

THE IMPACT OF EXCHANGE RATES ON INTERNATIONAL COTTON TRADE

Stephen MacDonald

Economic Research Service

U.S. Department of Agriculture

Washington, DC

Abstract

Over the last 3 decades, the U.S. exchange rate has periodically been a significant concern to exporters and to economic policy-makers. More than once, the real U.S. exchange rate has changed by 40 percent or more in the space of a few years.

Exchange rate changes can be a signal of larger issues that, in turn, have a much larger impact on cotton than the exchange rates themselves—the former Soviet Union in 1992 is an example. Exchange rates also can be a channel for macro-economic factors driving the economy, indirectly affecting cotton—the euro is a case in point here. The depreciation of the euro is one way the marketplace is expressing concern about the transition from German monetary control to broader control. European Union (EU) currencies have been effectively tied to the mark for a number of years, but in a sense the union of these currencies adds uncertainty to the reputation developed by Germany's central bank and has the potential of greater instability. As the euro has depreciated partly in response to this concern, the new European Central Bank has felt obliged to demonstrate its resolve to prevent inflation by cutting interest rates slowly, and with hindsight seems to have erred on the side of slower economic growth in the EU. This in turn has contributed to the global slowdown in 2001, reducing demand for cotton.

Finally, as anyone involved in internationally trade goods, like cotton and textiles, is well aware, exchange rates can directly influence international trade in goods. Exchange rates are notoriously difficult to predict, are highly volatile, and exhibit persistent trends. Since 1995, the U.S. dollar has been on a strengthening trend, affecting the competitiveness of the U.S. textile industry, and depressing commodity prices in dollar terms. This paper will start from this perspective—the most simple direct effects. It will then discuss some of the factors causing exchange rates to shift (which are not perfectly understood), look at how some of these factors have influenced exchange rates in major cotton producing and consuming countries, and conclude by trying to bring this discussion together with respect to future prospects for the U.S. exchange rate in general.

Introduction to Exchange Rates

A strengthening U.S. dollar means, for example, that it takes more lira to equal one dollar. Obviously, for holders of lira, it will become more of a sacrifice to give you a dollar's worth of lira in exchange for your goods. Exchange rates are far more volatile than domestic prices, so shifting exchange rates impose real costs on transactions between countries, and tradable goods bear these costs.

That said, it should be pointed out that the largest changes in exchange rates are driven by changes in prices. Occasionally a country's currency is quoted in hundreds of units per U.S. dollar, or even millions, as is the case with Turkey currently. In November 2001 it took 1.5 million Turkish lira to equal 1 dollar, compared with 15 lira in 1971. Turkey's prices have risen at least as fast as its nominal exchange rate and it would be misleading to not make an adjustment for prices when analyzing the impact of exchange rates on a commodity.

The International Monetary Fund (IMF) closely monitors exchange rates as part of its role in the international response to economic crises that affect financial flows. The IMF's real exchange rate index for the United States incorporates moving trade weights and price adjustments based on labor costs in manufacturing in each country. Unfortunately, it only incorporates exchange rates of developed countries. The IMF's work is too sophisticated to be replicated on a broader or a cotton-specific basis, so the IMF data will be first presented as a baseline. Then, to what extent the differences from this paper's cotton-specific and textile-specific results represent different methodology or real economic differences, will be discussed.

According to the IMF, the U.S. dollar, weighted by the value of trade with other developed countries, has appreciated 34 percent since 1995. However, note that this appreciation followed depreciations of either 38 percent, starting from 1971, or 46 percent, starting from 1985. Through 1995 it seems safe to say the U.S. dollar was tending to depreciate with respect to its major developed trading partners.

An Economic Research Service (ERS) developed country index (based on data from DRI-WEFA) weighted by textile trade, and adjusted by consumer price indices is similar to the IMF index, with a 29 percent appreciation since 1995. It does show

greater fluctuation and less of a long-term trend of depreciation. Note that DRI-WEFA is forecasting stability in the real exchange rate of dollar with these weights in 2002 and a slight decline in 2003. However, Oxford Economics is forecasting a slightly weaker value of the dollar in 2003.

