.

## EMPIRICAL EVIDENCE ON EXCHANGE RATE IMPACTS

The earliest attempts to evaluate Schuh's argument empirically were conducted in a partial equilibrium spatial modeling framework and focused on assessing the elasticities of price transmission and of supply and demand that affected trade. The partial equilibrium assessments seemed able to attribute only a small part of the substantial relative price movements in the early 1970s to the exchange rate – results consistent with Schuh's long-run claim but not supportive of the exchange rate being as significant an omitted variable as he described, at least when it came to the inflationary farm sector boom that was occurring. Such partial equilibrium spatial modeling subsequently gave way to computable general equilibrium models – models that offered a more complete linkage of real exchange rate movements to underlying causes, accounted for market equilibrium for traded and nontraded goods, and provided somewhat more support for real exchange rate effects on agriculture.

On another level, the attempt to understand exchange rate impacts on agriculture became redirected, like macroeconomics itself, by the turbulence in the world economy. Exchange rates did not settle down to an equilibrium devaluation around 13 percent during the 1970s, and macroeconomic polices seemed to be spinning out of control compared to the relative stability of the preceding period. This brought attention to Schuh's broader claim about the importance of monetary policy for agriculture. Did loose monetary policy cause flexible prices (like those for agricultural products) to overshoot their long-run equilibrium levels, rising relative to more slowly-adjusting (sticky) prices in other sectors? Did this account for the price boom in agriculture that Schuh had identified with the exchange rate? Later, when inflation was being squeezed out of the U.S. economy and the dollar appreciated in the 1980s, did tight monetary policy cause prices to fall?

The argument that monetary policy has nonneutral effects on agricultural prices was hardly a new one. Such effects had been argued forcefully by George Warren during the 1920s. This argument was given renewed impetus by an influential model of Rudiger Dornbusch (1976) in which monetary expansions that lowered domestic interest rates had to yield exchange rate overshooting in order that subsequent appreciation maintained arbitrage equating returns on domestic and foreign assets. Several research efforts provided a basis for assessing these effects in traditional macroeconomic econometric models, among them Hughes and Penson (1985), and Rausser and his colleagues (1986). The latter authors used results from such a model to argue that monetary policy had "taxed" agriculture significantly in the 1980s.

A third approach to empirical modeling adopted the methods of time-series analysis to seek causal relationships and dynamic impacts from monetary indicators to agriculture. Christopher Sims (1980) at the University of Minnesota was pioneering the use of small dynamic models without too many *a priori* restrictions as an alternative to overidentified structures imposed either by traditional Keynesians or by the new neoclassical rational expectations school. Work on empirical modeling

of monetary effects on agriculture by Bessler (1984), Chambers (1984), and myself, among others, adopted this approach.

While it is appealing to think that monetary effects on agricultural prices and trade could be measured easily in small dynamic models were they important, it turned out to be a fairly difficult task. I could detect little effect from the money supply on real U.S. agricultural prices or export values (Orden 1986a,b). Shocks to financial market variables such as a short-term interest rate or the exchange rate had larger impacts. These shocks explained 20 percent of forecast error variance for exports and 10 percent for real agricultural prices one year ahead, and over 50 percent and 25 percent, respectively, for a three-year forecast horizon. An increase in the interest rate or appreciation of the dollar had a depressing effect on agriculture. The dynamic responses to such shocks (which were highly correlated) looked somewhat plausible for a monetary contraction. Sims (1980, 1993) has remained skeptical of this interpretation arguing that interest rate shocks more likely come from real events, but other macroeconomists have adopted the view that monetary policy shocks do show up in small dynamic models through interest rates (Lane, 1998).

Girard Bradshaw and I (1990) pursued modeling exchange rate effects on agriculture in a narrow sense. We compared the out-of-sample forecasting performance of univariate models of monthly U.S. corn, wheat and soybean export sales to forecasts from bivariate models that included the exchange rate. The idea here was to test Schuh's exchange rate hypothesis in a tightly specified model. If the exchange rate mattered, we hypothesized, it would help predict subsequent export sales. We found that our best bivariate forecasting models outperformed our best univariate models in statistically significant ways, but would not have found that result if we had limited our search among models to those specified with a common lag structure, which is a standard procedure in some dynamic time-series modeling.

Paul Fackler and I went in a different direction to develop further evidence on monetary impacts (1989). We specified a nonrecursive structurally identified model of oil prices, supply and demand for aggregate output, money supply and demand, international effects (represented through the exchange rate), and agricultural prices. Short-run responses to the money supply shock looked plausible: money and output rose first, the dollar depreciated, and the price level increased slowly. We concluded that monetary shocks raised real agricultural prices for about one year but our empirical estimates also led us to conclude that monetary policy shocks had not been the dominant source of agricultural price instability – results subsequently paralleled in studies focused on monetary effects on the exchange rate per se (Eichenbaum and Evans, 1995).

More recently Dorfman and Lastrapes (1996) have brought additional developments in time-series methods to bear on measurement of monetary impacts on agriculture. They impose the theory-derived long-run restriction of monetary neutrality to identify policy shocks, and they utilize Bayesian techniques to investigate sensitivity of their results to various aspects of model specification. Their

identifying restriction insures that the price level, sectoral prices and money rise equi-proportionately in the long run, an appealing constraint. They also find plausible short-run monetary policy impacts on interest rates, output and the price level. Again, monetary shocks raise real agricultural prices in the short run, but explain only a small fraction of crop and livestock relative price variability.

## ANOTHER LOOK AT EXCHANGE RATE IMPACTS

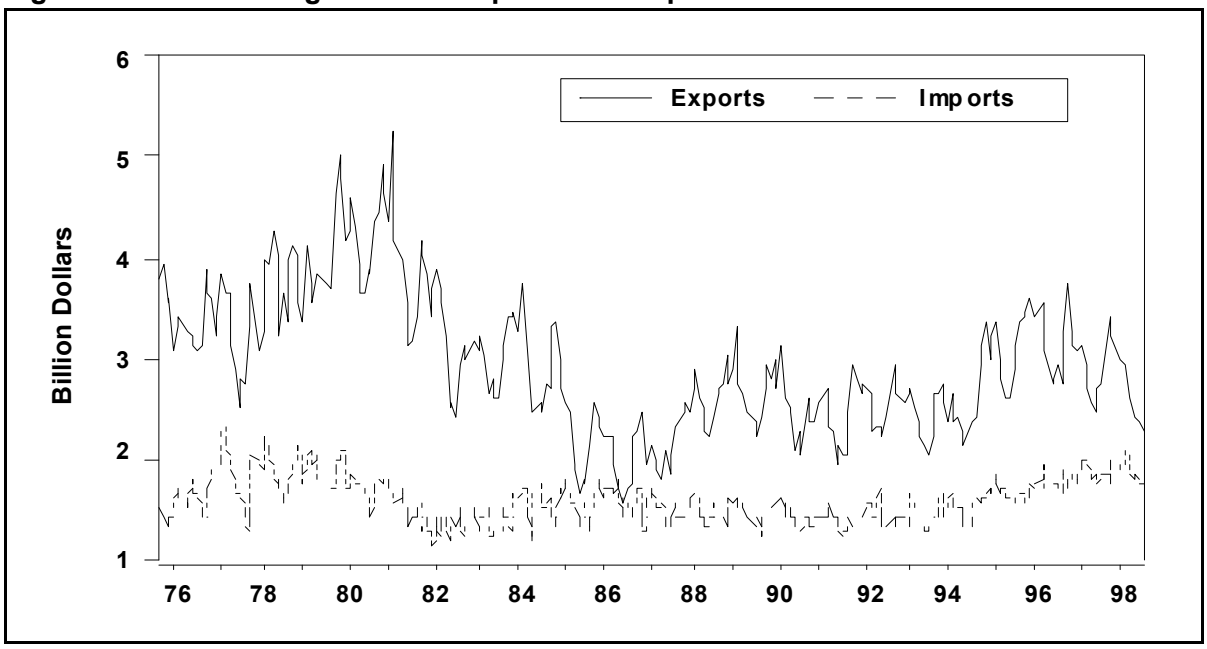
With exchange rate movements of the magnitude that have occurred since 1995, it is not surprising that the question of macroeconomic impacts on agriculture is again receiving attention. The financial meltdown affecting Korea, Thailand, Malaysia, the Philippines and Indonesia has been watched closely as their currencies devalued (by an average of nearly 60 percent in the second half of 1997) and their national incomes have fallen. The impacts on total U.S. agricultural exports have been assessed by Coyle *et al*. as a drop of around 6 percent in 1998, with livestock products suffering the largest decline, and with increased domestic demand and exports to other regions offsetting some of the losses in Asia. Were the crisis to spread to Japan, China and Taiwan, the same study projects a drop in exports on the order 10 percent or more for food grains, feed grains, and nongrain crops, and over 20 percent for livestock products and processed foods. A drop in agricultural exports of $6-10 billion arising from depressed world demand and appreciation of the dollar would severely pinch U.S. farm income, lead to renewed calls for safety net government interventions, and dampen enthusiasm for open markets and trade agreements.