The ERS index for less developed countries is quite different in its behavior over time. One might say there is a trend toward U.S. appreciation in the long run, in marked contrast to the depreciating trend over much of the IMF index. On the other hand, since 1995 the total appreciation has been only 13 percent, less than the IMF index. If Mexico is excluded from this index, then the dollar has appreciated 31 percent since 1995. Given the integration between the Mexican and U.S. textile industries it is appropriate to examine an index that excludes Mexico. In part, the strength of Mexico's currency since 1996 has reflected the depth of its ties to the United States. Note that DRI-WEFA expects continued U.S. appreciation in 2003.

The index with weights for all textile trade incorporates characteristics of both developed and developing countries. Like the developed countries index its trend is less obviously towards steady appreciation, and like the less developed countries index it has appreciated 18 to 30 percent since 1995, depending on whether or not Mexico is included.

This index (Figure 1) encapsulates the trials of the U.S. textile industry in recent years. After stability during the first half of the 1990's, first the Asian financial crisis in 1998 and 1999 and then the slowdown in the EU and Japan in 2000 and 2001 (among other things) increased global interest in holding assets denominated in U.S. dollars, driving the U.S. dollar upwards, and crimping the profitability of U.S. industries producing tradable goods. Given that this index is so different in its behavior from the more widely known indices such as the IMF's and JP Morgan's, it seemed appropriate to establish how the inclusion of less developed countries in this textile trade index accounted for the differences.

Finally, a graph of the U.S. Real Exchange Rate weighted by foreign cotton production since 1980 (Figure 2) shows an almost constant trend of appreciation, since foreign cotton production is almost exclusively a phenomenon of less developed countries. Unfortunately, this graph excludes Central Asia, due to data problems, so Central Asia will be discussed separately, but the long term trend remains toward significant U.S. appreciation even with Central Asia.

The Causes and Results of Exchange Rate Changes

Recall that the IMF index showed a declining trend through 1995. Until recently, the paradigm differentiating the U.S. from its developed trading partners was the continued erosion of the economic predominance the U.S. has enjoyed since the end of World War II. This entailed a catching up in productivity and technical prowess in both Europe and Japan. Furthermore, U.S. long-run monetary policy prospects—the “reputation” of the U.S. Federal Reserve—had elements of doubt compared with those of Germany and Japan. The U.S. accommodation to loose fiscal policy beginning in the 1960's exported inflation around the world afterwards, and while the 1980's reestablished the U.S. reputation, the prospect of long-run fiscal deficits by the U.S. federal government added to the long-run uncertainty about the strength of the U.S. dollar for many years.

In contrast, during this same time, U.S. prospects looked positively stellar versus most of the developing world. First, during the debt crisis of the 1980's, developing countries were forced to devalue significantly to acquire export earnings to pay overhanging debts, and then again in the second half of the 1990's a train of financial crises broke the commitments of one developing country after another to fixed or managed pegs against the dollar. And again, the result was almost invariably toward devaluation for these countries.

What has been the impact on cotton trade of this steady appreciation of the U.S. dollar? Economic theory suggests that an appreciating currency will tend to reduce the price of goods in that country's currency or its share of world production. The U.S. has not shown any trend in of downward share in world cotton production, but world cotton prices have fallen in dollar terms. Inverting the U.S. exchange rate provides an illustration of the relationship (Figure 3), although note that different ways of calculating the inverse exchange rate would result in somewhat different patterns, with a correlation perhaps below the 90 percent level achieved here. We are all aware that there are many other influences on cotton prices, and it should be clear that one should not place too much emphasis on this example's high correlation.

This high correlation is, however, consistent with estimates reported in the economics literature of exchange rate elasticities with commodity prices of around 1. This is consistent with the notion that agricultural goods are traded in auction markets where prices freely adjust, in contrast with manufactured and other differentiated products where pricing decisions have a greater strategic element.