With the fall in farm prices from their near-record levels reached in 1996, the total value of U.S. agricultural exports to Asia did fall nearly one-third by 1998 (despite extension of over $1 billion in short-term credit guarantees), and this drop in exports had just the effects suggested. Phil Paarlberg (1999) argues from back-of-the-envelop calculations that the large decline in farm prices itself can not be attributed to a decline in Asian demand. He attributes falling prices to increased world production instead. But world output of wheat and coarse grains was only 10 percent higher over the three years 1996/97-1998/99 than during the three years 1993/94-1995/96. The price movements from corn at $4.25 and wheat at $6.50 in mid 1996 to $1.90 and $2.40, respectively in late 1998 do not seem fully explained by comparative static calculations using world production or world demand. The observed price movements are better understood in a dynamic sense: they are always speculative and speculation involves uncertainty on the demand and supply sides.

What role do exchange rates play in the dynamics of agricultural trade? Figure 2 traces monthly movements of the real values of U.S. agricultural exports and imports (in dollars) from October 1975 through August 1998 using time series provided by the Economic Research Service, USDA. Co-movements of the exchange rate (Figure 1) and real export value is apparent: turning points in the direction of export value correspond to those of the exchange rate and exports rise with depreciation and fall with appreciation. Price and quantity effects are reinforcing for

export value (e.g., depreciation raises dollar prices and increases export quantities), whereas for import value these effects work against one another (e.g., depreciation raises dollar prices and lowers import quantities). Thus it is not entirely surprising that import value shows less consistent co-movement with the exchange rate: import value rises in the late 1970s and late 1990s even as the dollar depreciates, and falls in the early 1980s despite dollar appreciation.

**Figure 2: U.S. Real Agricultural Exports and Imports**

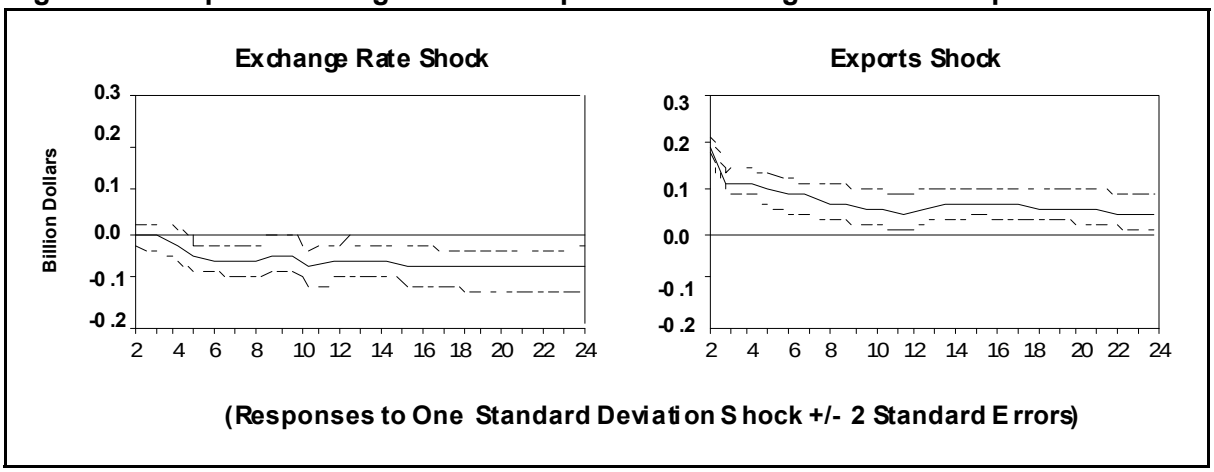



Source: ERS/USDA.

Preliminary econometric estimates confirm the visual impression from Figure 2. In a VAR model of the exchange rate and export value, the exchange rate shocks can be interpreted to convey macroeconomic effects, while agricultural export shocks reflect principally sectoral developments. The exchange rate appears essentially exogenous (shocks to the exchange rate show little contemporaneous correlation with shocks to export value and these shocks explain over 98 percent of exchange rate forecast error variance through a 24-month-ahead horizon). Exchange rate shocks also have explanatory power for agricultural export value: they explain nearly 10 percent of its forecast error variance at a six-month horizon, nearly 20 percent at a 12-month horizon, and 35 percent at a 24-month horizon.

The dynamic responses of export value to exchange rate and exports shocks are shown in Figure 3. Sectoral shocks show somewhat of a cyclical pattern over two years, while exchange rate impacts appear significant after a lag of four months and then have an increasing cumulative effect – an appreciation of the dollar lowers export value. In a model of agricultural import value, the exchange rate again appears essentially exogenous, but exchange rate shocks explain less than 2 percent of forecast error variance of imports through 24 months ahead, thus they have essentially no explanatory power for this side of aggregate trade.

**Figure 3: Responses of Agricultural Exports to Exchange Rate and Export Shocks**



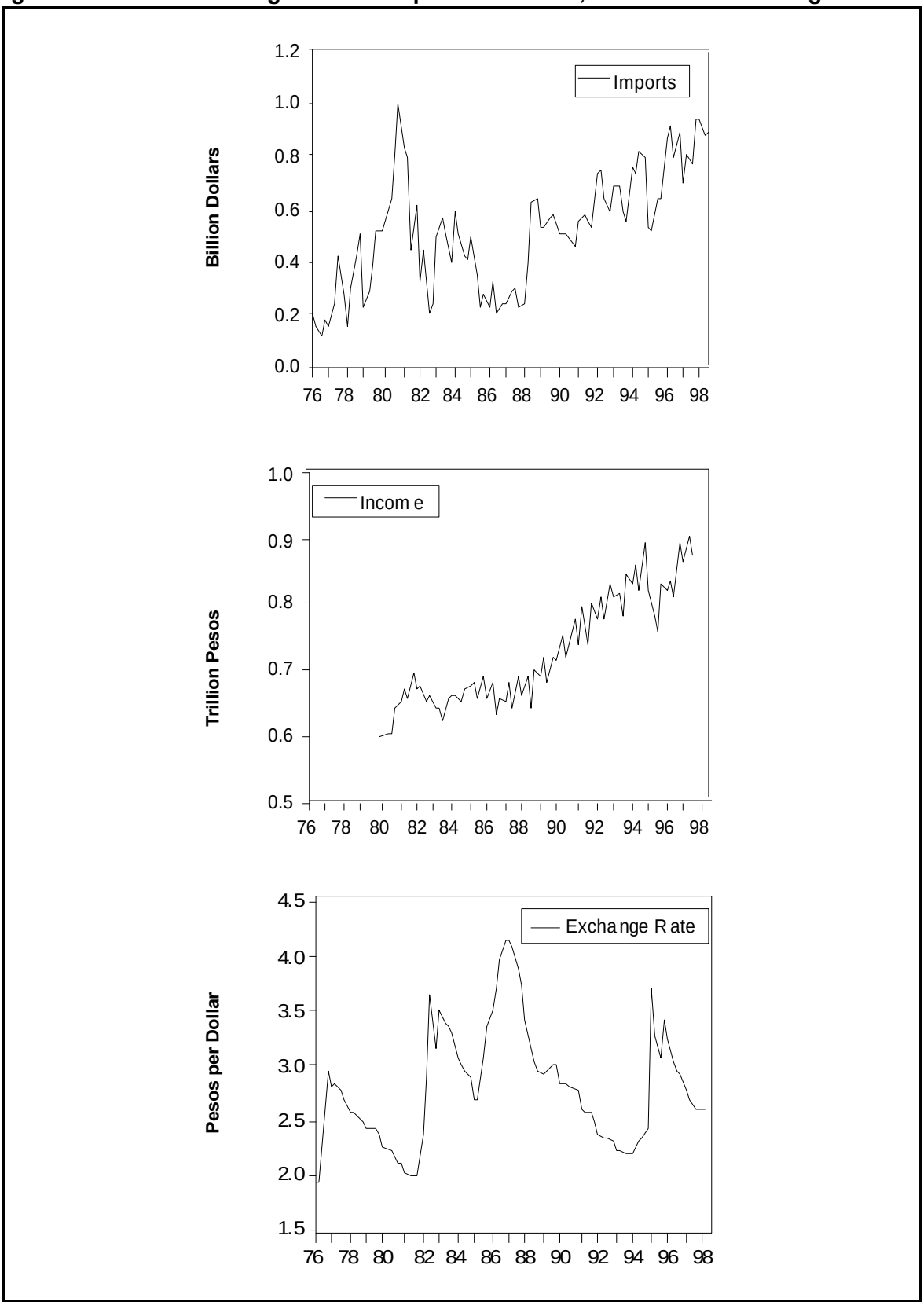

Source: Calculated by Author.

Figures 4-6 further illustrate potential exchange rate impacts on U.S. agricultural exports. Figures 4 and 5 display quarterly series for real agricultural import value (in dollars), real GDP, and the bilateral real exchange rate for two countries – Mexico and Japan. These series form the basis for aggregate import demand equations in which to explore income versus price effects. Bewley and Orden (1994) estimated such an equation for total Australian real imports. In a VAR model, the additional equations for the exchange rate and income allow the interdependencies between these macroeconomic aggregates to be modeled as well, rather than treating them unrealistically as independent and exogenous.

For Mexico, three substantial devaluations (1982, 1985-86 and 1994) are readily apparent followed by cumulative real appreciations over subsequent years. There are trend increases in income and imports, but income and possibly imports appear to drop with each depreciation. For Japan, the bilateral exchange rate follows a pattern more closely aligned with the trade-weighed U.S. dollar, and income but not imports shows a strong upward trend. It is not easy to see a relationship between exchange rate movements and import value.