Developments in Key Countries

The graphs presented so far have excluded Central Asia, and based on the data available would show an apparent level of still greater U.S. appreciation if Central Asia were included. Since the Central Asian countries did not have their own exchange rates before 1994 for the most part, it is necessary to estimate pre-1994 movements based on Russian data. However, both the Russian data before 1994 and the Central Asian data since then are suspect, with officially set exchange rates widely at variance from black market rates and inflation estimates that are widely described as under-reported. However, while the exact data are suspect, it is interesting to note that the apparent shift in exchange rates in 1992 and 1993 coincided with the surge in cotton exports from the former Soviet Union and a temporary collapse in world cotton prices. While imperfect, the data are indicative of the impact of a collapse in asset values in a competing cotton producer. Recently, Uzbekistan has been accelerating the depreciation of its official exchange rate, although the lack of reliable inflation data makes adjustment to real terms uncertain.

One broad explanation for the long-term appreciation of the U.S. dollar versus foreign cotton producers is a steady shift in economic orientation from inward-looking to outward-looking. For example, Russia's exchange rate in 2001 was half of its 1985 level. Until the 1980's, the typical development model pursued by developing countries was one that attempted to control investment and trade, trying to minimize foreign ownership of assets and preserve foreign exchange by reducing imports. One aspect of this orientation was that exchange rates tended to be over-valued. This permitted developing countries to control investment and imports through capital controls, doling out foreign exchange only for imports that met policy criteria. With the exchange rate over-valued, selected imports were subsidized. However, during the debt crisis of the 1980's a number of countries found these policies unsustainable. Furthermore, the example of East Asian countries that achieved and sustained much higher rates of economic growth with outward-oriented economies—and low exchange rates—provided further impetus to change.

Interestingly enough, much of the apparent upward trend in the U.S. exchange rate index weighted by foreign cotton production disappears once the three largest foreign cotton producers—China, India, and Pakistan—have been removed. Whereas a time trend described 90 percent of the variation of the original time series, once China, India, and Pakistan have been removed a time trend describes only 53 percent of the variation. Data limitations prevent extending these data earlier than 1980, and debates in the economics literature about how to view trends in exchange rates have resorted to analysis of 100 or more years of data. Therefore, this paper will leave the analysis of whether a trend is discernable at this simple subjective level. It appears plausible that much of the apparent trend in the cotton production weighted U.S. exchange rate could be attributable to events in China, India, and Pakistan, and it is worthwhile to examine those changes.

While China was not a country burdened by debt during the 1980's, it was definitely in the process of opening up its economy to the outside world, and its currency steadily depreciated for much of the 1980's. China's last nominal depreciation was in 1994, and China has largely pegged its currency to the U.S. dollar since then. Recent events have highlighted the pitfalls of fixed exchange rates for countries unable to defend them. China's economy is still large relative to its trade, and it still maintains significant capital controls, which facilitate maintaining a fixed exchange rate. However, with WTO membership it loses much of its discretion to control its current account, and further liberalization is planned. China's banking system has many problems, and together these factors could increase the cost of maintaining a fixed exchange rate. Furthermore, Japan's currency has recently resumed depreciating against the dollar, and a weaker currency in China's major export market will also increase the cost of pegging versus the dollar. These data are from DRI-WEFA and show China's currency has depreciated in recent years in real terms due to deflation, and that DRI-WEFA expects China to begin a nominal depreciation of the yuan in 2003. Note that the USDA baseline does not incorporate such an assumption.

Similar to China, India, while not burdened by debt, opened its economy during the 1990's, reversing the import-substitution orientation followed since independence, a change reflected in its surge in textile production and exports. India's currency gradually depreciated from its pre-liberalization overvalued level. India's central bank still tightly controls movement in India's currency, although the result of this control is largely to delay rather than prevent steady devaluation. With fiscal deficits at various levels of government, and devaluation by competing exporters during the late 1990's, India's currency has tended to devalue, and DRI-WEFA expects further real devaluation in 2003.