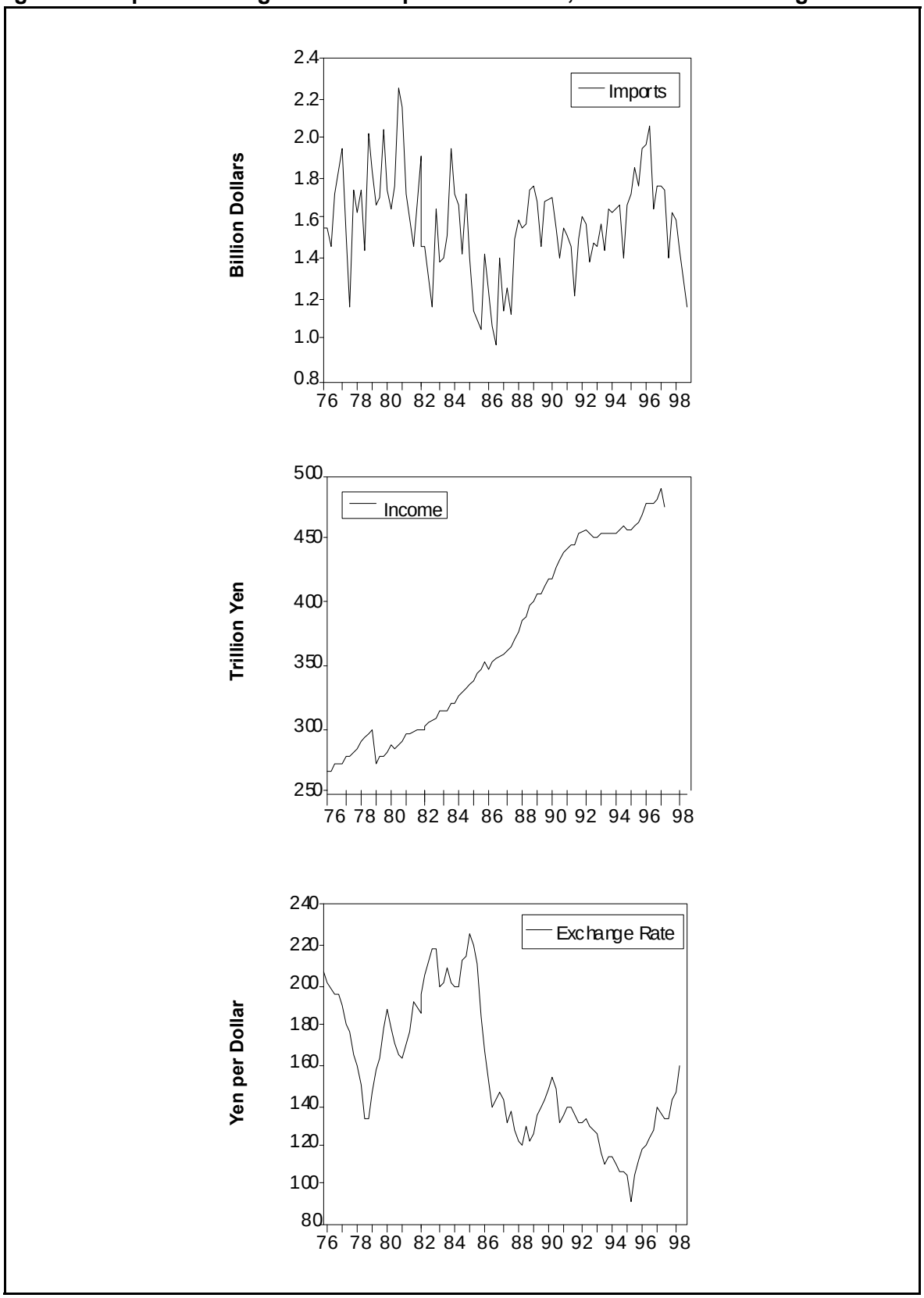
In the econometric models, exchange rate and imports shocks show substantial contemporaneous negative correlation for Mexico but not Japan (-0.39 compared to -0.14). For Mexico, exchange rate shocks explain about 30 percent of the forecast error variance for agricultural imports at horizons from one to eight quarters. Income shocks explain little of the forecast error variance at short horizons. For Japan, the explanatory power of these shocks is similar but exchange rate shocks have little explanatory power in terms of forecast error variance for about one year, then account for 20-30 percent of the forecast error variance over horizons through two years. Income shocks explain less than 5 percent of the forecast error variances of agricultural imports at horizons through two years.

**Figure 4: Mexico: Real Agricultural Imports from U.S., Income and Exchange Rate**




Source: ERS/USDA.