Pakistan's economy is heavily dependent on flows of aid and remittances from Pakistanis working overseas. Fiscal imbalances remain large and the government is under pressure to sustain exports, factors driving the exchange rate toward devaluation. Since late 2001, increased aid flows have stabilized the exchange rate, but as recently as November 2000 Pakistan was close large-scale default on its foreign debt, and DRI-WEFA expects depreciation to continue in 2003.

West Africa's Franc Zone is not a clear example of a region where exchange rate changes have been driven by broad economic policy changes, although the privatization of the region's cotton industry has been accompanied by analogous

reforms in other sectors. However, the Franc Zone's CFA Franc is pegged to the French Franc (FF), with the only adjustment in this time period being a shift from 50 CFA/FF to 100 CFA/FF in 1994. Since then, after working through the inflationary impact of the devaluation, Mali's currency has depreciated largely in line with the French Franc. On the one hand, the CFA-FF link is not expected to end in the foreseeable future, so the exchange rate in Mali and the rest of West Africa might be expected to track with those of the developed world. And developed country currencies do not show the persistent trend toward devaluation generally exhibited by developing countries. On the other hand, this expectation is conditional on West Africa maintaining its fixed peg with France. It is conceivable that unforeseen circumstances might lead to either abandoning this peg or, and more likely, to further adjustments like that seen in 1994. No such adjustment is foreseen by DRI-WEFA through 2020.

Conclusion

Outlook for the Future

DRI-WEFA forecasts suggests that the real value of the dollar will be stable through the rest of the decade when weighted by textiles and cotton trade. Note that both DRI-WEFA and Oxford Economics are forecasting a declining dollar when weighted by developed countries. Weighted by textile trade (excluding Mexico), the dollar is forecast unchanged in calendar 2002 and 0.6 percent higher in 2003. By 2010 it actually depreciates slightly. Weighted by cotton production, the dollar is expected to be unchanged in 2002 and appreciate 4.1 percent in 2003, although again a slight depreciation is expected by 2010. Note also that if China does not depreciate in 2003, then only 1.6 percent total U.S. depreciation is forecast for that year.

Exchange rates are notoriously difficult to forecast, and as mentioned earlier, data series stretching out to 100 or more years have been employed to ascertain whether global commodity price arbitrage brings exchange rates into line with relative purchasing power between countries. There are many measurement issues regarding the appropriate price adjustment to convert nominal exchange rates into real measures.

Studies have found that real exchange rates may deviate from purchasing power parity levels for a number of years. Thus, even if the recent appreciation of the U.S. dollar is not a permanent phenomenon, there is no guarantee that depreciation can be expected in the immediate future. During the last half of the 1990's, the U.S. dollar appreciated versus other developing countries as equity and bond investment flowed into the United States. U.S. fiscal policy during this period was quite different than during previous years, with actual and prospective budget surpluses. During this period, the United States enjoyed its period of fastest growth versus the rest of the world since 1985, which not coincidentally was the previous period of dollar appreciation. Neither DRI-WEFA nor Oxford Economics is forecasting such relative U.S. economic strength over the next few years, although the recent poor economic news from Japan and resumed deterioration of the yen suggests the U.S. will not quickly depreciate against Japan. The Euro could appreciate as it completes its transition period, assuming the European Central Bank can establish its credentials. Alternatively, the large investments that occurred in the United States during the 1990's may have raised productivity, breaking the trend that held with respect to the rest of developing world since 1971, and sustaining the value of the dollar.

Regarding developing countries, the danger remains that countries attempting to fix their exchange rates or continue in import-substitution policies may eventually devalue. To varying degrees, China, India, and Pakistan attempt to control their exchange rates. India and Pakistan are likely to face significant fiscal deficits and devaluation in the future, although the lack of fixed exchange rate pegs argues for gradual changes. China's fixed peg carries both the prospect of stability for the foreseeable future and the potential for the compression of future changes into a shorter time frame. Uzbekistan and the rest of Central Asia remain even less predictable, although for the foreseeable future their exchange rate policies will be less relevant to the world cotton industry than the rest of their economic policies.