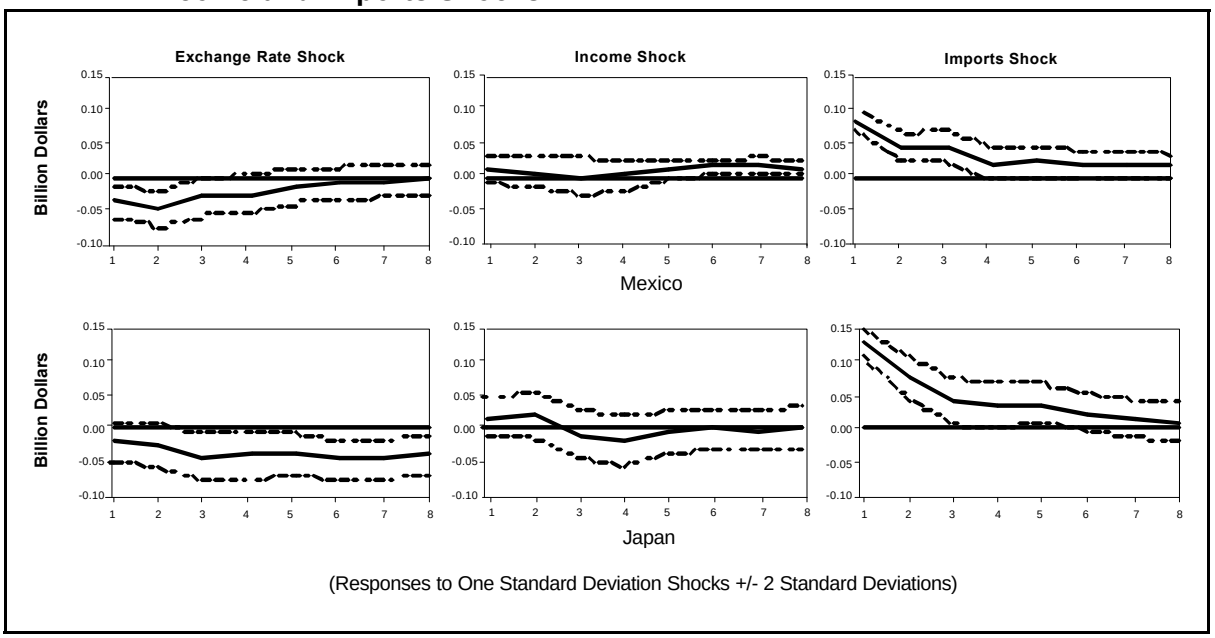
**Figure 5: Japan: Real Agricultural Imports from U.S., Income and Exchange Rate**




Source: ERS/USDA.

The dynamic responses of agricultural import values in Mexico and Japan to exchange rate, income and imports shocks are shown in Figure 6. These responses show similar patterns, but with stronger exchange rate and income effects for Mexico. Shocks to import value dampen out over four to six quarters in both countries. An exchange rate appreciation lowers import value in the short run in both countries, with the effects appearing larger (about 1/2 of the standard deviation of a shock to the imports series itself) and they are statistically significant for Mexico. The cumulating effect of an income shock also is evident for Mexico: it is smaller in magnitude after six quarters than the short run effect of an exchange rate shock but is (marginally) significant. For Japan, income shock effects are positive but do not appear statistically significant.

**Figure 6: Mexico and Japan: Responses of Agricultural Imports to Exchange Rate, Income and Imports Shocks**




Source: Calculated by Author.

Taken together, these preliminary results suggest that effects of the exchange rate (and income) on agricultural trade can be measured in time-series models. This is an interesting result since the samples of observations now includes a period of much more stable macroeconomic conditions (in particular of relative exchange rate stability) than prevalent during the 1970s and 1980s. Schuh's classic article again appears to have pointed analysis in a fruitful direction.

## EXCHANGE RATES, POLICY AND TRADE RELATIONS

Is there a risk that we understate macroeconomic influences on agriculture and agricultural trade if we concentrate too narrowly on formal empirical measures such as those reported above? I am inclined to answer this question in the affirmative on the basis of a descriptive analytical assessment of U.S. agricultural policy reform in the twentieth century recently completed with co-authors Robert

Paarlberg and Terry Roe. We see farm policy as having followed a turbulent and as-yet incomplete path toward progressively more "cashing out" of market interventions adopted in the 1930s, especially for export crops. There is little movement along alternative strategic reform paths, which we characterize as a slow program "squeeze out" or an abrupt retrenchment, either with compensation to farmers (a "buy out") or without such compensation (a "cut out").

One of the basic themes in our analysis of the movement that has occurred along the cash out reform path for agricultural policy in the United States is the importance of macroeconomic circumstances to farm policy innovations. The other important policy determinants we identify include additional economic factors (in particular the conditions of international markets, fiscal constraints, and the slow systemic effects of technology developments and labor-adjustment), as well as political factors (mostly party control in Congress, the power of political lobbies, and the political feedback from previous policy decisions; to a lesser extent shifting ideas and engagement in international negotiations). Some of these policy determinants are closely interrelated with macroeconomic conditions, others more nearly independent. Several observations about the importance of macroeconomic factors arise in this context.