For the rest of the developing world, it remains to be seen if the long-run holds a trend of countries maintaining flexible exchange rates as they make the long-term effort to establish credible monetary and fiscal policies, or whether the shift towards floating exchange rates and opening financial markets was the high point of an economic cycle. In any case, those in the cotton and textile industries will continue to be advised to be aware of shifts in this important economic variable.

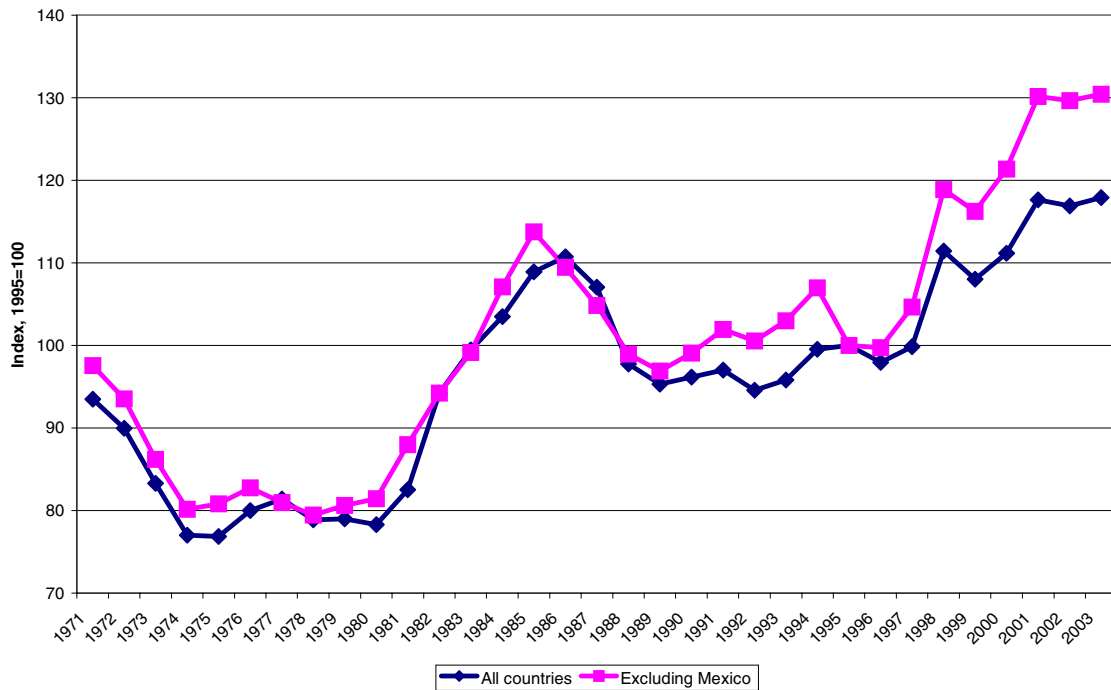


Figure 1. Real U.S. exchange rate, weighted by textile trade.

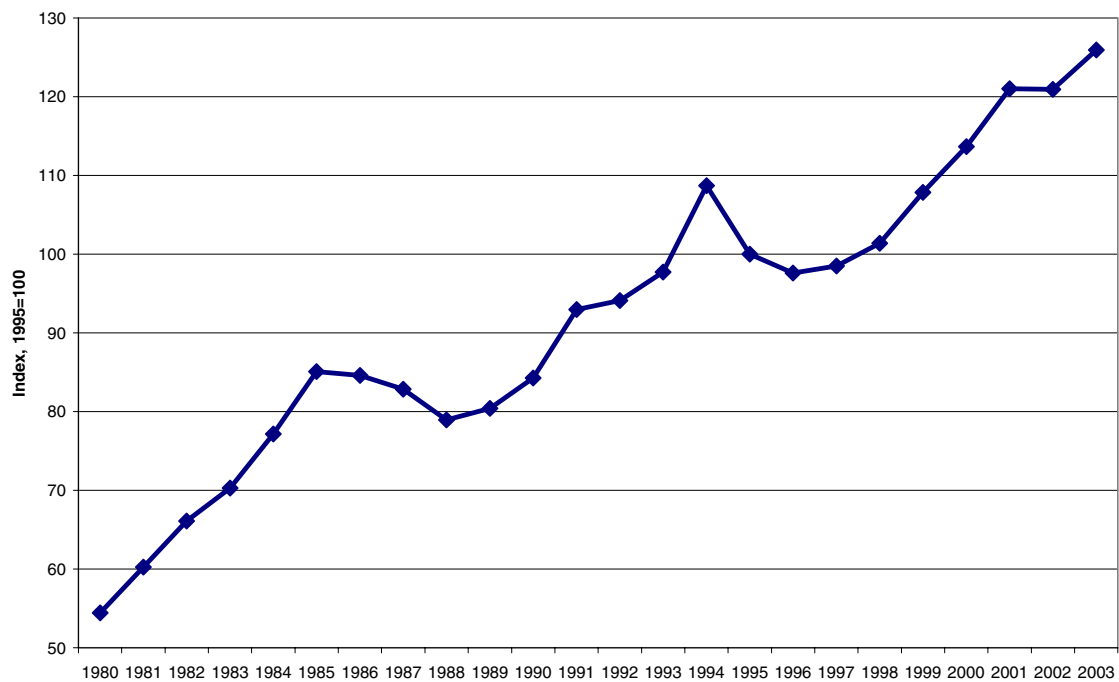


Figure 2. Real U.S. exchange rate, weighted by cotton production.

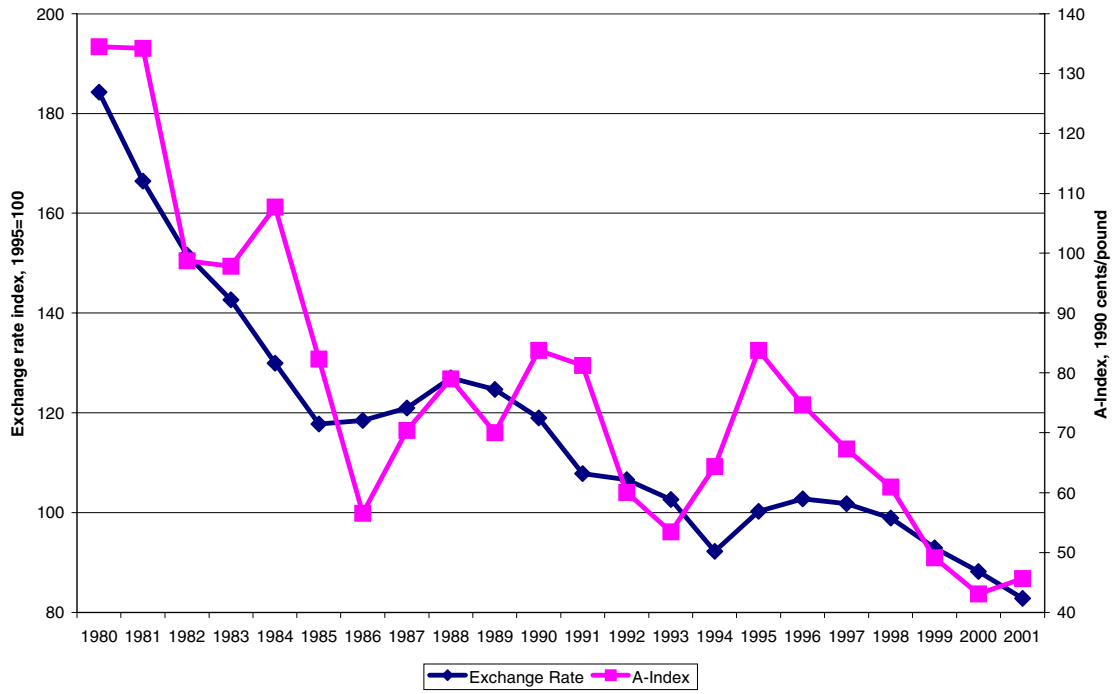


Figure 3. Inverse exchange rate and real A-Index.