First, early in the twentieth century it took more than hard times in agriculture to bring about a high-order change in policy regime toward extensive market interventions through farm price supports and supply controls. Agricultural exports and prices had collapsed shortly after the First World War, and the 1920s were a hard decade for the farm sector, but it was not until the more general macroeconomic collapse after 1929 that conditions were set which brought a Democratic president and Congress to power, and brought a new direction to farm policy. The interventionist policies of the Agricultural Adjustment Act of 1933 had parallels across the economy. The basic structure of farm support policy through market interventions did not emerge in isolation, and most likely never would have.

Once the new farm programs interventions were in place and powerful interests became organized to defend them, they created substantial market distortions and proved that sectoral policy could dominate macroeconomic forces. In my assessment, Schuh's classic article overstates the macroeconomic argument, if we take seriously his claim that agricultural resources were undervalued because of exchange rate overvaluation in the 1950s and 1960s, not just less overvalued than they would have been at an equilibrium exchange rate. Prices were still at war-time high levels in the early 1950s and agricultural interests resisted downward pressure on price supports in subsequent years. This was also a period in which strong productivity growth was making farm products less costly. By one estimate, wheat prices were 50 percent above market clearing levels (at the existing exchange rate) and feedgrains 20-30 percent above market clearing levels at the time Dwight Eisenhower left office in 1961 (Cochrane and Ryan, 1976).

Significant policy reform occurred in the 1960s that let prices fall and compensated farmers with direct payments (coupled to production levels). As a

result, CCC stocks were lower at the end of the decade than they had been from the mid 1950s through mid 1960s. But substantial increases in idled acres accompanied these price and payment policies – idled acres were over one-fifth of the acreage planted in 1970, more than double the acreage idled in the 1950s. A devaluation on the order of 10-15 percent by itself would have been unlikely to increase demand enough to bring this acreage into production and sustain market prices above the government supported levels. Exchange rate overvaluation led to an overstatement of the degree to which farm resources were overvalued by domestic policies in the 1950s and 1960s, but probably not to undervaluation of those farm resources.

Third, the macroeconomic instability in the 1970s and 1980s did not prove fruitful for farm policy reform. At first it seemed possible that the export boom and high prices in the early 1970s would allow farm support program participation to be squeezed out, as nominal support levels fell behind inflation. That outcome was thwarted when agricultural interests succeeded in ratcheting up price support guarantees. Then when the exchange rate appreciated in the 1980s, the full meaning of the view that the effects of macroeconomic policy could swamp those of sectoral policy again became evident. In the 1930s, macroeconomic conditions had driven farm policy toward interventions when a broad domestic and world market collapse in the absence of farm support programs came on top of agricultural export markets that had already been depressed for a decade. In the 1980s, the strong appreciation of the U.S. dollar with price support policies in place depressed export sales that had been growing for the past decade. When U.S. market shares fell sharply in this context, a struggle ensued between those who wanted to aid farmers by restoring U.S. competitiveness with lower price supports, and those who wanted a more determined use of supply controls. The first approach followed the cash out reform strategy, while the second would have revived a more severe interventionist approach of the depression era.

Pursuit of the cash out prevailed in the end, and lower support prices in the 1985 farm bill meant fewer market distortions than otherwise, but this cash out step did not come cheaply. Farm groups were politically powerful enough to insist that income support through deficiency payments increase as market prices fell. Stocks that had accumulated under support prices that had been too high for too long forced use of supply controls as well as larger cash payments, even as support prices were lowered. The magnitudes of these interventions masked what reform progress was being made; progress that came from the recognition that export-oriented agriculture can not ignore exchange rate impacts on its competitiveness. Whatever the econometric estimates, this was a substantial exchange rate effect.

It was fortunate for agriculture that the dollar began to depreciate at about the time that price support policy was being revised to accommodate a strong dollar. Devaluation helped restore U.S. exports, it helped bring down excess stocks, and it contributed to allowing the easing of acreage supply controls. At this point there were hopes that the GATT negotiations would promote substantial further reform, but instead those negotiations ended up (eight years later) exempting the main farm policies of Europe and the United States from any disciplines, and changing the form

of agricultural protection around the world more than the levels of this protection were reduced.

The next major step in U.S. farm policy did not come until 1996, under the FAIR Act, when payments to farmers were almost completely decoupled from production decisions and market prices, annual acreage restrictions were abolished, and price support loan rates were capped at relatively low levels. Adoption of the FAIR Act reflected a change in party control of Congress and a market price boom that made decoupled payments lucrative. The price boom reflected anticipated supply and demand factors, but one can hardly argue that changed macroeconomic expectations were primarily responsible for driving prices upward. Thus, again the idea that macroeconomic forces swamp sectoral factors in determining agricultural market and policy outcomes can be overstated.

## FUTURE TRADE AND TRADE RELATIONS

The arguments presented suggest that movements of the real exchange rate matter to agriculture: they are not always dominant, but they can be. From about 1987 through 1995 attention focused on the exchange rate diminished in the United States because rates were relatively stable. Strong appreciation through late 1998 has renewed interest in exchange rate effects, but does not necessarily portend continued strengthening of the dollar! Indeed, since late 1998, the dollar has fallen in value against the yen and other currencies. Exchange rates are inevitably difficult – really impossible – to predict into the future. Today there are reasons to think the dollar could depreciate further (for example, as the Euro becomes established as a reserve currency, or in light of continuing large U.S. trade deficits) or could appreciate (if Asian economic woes deepen). In neither case does it appear that the industrial world is on the verge of the kind of chaotic macroeconomic circumstances of the 1970s and 1980s. Formation of the Euro and the stable recent macroeconomic policies of the United States suggest the opposite.

That appreciation of the dollar creates agitation for protection and government support for trade sectors is observed across industries and time periods. One need only recall the pounding of sledge hammers on imported cars in demonstrations outside the U.S. Capital in the 1980s or the emotional lobbying for farm income support at that time to recognize this phenomena. In the late 1990s, anti-dumping complaints of the U.S. steel industry – an industry whose evolution to a capital-intensive competitive sector parallels that of agriculture – are a reminder of the political pressures currency movements engender. In agriculture, the 1996 FAIR Act suffered a near-death experience in 1998 – some will argue the wounds are mortal: $6 billion was added to farm support spending and nominally decoupled payments were raised as compensation for falling market prices.

Strong further appreciation of the dollar would have detrimental effects on farm policy worldwide, by undermining reform in the United States. Such a conclusion may be seen as non-symmetric and thus unwarranted – appreciation of the dollar means depreciation of other currencies, so offsetting pressures on farm

policies elsewhere might lead to something of a net wash. In my view, under the FAIR Act the United States has moved far enough forward along the path of decoupling farm support from market interventions that exchange rate movements would have asymmetric effects on policy evolution internationally. For those countries in which depreciation would favor farm policy liberalization, the effects on policy outcomes would not be as strongly positive as appreciation of the U.S. dollar would prove detrimental. The effects of dollar depreciation are symmetric, and would favor reform.

To illustrate this point, consider the case of the United States and EU. If the FAIR Act survives, the EU will find itself using acreage controls to sustain its farm policies while the United States pursues market-driven production levels unfettered by land use restrictions. This reverses the previous relative effects on competitiveness of policies in the two blocs, where from 1980 through 1995 the United States used supply controls and the EU for the most part did not. The EU is placed at a competitive disadvantage by the new policy mix. Simultaneously, the United States is positioned to press the EU in international negotiations to give up the "blue box" of WTO exemptions for programs making payments tied to production controls, since the United States itself is no longer using these exempted policies. The EU has reasons of its own to move toward decoupling, to accommodate expanded membership. Thus, convergent influences might culminate in further movement toward less market intervention in agriculture.

A strong appreciation that depresses U.S. farm prices and exports makes an optimistic reform scenario less likely. Dollar appreciation could shift U.S. farm policy back toward explicitly interventionist price supports (higher loan rates not restricted to a fixed level of output), or even toward adoption of new supply controls, perhaps through a paid land diversion. With marketing loans, the US would avoid the stocks-accumulation problem under which appreciation prompted lower loan rates in 1985. Competitors in world markets would decry this "unfair" subsidization, and the United States would lose a basis for arguing for greater liberalization worldwide. Meanwhile depreciation of other currencies would be lessening the cost of foreign farm supports – for example in the EU. These are circumstances under which convergent influences are less likely to favor elimination of the WTO blue box or negotiation of other farm policy reforms.

## SUMMING UP

This paper has examined the question of exchange rate effects on agriculture raised forcefully by G. Edward Schuh some 25 years ago as a new era of international capital mobility and flexible exchange rates emerged worldwide. Exchange rate movements drive a wedge between domestic and foreign prices of a single good. More generally exchange rates serve an equilibrating role when markets requires a systematic movement in the relative prices of traded and nontraded goods. Exchange rate movements depend on international capital flows, and the macroeconomic factors determining these flows, including monetary policy. Monetary shocks have

nonneutral effects which explain some of the variability in agricultural prices. Moreover, macroeconomic conditions are often decisive in determination of domestic agricultural polices, and hence competitiveness in world markets and tensions in trade relations.

These structural policy implications of exchange rate movements, along with their direct effects on markets at any given moment in time, are why exchange rates are important to agriculture.

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